



2010 – 2020

Periodic Review Self-Study

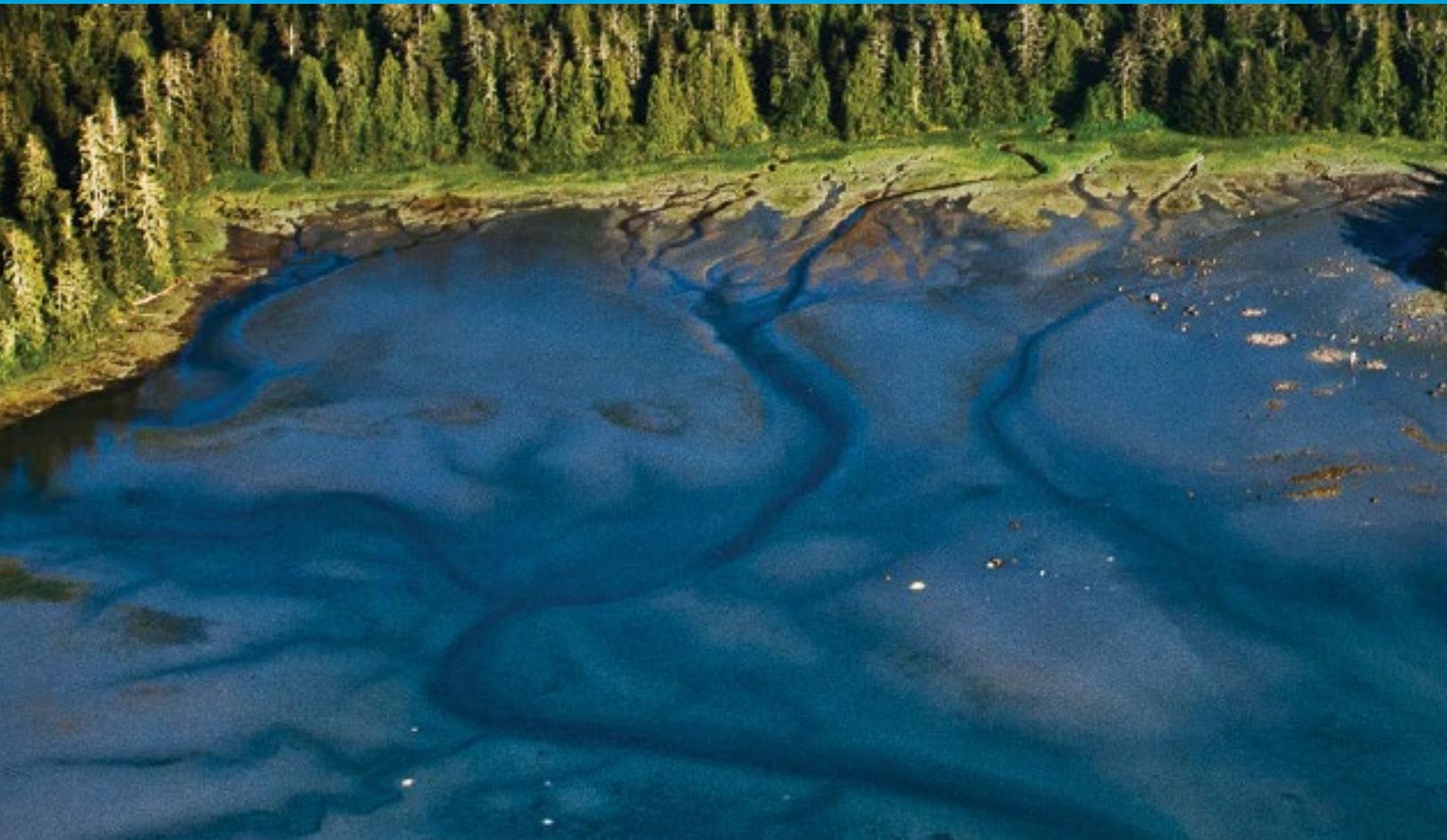
Prepared for the Canadian Commission for UNESCO and the
International Coordinating Council of the MAB Programme

February 2021





**We acknowledge the territories of
hišk^wiiʔath (Hesquiaht First Nation), Ƨaahuusʔath (Ahousaht),
łaaʔuuk^wiʔath (Tla-o-qui-aht First Nations), Yuuluʔilʔath Government
(Ucluelet First Nation), and tuk^waaʔath (Toquaht Nation)
in the spirit of truth, healing, and reconciliation.**





At its 28th session in 1995, the UNESCO General Conference adopted Resolution 28 C/2.4, the Statutory Framework of the World Network of Biosphere Reserves. Article 4 of the resolution defines the criteria to be fulfilled for areas designated as biosphere reserves. In addition, Article 9 provides that each biosphere reserve is subject to a periodic review every 10 years, fulfilled by a report prepared by the management authority for that biosphere. This document constitutes the second periodic review (2010-20) of the Clayoquot Sound Biosphere, completed by the Clayoquot Biosphere Trust, the non-government management organization for the Clayoquot Sound Biosphere.

As prescribed by the Canadian Commission for UNESCO in its guidelines for periodic assessments of biosphere reserves in Canada, this report aims to show how the Clayoquot Sound Biosphere meets the criteria of Article 4 of the Statutory Framework and, in particular, how it performs the three functions attached to it. The report consists of three sections:

Part I

A summary highlighting the main changes within the Clayoquot Sound Biosphere between 2010 – 2020.

Part II

A detailed description of the human, physical, and biological characteristics of the Clayoquot Sound Biosphere as well as its institutional aspects.

Part III

Appendices, which provide additional documents and or are in support of the information provided in the body of the report, as well as two annexes (updates for the directory of biosphere reserves on the MABnet and information for promotion and communication materials).

This self-study document has been prepared with input by the volunteers and staff of the Clayoquot Biosphere Trust, and with community input.

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Glossary of Terms

Canada Fund: \$12-million endowment fund, received in 2000 as a grant from the Government of Canada to support and promote local projects in the Clayoquot Sound Biosphere for research, education, and training

Clayoquot Biosphere Trust: the central administrative authority for the Clayoquot Sound Biosphere

Clayoquot Scientific Panel: Scientific Panel for Sustainable Forest Practices in Clayoquot Sound

Clayoquot Sound Biosphere: area of the Clayoquot Sound UNESCO Biosphere Reserve (see page 15)

Clayoquot Sound Biosphere Region: the land and communities within the boundaries of the Clayoquot Sound Biosphere as well as the territories of Yuutu?it?ath, the Toquaht Nation, and the District of Ucluelet, who are outside of the boundaries but were signatories to the UNESCO nomination and participating communities in the CBT's governance and programs

Coastal Family Resource Coalition: a network of health and social service providers that address the needs of children, youth, families, and communities

Ha-houlthee:¹ First Nations' traditional territory (alternate spellings: ha?uut?i, hahoutee, ha-hahoulthlee, hahoulthee)

Ha'wiih:² First Nation's hereditary chiefs

Pacific Rim National Park Reserve: part of the core area of the Clayoquot Sound Biosphere; note, however, that only the Long Beach Unit of the park is within the biosphere

Sustainable Development Goals: 17 goals adopted by the United Nations in 2015; they compose the 2030 Agenda for Sustainable Development with the ultimate goals of "peace and prosperity for people and the planet, now and into the future."

Theory of Change: a CBT framework of actionable initiatives and programs organized around five actions (see page 26)

Vital Signs: a biennial report that monitors a suite of indicators that guide the CBT's work within the CSBR (see page 125)

West Coast NEST: a regional collaboration to support education tourism in the CSBR (see page 101)

¹ Foxcroft, D., Hall, D., Cowan, L. (2016). West Coast of Vancouver Island, Canada: The Nuu-chah-nulth Continue to Fight for Their Aboriginal Fishing Rights Even After These Rights Were Recognized in *Ahousaht et al vs Canada*. (2009). <https://www.communityconservation.net/wp-content/uploads/2016/12/Nuu-chah-nulth.pdf>

² Ibid.

Abbreviations

ACRD: Alberni Clayoquot Regional District

CBD: Convention on Biological Diversity

CBRA: Canadian Biosphere Reserves Association

CBT: Clayoquot Biosphere Trust

CCU: Canadian Commission for UNESCO

CFC: Community Foundations of Canada

CSBR: Clayoquot Sound Biosphere Region

DFO: Fisheries and Oceans Canada

EBSA: Ecologically and Biologically Significant Area

ECCC: Environment and Climate Change Canada

ES: ecosystem service

IACBR: International Advisory Committee for Biosphere Reserves

IPCA: Indigenous Protected and Conserved Area

MAB: Man and the Biosphere Programme

MPA: marine protected area

NGO: non-governmental organization

OECM: Other effective area-based conservation measures

PRNPR: Pacific Rim National Park Reserve

RCA: Rockfish Conservation Area

RMI: Resort Municipality Initiative

SDG: United Nations Sustainable Development Goal

TFL: tree farm license

TOC: Theory of Change

TRC: Truth and Reconciliation Commission of Canada

WNBR: World Network of Biosphere Reserves

Part I Summary

**Name of the
biosphere reserve**
Clayoquot Sound
Biosphere Reserve

Country
Canada

Year of designation
2000

**Year(s) of periodic
review**
2010



Previous recommendation(s) made by the International Co-ordinating Council (MAB-ICC), if applicable.

The 2010 periodic review requested more information in regards to: the size of the core area, impacts of aquaculture and mining exploration, and monitoring activities with the Clayoquot Sound Biosphere. (See 1.3 below.)

What follow-up actions are completed and if not completed/initiated, please provide justifications.

Completed. Follow-up actions were resolved to the satisfaction of the UNESCO Man and the Biosphere (MAB) International Coordinating Council.

Update on the implementation of measures to achieve the objectives of the biosphere reserve.

The Clayoquot Biosphere Trust (CBT) develops annual business plans to evaluate and guide its work. In 2012 and 2017, the CBT completed a review and revision of its bylaws. Becoming a community foundation in 2012 further bolstered the organization's internal capacity. While the aforementioned actions relate specifically to the work of the CBT in relation to the Clayoquot Sound Biosphere Region (CSBR), the many jurisdictions within the CSBR result in a mosaic of approved plans, policies, and processes that create an overall management framework. This aligns with Item 130 in the draft *Technical Guidelines for Biosphere Reserves* which defines an NGO model of management.

Briefly describe the process by which the current periodic review has been conducted:

The process included: consultation with CBT board, staff, and advisory committees; several opportunities for public input; surveys with researchers and knowledge holders; updating the zonation maps; and a literature review. See 1.5 below for specific details.

Spatial Configuration

Area of terrestrial core area(s)	159,148 ha
Area of terrestrial buffer zone(s)	68,044 ha
Area of terrestrial transition area(s)	31,227 ha
Area of marine core area(s)	20,579 ha
Area of marine buffer zone(s)	6,980 ha
Area of marine transition area(s)	63,386 ha

Human Population

Core Area(s): 0 permanent; 10 (est.)³ seasonal
There are no known permanent residents in core protected areas. First Nations residents, and federal and provincial parks staff use core areas on a seasonal or temporary basis, as do scientists and researchers. Large numbers of short-term visitors to the biosphere region camp in designated areas in national and provincial parks.

Buffer Zone(s): 0 permanent; 25 (est.)⁴ seasonal
There are no known permanent residents in buffer zones. First Nations residents, government staff, scientists, researchers, and recreational visitors reside in buffer zones on a seasonal or temporary basis.

Transition Area(s): 3,742 permanent; 1,182⁵ seasonal
One town and a number of First Nations communities are located in the transition areas of the Clayoquot Sound Biosphere. The population counts for these communities using the 2016 national census and data from CSBR First Nations are:

Area C (Regional District, est.)	75
Esowista	129
Hesquiaht Harbour	5
Hot Springs Cove	44
Marktosis (Ahousesht)	1,100
Opitsaht	155
Tofino (District Municipality)	1,932
Ty-Histanis	302 ⁶
Total	3,742

Communities immediately adjacent to the Clayoquot Sound Biosphere include:

Area C (Regional District, est.)	602
Ittatsoo (Yuułuʔiłʔatḥ)	369
Macoah (Toquaht Nation)	32
Ucluelet (District Municipality)	1,717
Total	2,720

³ Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. p. 19 <https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf>

⁴ Ibid

⁵ This number is for the entire Clayoquot Sound Biosphere Region, so includes communities immediately adjacent to the biosphere as well. Based on 2016 data from Urban Systems (via District of Ucluelet, Land Use Demand study).

⁶ 2018 population count based on personal communication with Iris Frank, Tla-o-qui-aht First Nations. While this number is not found in census data, it captures the significant population growth in the new housing development of Ty-Histanis.

Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned.

The CBT's primary source of funds is the interest from the \$12-million Canada Fund, an endowment received from the Government of Canada in 2000. (As of December 31, 2020, the fund's value was \$17,717,749.) The annual operating budget is approved by the board of directors as part of the strategic/business planning process and revenue comes from interest on the Canada Fund, as well as grants, and financial agreements with program partners. Over the past decade, the operating budget has increased as the Canada Fund, and the capacity and programs of the CBT, grew. In 2010, the operating budget was \$590,450; in 2020, it was \$1,245,140. (See 2.3.2 for more details.)

International, regional, multilateral or bilateral frameworks of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieving objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

The CBT is a non-profit organization and as a non-government entity does not lead on the creation of legal agreements or conventions, per se. However, the organization's work promotes, supports, and recognizes the following agreements, frameworks, conventions at the local level.

As a member organization of both the World Network of Biosphere Reserves (WNBR) and the Community Foundations of Canada (CFC), the CBT aligns its work with several frameworks adopted by these networks and contributes to their achievement through activities, projects, and programs at the grassroots level. They include: the United Nations Sustainable Development Goals (SDG), the Truth and Reconciliation Commission of Canada's (TRC) Calls to Action, the Statutory Framework of the World Congress of Biosphere Reserves, and the Lima Action Plan.⁷

United Nations frameworks that guide the CBT's work include: UN Convention on Biological Diversity, the UN 2030 Agenda for Sustainable Development, the Millennium Ecosystem Assessment Framework, and the UN Declaration of Rights of Indigenous Peoples (UNDRIP). As a member of the UNESCO family and the Canadian Commission for UNESCO, the CBT's activities contribute to the achievement of UNESCO values at the local level.

In addition to UNDRIP and the TRC's Calls to Action, the CBT is also advised by several frameworks and guidelines in regards to reconciliation with Indigenous peoples. This includes being a signatory to the Canadian philanthropic community's Declaration of Action (a commitment to using philanthropic resources in service to reconciliation), Canadian Biosphere Reserve Association's Indigenous Circle, and the UNESCO Policy on Engaging with Indigenous Peoples.

Monitoring and research frameworks of cooperation include: the Western Hemisphere Shorebird Reserve Network, Important Bird Areas, Canada's 2010 Convention on Biological Diversity (Pathway to Canada Target, and contributions towards achieving Aichi Target 11), and other multilateral environmental agreements.

⁷ Clayoquot Biosphere Trust. (2019). 2020 Strategic Business Plan.

Part II
**Periodic
Review
Report**



1. Biosphere Reserve

1.1 Year designated.

2000

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate):

2010

1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

Correspondence following the 2010 periodic review outlined three recommendations, all of which have been resolved to the satisfaction of the UNESCO Man and the Biosphere (MAB) International Coordinating Council.

Size of the core area.

The International Advisory Committee for Biosphere Reserves (IACBR) review noted concern that the core area might be too small to meet conservation objectives.

The parks and protected areas that comprise the core area of the Clayoquot Sound Biosphere Region (CSBR) conserve a wide range of habitats and landscapes, covering approximately 90,000 ha in the terrestrial component (34% of terrestrial area) and 20,000 ha in the marine component (24% of marine area). At the time, core areas included Pacific Rim National Park Reserve (PRNPR) and 16 provincial parks and ecological reserves. As noted in the 2010 periodic review, prepared by an external review committee, the core areas constitute approximately one-third of the biosphere reserve and that “from a biosphere reserve perspective, this is appropriate.”⁸

Follow up correspondence from the Canadian Commission for UNESCO (CCU) noted that the [UNESCO MAB International Coordinating Council] “acknowledges that the zonation and size of the biosphere reserve seems functional.” (See Appendix I for a copy of the correspondence.)

Impact of aquaculture and mining exploration.

The IACBR had some concerns related to the biodiversity conservation function of the Clayoquot Sound Biosphere regarding the impact of aquaculture (specifically salmon farms) and mining exploration within the CSBR.

In follow-up correspondence, the CBT noted that the biosphere reserve designation in Canada does not bring any regulatory or decision-making authority with respect to land management, development, and use. The CBT mandate also does not provide for direct engagement in debates for or against specific land use decisions. The organization’s role is to encourage a regional approach to sustainability and to support, engage, and inform local residents and decision makers on issues regarding sustainable development and the maintenance of healthy, balanced interconnections within and between ecosystems.

In this correspondence, the CBT also detailed the provincial and federal governments’ roles in regulating aquaculture and mining. (See Appendix II for a copy of this correspondence.)

In response to this correspondence, the CCU stated that the [UNESCO MAB International Coordinating Council] “noted with satisfaction the measures taken to address the sustainable development function and concluded that this site meets the criteria in the *Statutory Framework of the World Network of Biosphere Reserves*.” (See Appendix I for a copy of the correspondence.)

It should be noted, however, that although the CBT does not have regulatory authority over activities within the Clayoquot Sound Biosphere, the organization does contribute its expertise to discussions regarding developments. In 2019, for example, the CBT prepared a detailed submission regarding the siting of three salmon farms stating concerns over the proximity of the sites to the Clayoquot Sound Biosphere’s core protected area, and on the potential impacts to wild salmon.

⁸ Francis, G., Mendis-Millard, S., Reed, M. (2010). Clayoquot Sound Biosphere Reserve Periodic Review. p. 37.

Monitoring the conservation objectives within the core area.

The IACBR requested more information on monitoring within the core area. This was thoroughly addressed in a 2013 report in which the CBT outlined the extensive complement of monitoring projects taking place within the CSBR. (See Appendix III for the full report.)

In response to this report, the CCU stated that the [UNESCO MAB International Coordinating Council] “noted with satisfaction the monitoring for conservation in the core areas and the involvement of First Nation members in managing the site.” (See Appendix I for a copy of the correspondence.)

1.4 Other observations or comments on the above.

Since the first periodic review in 2010, some communities within the CSBR have changed the way in which they would like to be referred, specifically: Yuułuʔiłʔatḥ (rather than Ucluelet First Nation), Ahousaht (rather than Ahousaht First Nation), and Toquaht Nation (rather than Toquaht First Nation).

In 2018, the CBT made the decision to remove the word reserve from the Clayoquot Sound Biosphere Reserve title. In Canada, the world reserve can have negative interpretations tied to the federal government’s Indian Act and colonization. As noted at the 2017 MAB Youth Forum, a reserve can be understood as an exclusive place where humans should not go. Neither of these definitions is a good fit with the mission of UNESCO biospheres—inspiring a positive future by connecting people and nature today. When referring to the area specifically designated as a biosphere reserve in 2000—the watershed of Clayoquot Sound—the CBT uses Clayoquot Sound Biosphere. When being inclusive of the territories of Yuułuʔiłʔatḥ, the Toquaht Nation, and the District of Ucluelet—signatories to the UNESCO nomination and participating communities in the CBT’s governance and programs—Clayoquot Sound Biosphere Region (CSBR) is used.

The decision to remove the word reserve is slowly being implemented across the Canadian network and the Canadian Biosphere Reserves Association (CBRA) is also contemplating a name change to reflect these same values and commitment.

1.5 Describe in detail the process by which the current periodic review has been conducted:

The periodic review is the result of a decade of continued interaction and resultant learning with residents and communities of the CSBR. Throughout this decade, the CBT has employed various strategies to engage people of the region in order to represent their varied interests. These strategies are described in more detail in the periodic review, but include regional representation on the board of directors, regional participation on advisory committees, and many community events, activities, and projects.

As the periodic review primarily occurred during 2020, the engagement process was hampered by the coronavirus pandemic. In observance of public health guidelines, public gatherings or in-person workshops were not possible so much of the input came via on-line meetings. The review process included:

- several sessions for staff and board members to solicit input on self-study questions,
- invitation to virtual input sessions with CBT advisory committees (approximately 60 people from throughout the CSBR) and the general public,
- notice of the review and encouraging community engagement through social media, newsletter, and CBT website,
- open space meeting at the Coming Together Forum,
- targeted interviews with experts/key informants (e.g., for case studies, people with particular expertise/knowledge on key topics),
- survey of researchers working in the CSBR to seek input on Sections 3 and 4 (see below for further details),
- thorough literature review of key documents related to the Clayoquot Sound Biosphere and the CSBR,
- letters of support from 80 organizations/government bodies,
- engagement with all First Nations, municipalities, and the regional district in whose territory the Clayoquot Sound Biosphere is designated. This engagement included: provision of a letter supporting the ongoing designation, question and answer sessions on recent activities, and review of the CBT decision making and governance processes with First Nations leadership,



Tla-o-qui-aht First Nations Tribal Parks Guardians. Photo: Ocean Shine

- detailed review of the Clayoquot Sound Biosphere zonation rationale and subsequent revisions to the zonation maps with GIS capacity provided by Nature United,
- draft review by staff, board, and representatives from provincial and federal governments,
- interviewing leads of conservation research and monitoring programs conducted within the CSBR over the last 10 years using an on-line survey⁹ with questions designed to target key sections of the periodic review,
- interviewing eight local residents who are known to be knowledge-holders about nature and/or conservation within the CSBR, and
- hosting reviewers from the Canadian Commission for UNESCO virtually in 2021.

⁹ Survey Monkey was used as an on-line tool to provide a questionnaire to researchers and was followed-up by telephone interviews with local knowledge holders.

2. Significant Changes in the Biosphere Reserve During the Past 10 Years

2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues.

The Clayoquot Biosphere Trust (CBT) remains the entity that administers the affairs of the Clayoquot Sound Biosphere Region (CSBR), in particular the logistics function, as established in the 2000 nomination document. (See Appendix IV.) The CBT is a registered charity in good standing with the Canada Revenue Agency. The CBT acts as a “convener organization” that fosters the ideals of the biosphere reserve program. It is governed by a board of directors comprised of 10 volunteer directors and their alternates from the region’s five First Nations, the Districts of Tofino and Ucluelet, and Area C of the Alberni-Clayoquot Regional District. The board also includes non-voting advisors appointed by the provincial and federal governments (Environment and Climate Change Canada, Parks Canada, Fisheries and Oceans Canada, and the Government of British Columbia). Communities select board appointees and alternate directors through open and publicly accountable procedures. Several advisory committees, comprised of volunteers from throughout the CSBR, provide direction on granting, aligning projects and initiatives with the mandate of the Clayoquot Sound Biosphere.

In 2012, the CBT joined the Community Foundations of Canada (CFC), an association of 191 community foundations across Canada that provides networking, resources, expertise, funding, and opportunities for its members. Since becoming the region’s community foundation, the CBT has worked with donors to create a diversity of endowment funds while gaining capacity as a grant-making organization, all with the goal of leveraging its invested funds for the region’s communities and ecosystems. In particular, this association with the CFC helps the organization manage and leverage the Canada Fund to further the goals of the Clayoquot Sound Biosphere. In 2014, the CBT began to produce *Vital Signs*, a biennial report that monitors a suite of indicators that guide the CBT’s work within the CSBR. (For more on *Vital Signs*, see page 125. See Appendix V for the most recent *Vital Signs*.)

Changes to landscape and habitat use over the past decade are noted below. (See 2.2.2, 2.4.5 and 4.1 for more details.)

Changes to zonation between 2010 and 2020 are primarily due to the completion of watershed management plans and include:

- change in terrestrial core protected area from 89,158 ha (34.5%) to 159,148 ha (62%),
- change in terrestrial buffer zone from 58,436 ha (22.5%) to 68,044 ha (26%), and
- change in terrestrial transition zone from 110,890 (43%) to 31,227 ha (12%).

Other landscape/habitat changes of note:

- Between 2010 and 2017, a total of 1441 ha of old growth forest (forests >241 years) and 55 ha of second growth (<100 years) were logged within 95 cutblocks spread across Clayoquot Sound. These cutblocks were mainly in watersheds where industrial logging has occurred over the past 80 years. All of the biosphere’s intact watersheds remain undisturbed. At a broad scale, this change accounts for less than 1% of Clayoquot Sound’s forest ecosystem, however at the landscape level there has been some impact on wildlife habitat and species of cultural and economic importance.
- From 2017 to 2021, Parks Canada constructed a 25 km multi-use trail connecting the District of Ucluelet, the villages of Esowista and Ty-Histanis, and the District of Tofino to PRNPR. This included removal of approximately 13 ha of forest and wetlands within the core area of the biosphere which was done with extensive planning and mitigation.
- The Tofino Wah-nah-jus Hilt-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area), part of the biosphere’s terrestrial and marine buffer, was designated an internationally significant migratory shorebird site within the Western Hemisphere Shorebird Reserve Network in 2013. Development near the flats and human use has seen a marked increase over the past decade.
- Efforts to restore stream habitats for salmon have improved over 67 ha of riparian area and 8 km of in-stream habitat since 2011.
- Concerted efforts by local non-profit groups and governments has seen more than 25 tonnes of marine debris removed from remote beaches in Clayoquot Sound.
- Restoration efforts in PRNPR have seen the improvement in the ecological integrity of sand dune ecosystems over the past decade.
- Long-term monitoring by PRNPR show a decline in several indicators used to track the health of eelgrass over the past 14 years.

Over the last 10 years, the tourism industry has continued to grow steadily as employment in resource sectors—primarily fishing and forestry—has declined. Tourism is currently the main economic driver in the CSBR, with over one million visitors a year coming to enjoy its spectacular scenery, outdoor recreation opportunities, mild climate, and rich culture. Although less extractive in nature, tourism is not without its challenges and the region continues to grapple with the socioeconomics of tourism—lower wages, lack of affordable housing, pressure on essential services and infrastructure, inequitable spread of benefits, and overcrowding and localized impacts on specific environments, for example. The COVID-19 pandemic, and subsequent months-long shut down in spring 2020, quickly exposed the vulnerabilities of such a heavy reliance on tourism. The communities of the CSBR and the CBT recognize these challenges and continue to work toward innovative solutions. (See 5.2 for more details.)

Since the last periodic review, the Hesquiaht First Nation, Tla-o-qui-aht Nation, and Ahousaht have taken critical steps to develop land-use visions in their respective territories. Building on the recommendations of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound (1995)¹⁰ and the Clayoquot Sound watershed plans designated by ministerial order in 2008, each of these First Nations are pursuing a protected area land designation and co-management agreement with the province of British Columbia. In preparation for these Indigenous-led conservation initiatives, significant investments have been made to support capacity building for leadership, governance, stewardship, and economic development. If successful, the new protected areas will further expand the terrestrial core area and decrease the buffer zone and transition areas within the designated Clayoquot Sound Biosphere.

These steps by the CSBR First Nations parallel an overall trend toward co-management, particularly in the core protected areas of the Clayoquot Sound Biosphere where there is an increase in shared decision-making authority between federal and provincial parks and First Nation governments. For example, over the last decade, Pacific Rim National Park Reserve (PRNPR) has prioritized cooperative management with First Nations and facilitated a participatory national park

management plan. Parks Canada engages in shared decision-making in cultural heritage preservation and integrates Indigenous knowledge in national park management activities such as interpretation, training, and resource and environmental management. Similarly, there are government-to-government discussions with BC Parks over co-management of some of the provincial parks within the Clayoquot Sound Biosphere.

All of these initiatives are consistent with Canada's federal and provincial strategies to contribute to the 2010 Convention on Biological Diversity, known as The Pathway to Canada Target 1 (Canada Target 1). Canada Target 1 aims to conserve natural diversity through increasing the percentage of protected areas, Indigenous protected and conserved areas, and other effective area-based conservation measures, while also embracing a collaborative approach that recognizes the "integral role of Indigenous Peoples as leaders in conservation, and respects the rights, responsibilities and priorities of First Nations, Inuit and Metis Peoples."¹¹

2.2 Updated background information about the biosphere reserve.

2.2.1 Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84)

Cardinal points:

Northernmost point: 49° 35' N
 Southernmost point: 49° 0' N
 Westernmost point: 126° 35' W
 Easternmost point: 125° 25' W¹²

¹⁰ Clayoquot Sound Scientific Panel. (1995). Report 5. Sustainable ecosystem management in Clayoquot Sound: planning and practices. Victoria, B.C. Cortex Consultants Inc. <https://www.for.gov.bc.ca/hfd/library/documents/bib12571.pdf>

¹¹ Pathway to Canada Target 1. 2020. <https://www.conservation2020canada.ca/home>

¹² Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. p. 15.

2.2.2 If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website).

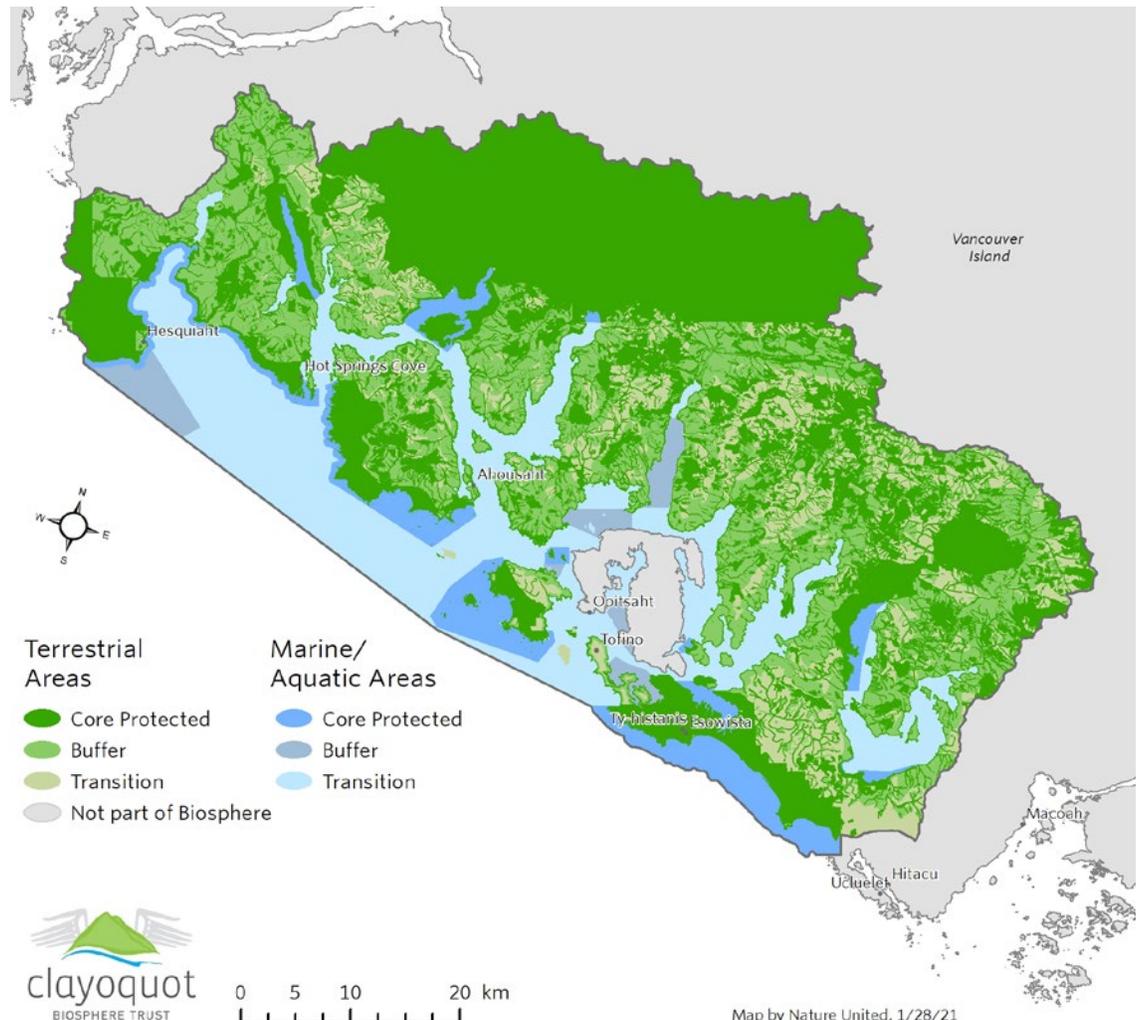


Figure 1 Clayoquot Sound Biosphere Zonation, 2020

The UNESCO Man and the Biosphere Programme (MAB) requires each biosphere reserve to have appropriate zonation that includes: (a) a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives; (b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place; and (c) an outer transition area where sustainable resource management practices are promoted and developed.

In 2000, the Clayoquot Sound Biosphere met these requirements with a configuration of zones shown in Figure 2: (a) federal and provincial parks comprised the terrestrial core protected area, (b) watersheds with less than 2% industrial development and the terrestrial component of the Tofino Mudflats Wildlife Management Area comprised the buffer zone, and (c) the remaining land base, designated for sustainable forest practices and town sites, formed the transition zone.

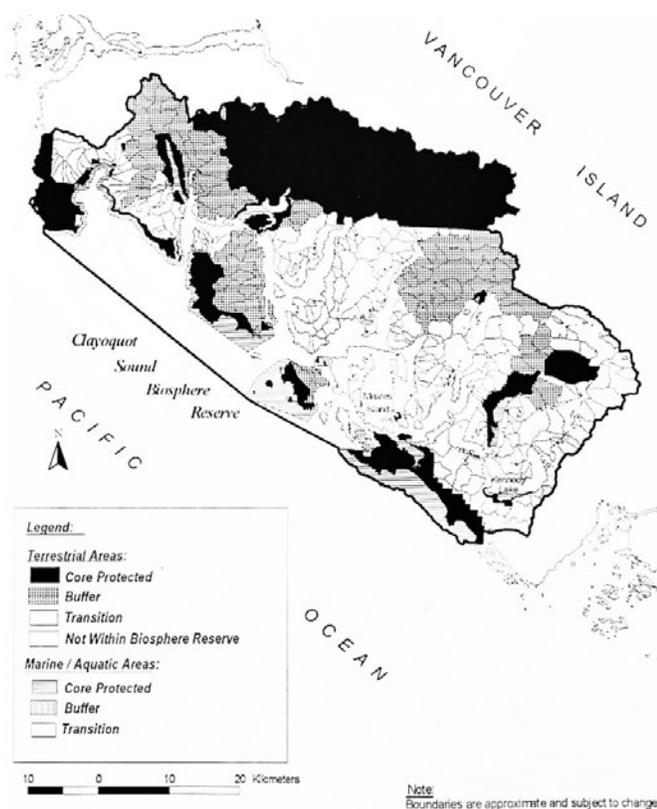


Figure 2 Clayoquot Sound Biosphere Zonation, 2000

Land designations within the Clayoquot Sound Biosphere legally changed in 2008 when land use objectives defined by the Clayoquot Scientific Panel and embodied in the Clayoquot Sound Watershed Plans were established through a British Columbia ministerial order.¹³ The watershed plans were the culmination of a multi-step process that began with defining watershed planning units on the basis of physiography and ecology rather than administrative units. Baseline information about the full range of biophysical and cultural forest values was obtained through an extensive set of inventories. Results were mapped to identify sensitive areas and specific resources and values that needed to be protected from logging in order to achieve the overall objective of sustainable ecosystem management in Clayoquot Sound.

The watershed plans map and designate areas set aside as reserves to protect a range of values including: hydroriparian resources, sensitive soils and unstable terrain, red- and blue-listed species, forest-interior conditions in late successional forests, cultural values, scenic and recreation values, and representative ecosystems.¹⁴ The watershed plans also map and designate harvestable areas on which sustainable forest harvesting can take place along with special management zones that protect First Nations' cultural values, as well as scenic, recreational, and tourism values in areas that are accessible for forest harvesting.

The watershed plans significantly impact the Clayoquot Sound Biosphere zonation. Based on the recommendations of the Clayoquot Scientific Panel and the inclusion of the Nuu-chah-nulth First Nations as major participants in the planning process, completion of the watershed plans represent efforts that meet the MAB's zonation requirements: (a) long-term protection to meet the Clayoquot Sound Biosphere's conservation objectives within a core protected area of suitable size, (b) buffer zones that are contiguous to core areas, and (c) outer transition areas where sustainable resource management practices, such as variable retention silviculture and restricted rates of cut, are promoted.

The watershed plan reserves, harvestable areas, and special management zones alter the actual amount of area within core protected area, buffer zone, and transition zone within the Clayoquot Sound Biosphere in comparison to the spatial configuration from 2000. As shown in Figure 1, these land use designations result in: (a) an increase in the core protected area by including the watershed reserve network, (b) a shift in some of the original buffer zone to core protected area, (c) a substantial addition to the buffer zone by including special management zones, and (d) a decrease in the area of the transition zone (Table 1).

¹³ BC Ministry of Agriculture and Lands. (2008). Ministerial Order Establishing Land Use Objectives for Clayoquot Sound. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/legal-orders/clayoquotsound_lud_luor_26jun2008.pdf

¹⁴ Clayoquot Sound Technical Planning Committee. (2006). Watershed Planning in Clayoquot Sound. Volume 1. Principles and Process. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/clayoquotsound-lud/clayoquot_lud_watershedplanning_principlesprocesses_report.pdf

Table 1 Areas (ha) within each terrestrial zone within the Clayoquot Sound Biosphere after allocating (i) watershed reserves to the core protected zone, and (ii) special management zones to the buffer zone. Areas provided for the Periodic Review 2020 are based on the best available data from the Province of British Columbia.¹⁵

Zone	Area in Nomination Document (ha)	Area in CSBR Periodic Review 2010 ¹⁶	Watershed Planning Zones (ha)	Area in CSBR Periodic Review 2020 (ha)
Core Protected	90,412 (34%)	89,158 (34.5%)	Parks	87,343 (34%)*
			Watershed Reserves	100,727 (39%)
			Subtotal	159,148 (62%)
Buffer	58,736 (22%)	58,436 (22.5%)	Special Management Zones	68,044 (26%)
Transition	116,557 (44%)	110,890 (43%)	Harvestable	29,367 (12%)
			Other Area	1,860 (0.5%)
			Subtotal	31,227 (12%)
Total	265,705	258,483		258,419

* (Note that there is some overlap between parks and watershed reserves.)

As a result, the area of land within each zone is changed to include more land in the core protected area and in the buffer zone as illustrated by the following map. This change, and the interpretation of land within the various zones, is consistent with Section 2.2 (Statutory Framework, Article 4, paragraph 5) of the draft Technical Guidelines for Biosphere Reserves.¹⁷ (NOTE: As stated in section 7.5 of the 2000 nomination document, Meares Island (8,305 ha) is excluded from the Clayoquot Sound Biosphere as, at the time, it was under a court injunction prohibiting logging activity pending the outcome of treaty negotiations and was not included in the province's land use decision for Clayoquot Sound. This status still stands.)

2.2.3 Changes in the human population of the biosphere reserve

Based on data from Statistics Canada the population of the CSBR grew 5% between 2011 and 2016, the year of the last national census. However, since not all First Nation's people are captured in census data, the CBT worked with advisors from local communities to compile more accurate numbers for its 2018 *Vital Signs* report, which shows a total population in the CSBR as 6,462 and a population growth of 22% since 2011 (Table 2). (Note that although some of the communities in the table below are technically outside of the Clayoquot Sound Biosphere's boundaries, they have been considered part of the CSBR since the Clayoquot Sound Biosphere's inception.)

¹⁵ Draft data for Clayoquot Sound Summary in "ALL CLAYOQUOT WPUS – FINAL Nos. & Summ. Graphs 2006 (+ 2013 notes) – Copy.xls" provided by B. Retzer 2020 pers. comm.

¹⁶ Note that the Shape Files from 2010 were reassessed so the figures noted here vary slightly from those printed in the 2010 Periodic Review.

¹⁷ International Coordinating Council of the MAB Programme. (2020). Presentation of the Technical Guidelines for Biosphere Reserves.

Table 2 Population change in the CSBR between 2011 and 2018.¹⁸

Community	2011	2016 (census)	2018 (<i>Vital Signs</i>)	% change (2011 to 2018)
Ucluelet	1627	1717	1717	5.5
Macoah	22	19	32	45.5
Hitacu (Ittatsoo)	240	274	369	53.8
Esowista	176	94	129	-26.7
Opitsaht	156	150	155	-0.6
Ty-Histanis	-	-	302	-
Tofino	1876	1967	1932	3.0
Ahousaht	695	622	1100	58.3
Hesquiaht	5	5	5	0
Hot Springs Cove	72	44	44	-38.9
ACRD – Area C	433	677	677	56.4
CSBR Total Population	5302	5569	6462	22

The 2018 *Vital Signs* report also noted these demographics for the CSBR:

- A large proportion of the population is 25 years of age or younger (56% in municipalities of Tofino and Ucluelet; 44% outside of municipalities), and
- 33% of the population identifies as Aboriginal (as compared to 8% for the rest of Vancouver Island, and 6% for British Columbia).

2.2.4 Update on conservation function, including main changes since last report.

At a broad scale, the ecosystems within the Clayoquot Sound Biosphere have been changed little since 2010. (Less than 1% altered.) While there has been some forest harvesting, it was largely in watersheds that were previously logged. All of the large intact watersheds remain undisturbed. Still, logging in the Kennedy Flats Watershed and the removal of forest cover due to development (both residential and commercial buildings, as well as for recreation, such as multi-use trails) in various parts of the CSBR has affected habitat for amphibians, birds, and carnivores. Restoration efforts have been ongoing, particularly in the riparian zones and in stream restoration, the latter primarily in an effort to help restore salmon populations. Unfortunately, salmon populations continue to decline as they have for the past 50 years or so. Salmon are ecologically and culturally integral to the Clayoquot Sound Biosphere, so

¹⁸ Statistics Canada. (2016). 2016 census profiles; personal communications from Rob Bullock (Ahousaht), Debbie Mundy (Hitacu), Angela Profolini (Macoah), Iris Frank (Opitsaht, Esowista, Ty-Histanis).

the restoration efforts are multi-pronged, from the Clayoquot Salmon Roundtable (see page 34) to significant restoration work by the Central Westcoast Forest Society (see page 90) and others.

One of the most significant changes in the marine environment was the sudden decline of many sea star species due to sea star wasting disease, thought to be caused by a virus and exacerbated by warming marine temperatures. While some of the populations have since recovered from the initial crash, the sunflower star, a keystone species, has not. The northeast Pacific Ocean was impacted by a period of unusually warm water (“the Blob”), which resulted in some immediate consequences, such as a decrease in phytoplankton in some areas, and an increase in toxic algae. Longer-term effects are still playing out.

The number of salmon farms within the CSBR increased over the decade, and Clayoquot Sound now has the second highest density of salmon farms in British Columbia. Prevalence of sea lice on the farmed salmon and how they might impact wild salmon is an ongoing concern.

Marine mammal observations have increased over the past decade. Visitation by Bigg’s (transient) killer whales have increased, and sea otters, once extirpated from Clayoquot Sound, have a well-established population, with an estimated population increase of 8.9% between 2004 and 2013. Various pinniped and cetacean species are resident or migratory visitors to the CSBR, including Steller sea lions, harbour seals, and grey whales.

A concerted effort has been made to monitor and mitigate human-wildlife conflict within the CSBR, most notably the *Iisaak Sin Hay Tiič̓mis* Regional Coexistence Network (see page 133) which formed because of concerns over the increase of negative interactions between large carnivores—black bears, wolves, and cougars—and people over the past two decades. The group works collaboratively and across jurisdictions to reduce conflict and promote coexistence.

The conservation function of the Clayoquot Sound Biosphere has been bolstered by the growth of the CBT’s research program as noted in 6.8, which includes significant research fundraising, knowledge sharing initiatives, and monitoring projects (such as the biennial *Vital Signs* and the Clayoquot Soundscape project). The CBT’s research program closely integrates its work with the United Nation’s sustainable development goals.

For more details on the conservation function, please see Section 4.

2.2.5 Update on the development function, including main changes since last report.

Tourism continues to be the main economic driver of the CSBR, and it is estimated that more than one million visitors come to enjoy the region each year. Forestry and fishing, once major industries, continue to decline, although the sports fishing industry is strong. Salmon aquaculture provides well-paying employment, however the sector faces significant resistance and regulatory challenges.

Although tourism is less extractive than many industries, the sector’s steady growth has exposed several stressors that impact the communities of the CSBR, including lower wages and seasonal employment, impact on infrastructure, lack of affordable housing, and increasing impacts on ecosystems and wildlife. In an effort to tackle the challenges with tourism, the CBT has initiated or participated in several initiatives that help meet the challenges head on. This includes supporting the West Coast NEST, a regional collaboration created to expand local education opportunities and diversify the economy by supporting the development of an education tourism sector.

In 2012, the CBT joined the Community Foundations of Canada and also released its first *Vital Signs* report. These milestones served as important steps in the evolution of the CBT and expanded the organization’s role in the region as it began to systematically monitor a series of indicators that measures the vitality of the CSBR. The *Vital Signs* document, released four times in the past decade, compiles data from the region to identify significant trends in a range of areas critical to quality of life. In turn, these results guide programming, granting, and strategic directions of the CBT as well as other organizations.

To address socioeconomic challenges within the region, the CBT continues its work in the areas of food security. This was bolstered over the past decade with the formation of Eat West Coast (EWC), a regional food security initiative of the CBT. EWC is part of a collective of food hubs on Vancouver Island that work together under the regional health authority to address food security issues in the region. EWC is just one of several CBT partnerships that support CSBR communities. Others include the Coastal Family Resource Coalition (a multidisciplinary network of health and social service providers that address the needs of children, youth,

families and communities in the CSBR), Leadership Vancouver Island (a community-focused, grassroots leadership program for people in the CSBR communities which fosters leadership skills in order to grow local leaders, provide local educational opportunities, and develop cross-community and cross-cultural connections), and, as noted above, West Coast NEST.

The three First Nations in Clayoquot Sound are in the process of creating Land Use Visions for stewardship of their territorial lands, waters, and resources. This work includes government-to-government negotiations and agreements with the British Columbia and Canadian governments over access to terrestrial and marine resources. The nations also have several co-management agreements in provincial and national parks. All of these changes assert the rights of First Nations to fully contribute to and benefit from sustainable development initiatives within the CSBR.

The CBT, along with individuals, organizations, and various levels of government, have made significant efforts to make meaningful steps on the road towards reconciliation with Indigenous people. The CBT has always been guided by the First Nations of the CSBR and over the past decade these efforts have increased, particularly in light of the Truth and Reconciliation Commission of Canada's Calls to Action. A significant step along this path was the 2017 regional gathering, *Hišinq'wiił*, that brought together hundreds of people from throughout the CSBR to join in a spirit of truth and healing and to recognize our unique strengths, histories, and cultural diversity.

For more details on the development function, please see Section 5.

2.2.6 Update on logistic support function, including main changes since last report.

Since 2010, 12 local research organizations have led over 100 project partnerships in the CSBR, all of which have received some funding from the CBT. This shows that the CBT's funding and granting models, which have been formalized and strengthened over the last decade, strongly support the region's research sector. Research and monitoring occurs in the following conservation program areas: marine habitat and water quality monitoring; migratory shorebird and waterfowl monitoring, as well nesting seabirds and at-sea bird populations; human-wildlife coexistence monitoring and research; salmon habitat restoration and population recovery; amphibian population and habitat conservation; marine mammal monitoring and research; marine spatial

planning; marine debris and microplastics monitoring; and old growth forest monitoring and restoration.

First Nations participation in land and resource management within the CSBR continues to strengthen. Nations have developed, or are developing, land-vision plans, conduct research and monitoring, and have employees with positions specific to resource management. First Nations contribute their knowledge to many tables, including roundtables such as the Clayoquot Salmon Roundtable and the *lisaak Sin Hay Tiičmis* Regional Coexistence Network.

The West Coast NEST initiative provides a framework for promoting environmental and sustainability education and furthering the knowledge economy. Through their logistical support, they can further the efforts of the myriad organizations offering programming on the natural and cultural attributes of the CSBR. Over the past decade, several universities have offered field schools and credit courses in the CSBR, including Royal Roads University that offers the interdisciplinary course, *The Biosphere and Sustainability*, in partnership with the CBT. The CBT also developed courses for public school students including *Sustainability Studies 11/12* and an outdoor education semester that provides opportunities for youth to develop leadership skills and obtain the training and certifications needed to gain local employment in adventure tourism.

As noted above, *Vital Signs* is a new initiative of the CBT in the past decade. The report provides a strong logistical tool as it tracks indicators of social and environmental health in the region and helps align the CBT's granting program with issues that matter to the CSBR. Other documents and strategies that ensure strong logistical support include a regularly updated communications plan, the Living Wage calculation (Appendix VI), and regular strategic/business plans.

In the last decade, the CBT has had the means and opportunity to become much more engaged with national and international biosphere reserve initiatives. This includes attending regional, national, and international gatherings; participating in networks such as the Community Conservation Research Network and the Canadian Biosphere Reserve Association's (CBRA) Indigenous Circle; hosting delegations, workshops, and conferences; and serving on the boards of the national biosphere reserve association, including the CBT's executive director serving as CBRA chair since 2018.

For more details on the logistics support function, please see Section 6.

2.2.7 Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure.

There has been no change to the manager/coordinator of the Clayoquot Sound Biosphere over the past decade; the CBT remains the designated authority. However, the organization has significantly strengthened its coordination structure and function. Changes include: becoming a community foundation in 2012 by joining the Community Foundations of Canada; strengthening its granting criteria through regular strategic planning and by ensuring alignment with regional goals by engaging community members and through monitoring tools such as the *Vital Signs* indicator report; bylaw revision and good governance strategies (annual budgeting and strategic planning, alignment and guidance to national and international frameworks such as the United Nation's sustainable development goals, and regular program audits).

The CBT also developed a theory of change in 2018 that identified five actions organized around the core priorities and essential functions of the convener organization. The actions are: facilitating and coordinating healthy community and ecosystem initiatives; empowering youth; co-leading sustainability research, education, and training; achieving the Biosphere Centre; and stewarding granting and governance processes.

For more details on governance management and coordination, please see Section 7.

2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve (comment on the following topics as much as is relevant).

2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years.

The vision and mission of the CBT, the authority in charge of coordinating/managing the Clayoquot Sound Biosphere, has not changed, nor have the principles as defined in the Clayoquot Sound UNESCO Biosphere Reserve Charter in 2000 (Appendix VII). There have been, however, updates as to some of the tools that the CBT uses to achieve its objectives.

In 2012, the CBT joined the Community Foundations of Canada (CFC), an association of 191 community foundations across Canada that provides networking, resources, expertise, funding, and opportunities for its members. Since becoming the regional community foundation, the CBT has worked with donors to create a diversity of endowment funds while gaining capacity as a grant-making organization, all with the goal of leveraging its invested funds for the region's communities and ecosystems. In particular, this association with the CFC helps the organization manage and leverage the Canada Fund to further the goals of the Clayoquot Sound Biosphere.

The CBT is one of the only organizations in the world that is both a community foundation and a UNESCO biosphere and is uniquely positioned to simultaneously address social and environmental issues. The two complementary mandates allow the CBT to enhance the vitality of the region's socioecological systems in an integrated way, embodying the spirit of *hishuk ish ts'awalk*—that everything is one and interconnected—as stated in the organization's mission.

In 2018, the CBT developed a theory of change (TOC) to describe its work and to identify differences it seeks to make with community partners. (See below for more details.) This renewed approach to its annual planning process, in anticipation of the 2020 periodic review process, provided an opportunity to refine the CBT's alignment with the local, national, and international mandates of a UNESCO biosphere.

Theory OF Change

The communities of the Clayoquot Sound UNESCO Biosphere Region will live sustainably in a healthy ecosystem, with a diversified economy, and strong, vibrant, and united cultures while embracing the Nuu-chah-nulth First Nations living philosophies of iisaak *living respectfully*, qwa' aak qin tiič *mis life in the balance*, and hišukniš čawaak *everything is one and interconnected*.

VALUES

Why we are connected . . .

- culturally safe practise
- connection to place, land, and territory
- partnerships
- trust
- engagement
- resources



ACTIONS

What moves us . . .

- healthy community and ecosystem initiatives
- empowering youth
- sustainability research, education, and training
- achieving the biosphere centre
- granting and governance

OUTCOMES

Where we are going together . . .

- increase engagement in regional planning and decision-making
- understanding and collaboration for biodiversity conservation, sustainable development, and reconciliation
- knowledge and data to support understanding about complex social and ecological systems
- awareness of sustainability issues to achieve healthy ecosystems
- co-learning and capacity development opportunities
- share lessons and successes locally, nationally, and internationally



The CBT's Theory of Change was inspired by Hiłhiyiis, the carving created by Robinson Cook to reflect the Hisiinqwih regional gathering of September 17, 2017.

clayoquotbiosphere.org

A Closer Look A Theory of Change

As described by the [Center for Theory of Change](http://www.theoryofchange.org), a TOC is “a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context. It is focused in particular on mapping out or ‘filling in’ what has been described as the ‘missing middle’ between what a program or change initiative does (its activities or interventions) and how these lead to desired goals being achieved.”¹⁹

As the CBT continues to work toward advancing the goals of UNESCO biospheres worldwide, and, at the same time, responds to community priorities in a way consistent with the roles of community foundation, the TOC provides a simple and living picture of how the CBT bridges these two functions. Given that the CBT will continue to evolve and grow, the TOC is viewed as a living expression of the organization with three main purposes:

1. inform internal and community-focused communication about what the CBT is, what it does, and how it does its work in collaboration with community partners and stakeholders;
2. give shape to program and initiative-specific evaluations and assessments in a way that brings coherency and alignment among diverse evaluation and assessment activities over time; and,
3. guide strategic and program planning activities so existing and new initiatives are working to contribute to the forms of change that CBT is expressly aspiring to manifest in the CSBR.

¹⁹ Center for Theory of Change <https://www.theoryofchange.org/what-is-theory-of-change>



Hiḥiyiis carving by Robinson Cook. Photo credit: CBT

The CBT's 2020 Strategic Business plan is guided by five actions identified in the TOC:

- facilitating and coordinating healthy community and ecosystem initiatives
- empowering youth
- co-leading sustainability research, education and training
- achieving the biosphere centre
- stewarding granting and governance processes

The CBT's Theory of Change was inspired by Hiḥiyiis, a carving commissioned by the CBT to reflect the Hišinqʷiił regional gathering of September 17, 2017. (See page 119 for more details on this gathering.) Carver Robinson Cook wrote of his work:

"Hiḥiyiis means 'standing on the shoulders of.' The woman figure represents all of us as residents of the west coast communities; the wolf represents the Nuu-chah-nulth ancestors. We are all standing on the shoulders of the ancestors of these lands. [Hiḥiyiis] comes from the Frank family in Ahousaht and I am using it here with permission from my brother and Elder, David Frank Sr.

The Qʷayačik (wolf), the ancestors, are the foundation for this carving, the base of the totem pole, holding all things up. The Qʷayačik speaks to natural law—respect for nature, ourselves, and each other. The Qʷayačik is holding a salmon to remind us of the interconnectedness of all things and of our responsibilities to take care of the environment and all that nourishes us.

The human figure is portrayed as a woman to represent future leadership. She has a voice symbolized by the abalone shell on her throat. We need to listen to this voice; it has been silenced for too long. Her eyes, as painted by Deanna Lankin, represent all cultures. In one hand, she is holding a paddle to represent the tools we possess for moving ahead in life. Her other hand is holding the gunnels of the canoe to show leadership steadying the boat as we navigate the waters ahead.

Nuu-chah-nulth teachings use the Čapac (canoe) as an analogy for our lives. We choose what goes in and out of our canoes if we are living in balance. In the absence of balance, we lose control and choice. This Čapac is formed in the λaʔuukʷiath (Tla-o-qui-aht) style of the Martin family. The roughed-out prow and technical advice was provided by Joe Martin. All the figures are inside the Čapac to represent the fact that as residents of the west coast we are all in the same boat.

Lastly, the paddle has seven abalone shells for each community. There is an eagle carved on the paddle to represent vision. The gifts of the eagle spirit are to see from above, the big picture, but also to be brave and use that vision to look deep within ourselves to affect humility, personal growth and change.

I am not the inventor of all these concepts. I am practising what reconciliation means to me, in part, to be a good listener. We have to reconcile our right to belonging."

2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

Budget

Funding for the CBT comes largely from a \$12-million endowment (the Canada Fund) established by the federal government through Environment Canada²⁰ in 2000. The fund is managed by Vancouver-based Genus Capital Management and is invested using a fossil fuel free mandate. Genus meets regularly with the CBT's investment committee, industry specialists who volunteer as CBT investment advisors.

The Canada Fund is legally obligated to maintain the equivalent level of the original \$12-million over its life including annual cost-of-living adjustments for inflation. As of December 31, 2020, the Canada Fund was valued at \$17,717,749.

Operating budgets are approved by the board as part of the annual strategic/business planning process. Budgets over the last decade are shown below.

Year	Operating Budget (CAN \$)
2010	590,450
2011	499,850
2012	498,140
2013	542,850
2014	625,879
2015	730,622
2016	731,392
2017	1,030,533
2018	1,133,658
2019	1,396,536
2020	1,245,140

The CBT's operating budget is supported by the interest on the Canada Fund, as well as grants, and financial agreements with program partners. In recent years, for example, the CBT has become the administration and coordination home to a number of regional programs including Leadership Vancouver Island (see page 122), West Coast NEST (see page 101), and the Coastal Family Resource Coalition. These programs align with the CBT mandate and create opportunities for community engagement while leveraging the CBT's administrative abilities. The CBT assists with its staff expertise and knowledge of local communities, and provides office support including financial management and contract oversight.

Through its various programs, the CBT often applies for grants. A recent example is the receipt of two significant grants through the provincial government's Rural Dividend Fund to support the West Coast NEST, an education tourism initiative, administered and coordinated by the CBT.

The CBT has a number of significant public partners including the Vancouver Foundation, which partnered with the CBT in 2015 to develop a Neighbourhood Small Grant program (see page 155) in the CSBR. This partnership has grown to include other Vancouver Island community foundations with the formation of the Vancouver Island Neighbourhood Small Grant network. The CBT is the co-lead of this network, working to develop capacity in other regions including with partners within the Mount Arrowsmith Biosphere Region.

The CBT has undergone significant internal changes to adapt to its role coordinating regional programs. This includes the addition of a part-time bookkeeper position, as well as a move to fund accounting to track the number of regional initiatives and endowments administered. In addition, when it makes sense, the CBT also assists with fundraising, communications, and program planning and development. By taking on the critical, but-time-consuming, operations tasks, the CBT helps partner networks and initiatives focus their expertise on their programs.

²⁰ Now Environment and Climate Change Canada



CBT Executive Director Rebecca Hurwitz with Willie Mitchell, President of Tofino Resort + Marina celebrate the establishment of the Fish for the Future Fund. Photo: CBT

The CBT has been successful in leveraging funds and partnerships to increase funding available for its core priorities. Its most recent program audit shows that the organization’s ratio of core priority project funding (total) to in-kind contributions from project applications increased from 62% (\$101,663) in 2014 to 70% (\$217,677) in 2018, indicating a strong and growing collaboration among partner organizations.²¹

A core priority of the CBT is to create a Biosphere Centre, a permanent home for the delivery of CSBR programs and projects. In 2018, the CBT established a reserve fund with the goal of accumulating the capital to acquire property to achieve its Biosphere Centre vision. This reserve fund was utilized in September 2019 to purchase property on Olsen Road in Tofino, in the heart of the CSBR. The reserve fund continues to support the building design and zoning bylaw amendment application costs.

As noted in 2.3.1, as a community foundation the CBT works with donors to create a diversity of endowment funds. As of 2020, the CBT administers nine funds: the Tofino Community Fund, the Clayoquot Sound Wild Salmon Fund, the Tofino Children’s Swimming and Water Safety Fund, the Biosphere Centre Fund, the Fish for the Future Fund, the Pacific Rim Foundation Fund, the Biosphere Research Fund, the West Coast NEST Fund, and the CBT Operating Endowment Fund. Interested donors can direct their donation to a particular fund or can make a general donation to the CBT. As a registered charity, all donors receive a tax-receipt. The CBT is a signatory to the philanthropic community’s Declaration of Action as a commitment to using its philanthropic resources in service to reconciliation with Indigenous people.

Tracking and analysis of CBT donations, social enterprises, and partner contributions is completed every three years as part of the CBT’s program audit.

Staff

The CBT has grown incrementally over the past 10 years, adding staff positions and capacity to serve the region including a program coordinator, research director, outreach coordinator, office and communications coordinator, bookkeeper, and, most recently, a Sustainable Development Goal (SDG) education coordinator (Figure 3; Table 3). The CBT regularly hires additional summer students or interns, and contracts local people for additional project-based work.

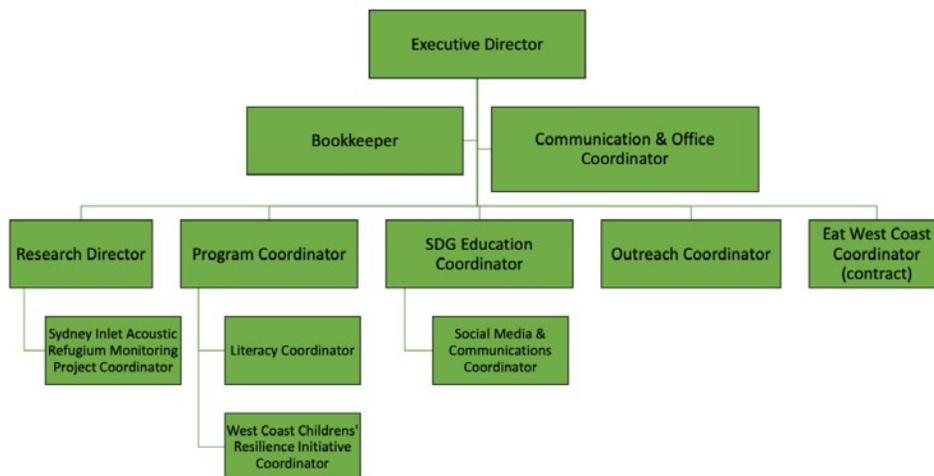


Figure 3 Clayoquot Biosphere Trust Organizational Chart

21 SPARC BC. (2018). Clayoquot Biosphere Trust Program Audit (September 2018) Final Report. p.18

Table 3 Change in staffing levels, 2010 to 2020

Year	Full-time staff	Part-time staff
2010	3	0
2011	2	2
2012	3	0
2013	3	0
2014	6	0
2015	7	0
2016	5	1
2017	5	3
2018	6	1
2019	6	2
2020	6	2

Volunteers

Approximately 60 people/year volunteer with the CBT, primarily as members of one of the CBT's advisory committees—currently, arts and culture, community development, neighbourhood small grants, research and environment, and youth and education—that provide support and funding to organizations throughout the region. Volunteers also help with special events, such as Hišinqwiit²², an event that brought together 800 people from throughout the CSBR.

2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

The CBT uses a multi-faceted strategy to communicate the values of UNESCO biospheres, and the role and vision of the CBT and its work in CSBR communities. The main goals are to share and connect with people; to promote the CBT's programs, events, and grants; and to stay active and consistent in their communications.²²

²² Clayoquot Biosphere Trust. (2018). Business Plan and Budget 2019-21. https://clayoquotbiosphere.org/files/file/5d322c7f0a992/CBT-Business-Plan-2019_final_copy-edited.docx.pdf

²³ Clayoquot Biosphere Trust. (2012). Communication Plan 2012, p.2

²⁴ Ibid



The CBT Board of Directors is one of the organization's most effective communication methods with communities in the Biosphere Region. Photo: Nora Morrison

From its inception, the governance model of the CBT was designed to foster communication between the organization and the communities within the Clayoquot Sound Biosphere. Eight of the CBT's 10 board seats are reserved for a representative from the region's five First Nations, the Districts of Tofino and of Ucluelet, and Area C of the Alberni-Clayoquot Regional District. The board representatives are expected to keep their communities apprised of the CBT and activities within the Clayoquot Sound Biosphere. Board meetings also move throughout the region and community members are always welcome and encouraged to attend. Each meeting opens with an opportunity for representatives to provide updates on community news and priorities, and the board and community members often share a meal together.

In 2012, the CBT joined the Community Foundations of Canada and also released its first *Vital Signs* report. As these events served as important steps in the evolution of the CBT and expanded the organization's role in the region, the CBT developed its first communications plan the same year to share and promote its work.²³

The primary purpose of the communications plan was to enhance awareness of the CBT and to strengthen relationships with donors, volunteers, community members, and other key partners through strategic communications. The plan also prioritized staff energy around communications and provided a reference for key messages. The plan is regularly updated and provides a framework that guides its external communications.²⁴ The most recent Communications Plan (2019) is attached in Appendix VIII.

To assess the efficacy of communication strategies, several metrics are tracked. Having strategic communications with measurable outcomes helps the CBT realize its goals and increases awareness of sustainability targets.²⁵

Communications serve many purposes for the CBT, including to:

- publicize and showcase funded projects,
- encourage and acknowledge community participation (e.g., on advisory committees) and partnerships,
- advertise and fulfill youth scholarships and other programs for youth,
- enhance the visibility of biosphere reserves in Canada and contribute to the international network of biosphere reserves,
- produce a community health snapshot (*Vital Signs*) and the Living Wage document, which position the CBT as a source of accurate information about regional issues and needs,
- provide leadership and support to local organizations,
- increase awareness of the CSBR, the UNESCO biosphere reserve program, and the CBT among local employees and visitors,
- encourage donations and fund development (for the CBT and for other organizations in the region),
- increase understanding and awareness of the United Nations sustainable development goals,
- raise awareness of the International Year of Indigenous Languages and to support local language revitalization, and
- celebrate other significant national and international recognition dates and showcase local contributions.

Communication tools include:

- website www.clayoquotbiosphere.org
- stories/interviews in local media (e.g., *The Westerly News*, *Haa-shilth-sa*, local radio)
- e-newsletter (approximately one/month)
- social media: Facebook (facebook.com/clayoquotbiosphere), Twitter (twitter.com/claybiotrust), Instagram instagram.com/clayoquotbiospheretrust,
- blog
- press releases
- documents such as the annual report, *Vital Signs*, Living Wage

- targeted communications, such as engaging communities in events and programs
- speaker series and other special events (e.g., knowledge symposium, workshops, regional gathering)
- community events, including board meetings being held in all communities in the CSBR
- signage (at biosphere boundary in Pacific Rim National Park Reserve, and in strategic locations within communities)
- short videos highlighting specific programs
- standardized branding (logo, etc.) and acknowledgement on any projects funded by the CBT (e.g., interpretive signs on trails)
- inclusion of information on the CSBR, biosphere reserves, and the CBT in local training initiatives for the tourism sector (e.g., Tofino Ambassador Program, resource kits for outdoor guides)
- film, *Striking Balance: Exploring Canada's Biosphere Reserves – Clayoquot Sound*
- tour/information for walk-in traffic at CBT office
- requirement that organizations awarded CBT grants participate in CBT communications
- workshops by West Coast NEST that support communications efforts by organizations within the CSBR (for example, a video-making course specific to SDGs, and an ArcGIS story mapping project)

2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections (“bridging”) among diverse groups in different sectors of the community.

At its core, the CBT fosters networks of cooperation among diverse groups in different sectors of the community. Its governance model brings communities, rather than stakeholders, to the table, and, by their nature, communities are comprised of people with diverse interests.

As a community foundation, the CBT has a role as a trusted partner and convener that can help facilitate conversations and offer programs that foster cooperation, stimulate conversations, and work toward solutions to identified challenges. These programs and gatherings build bridges across cultures, communities, and institutions, and help the CBT shape its programs, investment priorities, and operational objectives.

²⁵ Clayoquot Biosphere Trust. [2019]. Communication Plan 2019, p. 3



Members from multiple communities in the Biosphere Region participating in an Art of Hosting facilitation workshops organized by the CBT. Photo: CBT

Examples of specific programs that foster cooperation include:

- **Vital Conversations:** The CBT has held three “vital conversations”—one on youth, one on sustainable tourism, and one on COVID-19 and regenerative tourism. A specific goal in the 2020 Strategic Business plan is to “advance Vital Conversations, with focus on SDGs, climate change, sustainable tourism, etc.” in the future.
- **Leadership Vancouver Island:** the CBT coordinates and administers this annual program, in part to facilitate cross-cultural community building. (For more details see page 122.)
- **Advisory Committees:** the CBT’s grant advisory committees bring together invaluable local knowledge, networks, experience, and historical perspectives.
- ***lisaak sin hay tiič mis* Regional Coexistence Network:** in collaboration with Pacific Rim National Park Reserve, this network brings together local community planners and stakeholders, including representatives from the tourism sector, municipalities, and Nuu-chah-nulth communities, to create plans that help humans and wildlife coexist in the CSBR. (For more details, see page 133.)
- **Westcoast Indigenous-led Stewardship Corridor:** as co-secretariat of *lisaak sin hay tiič mis* Regional Coexistence Network, the CBT is engaged in a regional conversation about terrestrial habitat conservation and the potential for a progressive land management initiative leading to a wildlife corridor along western Vancouver Island.
- **Knowledge Symposia:** Building on similar events held in the CBT’s first decade, the CBT held a knowledge symposium (then referred to as a science symposium) in 2013, which brought together researchers doing work in the CSBR to share their research with the public and other researchers. A second symposium was held in 2015, and a third, planned for 2020, was postponed due to the coronavirus pandemic. Now planned for 2021, the event will connect stakeholders to identify shared priorities for research and action. Smaller, more informal gatherings and presentations (e.g., What’s Brewing in the Biosphere) are also held on occasion.
- **Hišinqwiit” Regional Gathering:** In 2017, the CBT held this regional gathering at which over 800 community members and local leaders met in Pacific Rim National Park Reserve to share a meal, to learn from one another, and recognize the strength, history, and diversity of the region’s residents. (For more details, see page 119.)
- **Eat West Coast:** is a regional food security initiative of the CBT. It is part of Island Food Hubs, a collective of organizations working together under Island Health (the regional health authority) to address food security issues and ultimately improve health across Vancouver Island. (For more details, see page 107.)

- **Coastal Family Resource Coalition:** this regional network is coordinated and administered by the CBT. It is a multidisciplinary network of health and social service providers that aims to address the needs of children, youth, families, and communities within the region, and; to improve communications between service providers, agencies, communities, and funders.
- **Neighbourhood Small Grant Island Network:** with funding from the Vancouver Foundation, the CBT and the Victoria Foundation are working with communities on Vancouver Island to build capacity so that they can offer their own neighbourhood small grants. (For more on the Neighbourhood Small Grants program, see page 155.)
- **West Coast NEST:** is a regional collaboration led by the CBT along with communities, organizations, businesses, and individuals from throughout the CSBR that was convened to expand local education opportunities, diversify the economy, and establish further employment opportunities. (For more details, see page 101.)



Pacific Salmon returning to a river. Photo: Jeremy Koreski

A Closer Look Clayoquot Salmon Roundtable

Access to salmon, the state of stocks and salmon habitat, and the presence of salmon aquaculture within Clayoquot Sound have been much-discussed and debated in the CSBR for decades. Declining wild salmon stocks have made these discussions ever-more challenging, and the [Clayoquot Salmon Roundtable](#) is an attempt to build partnerships between First Nations, governments, and stakeholders in a co-management process in order to develop and implement the best possible plan for the recovery and sustainable management of Clayoquot Sound's wild salmon stocks. The roundtable provides a forum for First Nations and sector organizations to provide formal, timely, local level advice and make recommendations to Fisheries and Oceans Canada on decisions related to salmon harvest and stewardship.²⁶ Through inclusive representation, the roundtable strives to empower users and groups to have more authority over managing the resources in their communities.²⁷

²⁶ West Coast Aquatic. West Coast Vancouver Island Roundtables: Area 24 Clayoquot. <https://www.roundtables.westcoastaquatic.ca/area-24-clayoquot>

²⁷ Lem, T. (2016) West Coast Vancouver Island, Canada: A Story of Community Resource Management. <https://www.communityconservation.net/wp-content/uploads/2016/08/West-Coast-Vancouver-Island-Canada.pdf>

The group is facilitated by West Coast Aquatic, an organization with expertise in convening multi-party collaborative processes for natural resource management, and includes subcommittees working on various facets of fisheries health, including habitat, management, hatcheries and enhancement, and fundraising. The CBT is an active member of the roundtable.

Although making progress with such a diverse group is challenging, there have been successes, including the agreement for a temporary no fishing zone to minimize the mortality of returning chinook and coho salmon.

To help support the work of the Clayoquot Salmon Roundtable, the CBT manages the Clayoquot Sound Wild Salmon Fund, an endowment fund that supports salmon enhancement, stock rebuilding, and recovery initiatives as prioritized within the Clayoquot Sound Salmon Recovery Plan. Each year funds will be directed towards local habitat restoration, stewardship, education, research, and monitoring led by local organizations and researchers within the watershed of Clayoquot Sound.



Statutory Framework of the World Congress of Biosphere Reserves

II.3 Integrate biosphere reserves into regional planning

III.2 Improve monitoring activities

2.3.5 Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve.

The CBT's vision statement directly addresses the socio-cultural context of the region:

"The community of the CSBR will live sustainably in a healthy ecosystem, with a diversified economy, and strong, vibrant, and united cultures, while embracing the Nuu-chah-nulth First Nations living philosophies of *iisaak* (living respectfully), *qwa' aak qin tiič mis* (life in the balance), and *hišukniš čawaak* (everything is one and interconnected)."

Since its inception, the CBT has involved all communities in the region at the board level, thus ensuring representation for all of the region's population, both Indigenous and non-Indigenous. The board has two co-chairs, one representing a Nuu-chah-nulth community and one representing a non-Indigenous community.

The organization rotates its meetings between communities in the region, and, in keeping with Indigenous tradition, acknowledges the territory on which it meets. Staff and board members also include a territorial acknowledgement as part of their email correspondence. (It reads: "We acknowledge the traditional territories of Hesquiaht First Nation, Tla-o-qui-aht First Nations, Toquaht Nation, Ahousaht, and Yuutu?it?ath in the spirit of truth, healing, and reconciliation.") This is a recognition of the Indigenous governance that exists in the region, the peoples' vital connection to the land, and demonstrates respect. The board also has a "Nuu-chah-nulth word of the day" at its meetings, and includes Nuu-chah-nulth language in its biennial *Vital Signs* report.

A core priority of the CBT is to facilitate and coordinate healthy community and ecosystem initiatives, acknowledging that healthy ecosystems require healthy people and communities, and that one cannot care for the environment if they cannot care for themselves. Projects are grounded in research on the social determinants of health, which look at health from a broad range of social, economic, and environmental factors, from education and income, to culture and having a sense of belonging.

In 2012, the CBT became a community foundation and joined the Community Foundations of Canada (CFC), an association of 191 community foundations across Canada. Community foundations use various tools to identify issues that matter—education, youth, food

security, sustainable development, gender equity, and more—and work with First Nations, local governments, organizations, schools, and businesses to address regional goals. Joining the CFC has helped the CBT align regional goals with the ways in which it distributes the interest from the Canada Fund, an endowment it has managed since 2000. Regular strategic planning, community-led advisory committees, and documents such as *Vital Signs*, help ensure this alignment.

Four of the CBT's advisory committees—currently, arts and culture, community development, neighbourhood small grants, and youth and education—directly address the socio-cultural context of the region, providing support and funding to organizations throughout the region. Through its annual "call for projects," the CBT has funded over 300 projects since 2010. (See Appendix IX for a complete listing.) The scope of the projects is broad, but examples include a cultural heritage festival, Indigenous language "nests," a grief and loss support group for children and youth, interpretive signs on local history for hiking trails, and the creation of exhibits on Indigenous culture and heritage for a local museum.

The CBT provides several initiatives that support cross-cultural learning. Examples include:

- **Neighbourhood Small Grants:** small grants of \$50-500 for projects initiated by local people that help strengthen their neighbourhood. One of the goals of the project is to respect and celebrate diversity. (For more details, see page 155.)
- **Leadership Vancouver Island:** a community-focused, grassroots leadership program for people in the CSBR communities which fosters leadership skills in order to grow local leaders, provide local educational opportunities, and develop cross-community and cross-cultural connections. (For more details, see page 122.)
- **Hišinqwiit" Regional Gathering:** held in 2017, the CBT co-hosted this regional gathering at which over 800 community members and local leaders met in Pacific Rim National Park Reserve to share a meal, to learn from one another, and to acknowledge the strength, history, and diversity of the region's residents. (For more details, see page 119.)
- **Workshops for cross-cultural understanding:** the CBT has provided training to its staff, board, and other volunteers to better understand Indigenous history and appropriate actions for reconciliation.

2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.

As noted in 2.3.5, the CBT's vision is strongly grounded in the living philosophies of the local Indigenous people and endeavours to always acknowledge and include traditional and local knowledge in all aspects of its operations within the Clayoquot Sound Biosphere. Since inception, the board structure has ensured meaningful engagement with a seat at the table for representatives from the Hesquiaht First Nation, Ahousaht, Tla-o-qui-aht First Nations, Yuułu?it?atḥ Government, and Toquaht Nation.

The CBT encourages participation of people from throughout the region in the organization's events, on their advisory committees, and by facilitating grant applications. (Further to the last point, a goal in the 2020 Strategic Business Plan specifically mentions engagement with communities about CBT grant opportunities, with a focus on outreach to First Nations chiefs and councils.) Board meetings rotate throughout the communities and local residents are invited to share a meal with the board to share news from their community, including community challenges and priorities.

As a specific acknowledgement of the role of traditional knowledge, and the wisdom that Elders hold, the 2020 Strategic Business Plan identifies as a goal the development of an Elder-in-resident position, hiring a person who can be a guide for CBT staff and board.

Over the last decade, federal and provincial strategies have contributed to the 2010 Convention on Biological Diversity, known as The Pathway to Canada Target 1. Strategies aim to conserve natural diversity through increasing the percentage of protected areas, Indigenous protected and conserved areas, and other effective area-based conservation measures, while also embracing a collaborative approach that recognizes the "integral role of Indigenous Peoples as leaders in conservation, and respects the rights, responsibilities and priorities of First Nations, Inuit and Metis Peoples."²⁸ As such, there has been a shift toward co-management of areas within the CSBR and an increasing acknowledgement of traditional and local knowledge.

Details on these roles can be found in 7.6.1, but, in general, they include:

- Prioritization of cooperative management and strengthened consultation with First Nations in Pacific Rim National Park Reserve, part of the Clayoquot Sound Biosphere's core area.
- The Hesquiaht First Nation, Tla-o-qui-aht First Nations, and Ahousaht are developing, or have developed, their management visions for the lands, waters, and conservation areas in their territories. For example, the Tla-o-qui-aht First Nations' tribal park initiative is a cultural value-based approach to management based on Indigenous knowledge and conservation principles. And in 2017, Ahousaht released its land use vision²⁹ "to promote the long-term stewardship of Ahousaht Ha-Hahoulthlee [traditional territory lands, waters, and resources]³⁰ and to provide lasting social and economic benefits for the Ahousaht muschiim [people]³¹ and others," with the intent to "protect Ahousaht cultural and heritage resources, maintain and enhance the Ahousaht way of life, protect and maintain biological diversity and natural environments, and provide community development opportunities for both economic and social well-being."
- The Hesquiaht First Nation, Tla-o-qui-aht First Nations, and Ahousaht are pursuing government-to-government agreements with the British Columbia government, including co-management agreements with BC Parks. (There are 16 provincial parks within the Clayoquot Sound Biosphere boundary.)

2.3.7 Community cultural development initiatives.

Although one of the CBT's advisory committees focuses specifically on funding arts and culture initiatives, recognition of, and support for, language and culture are threads that run through many of the CBT's projects and initiatives. As one example, the *Hišinqwiit* Regional Gathering, held in 2017, was coordinated through a partnership between the CBT, the Yuułu?it?atḥ Government, and Pacific Rim National Park Reserve (PRNPR). The core planning team included members from each organization and the planning process focused largely on understanding Nuuchahnulth language and celebration protocols. (For more details, see page 119.)

²⁸ Pathway to Canada Target 1. <https://www.conservation2020canada.ca/the-pathway#Intro>

²⁹ IISAAKSTAŁ: Ahousaht Ha-Hahoulthlee Land and Marine Use Designations. [2016]. http://www.mhssahousaht.ca/sites/default/files/%20IISAAKSTAL%20Designations_Final.pdf

³⁰ Maaqutusiis Hahoulthlee Stewardship Society. Ahousaht Stewardship – Economic Development, Business Development. <http://www.mhssahousaht.ca/mhss>

³¹ Ibid



Timmy Masso dancing for elders at the *hišukniš cawaak histaqši niš iqh muut* (West Coast Language Gathering).
Photo: Melody Charlie

The CBT recognizes that “language is one of the most tangible symbols of culture and group identity. It is not only a means of communication, but a link that connects people with their past and grounds their social, emotional, and spiritual vitality.”³² The CBT’s 2020 Strategic Business Plan is also guided by the frameworks of the United Nations’ Sustainable Development Goals, and the Truth and Reconciliation Commission of Canada’s Calls to Action, five of which are specific to language and culture.

As such, the CBT supports various language initiatives in the CSBR. They include:

- **Language Committee/Language Gathering:** the literacy program of the Coastal Family Resources Coalition, a regional network coordinated and administered by the CBT, formed a language committee of Elders and knowledge holders to plan for Nuuchahnulth language revitalization activities, including the 2018 *hišukniš cawaak histaqši niš iqh muut* (West Coast Language Gathering), which was attended by over 400 youth, Elders, and language champions from all communities in the CSBR. The committee continued to meet after the gathering to discuss and provide guidance on various language initiatives in the region.
- **Neighbourhood Small Grants** specific to Nuuchahnulth culture: in 2019, the CBT’s Neighbourhood Small Grants (NSG) program partnered with the Coastal Family Resource Coalition’s language committee, composed of Elders and

knowledge-holders from multiple Nuuchahnulth nations, to develop, launch, and evaluate a culture-themed round of NSGs that encouraged applications related to Nuuchahnulth language and culture. The joint committee supported 13 projects, including a Tla-o-qui-aht language initiative as part of the afterschool program at Wickaninnish Community School in Tofino.

- **First Nations Language Nests:** language nests are programs for young children in which they are immersed in their First Nations language. With its partners, the CBT has supported several language nests in First Nations communities in the CSBR.
- **Nuuchahnulth language exposure:** more and more, the CBT and other organizations within the region are including Indigenous languages in their events, presentations, and written materials. For example, CBT board meetings open with a Nuuchahnulth word of the day, and the most recent *Vital Signs* report included relevant Nuuchahnulth words throughout and a spread on Nuuchahnulth language, noting that cultural integrity and identity is one of the 14 determinants of health and well-being. The CBT has also funded several projects that promote and share Nuuchahnulth language, including interpretive signs on the Tonquin Trail in Tofino and at the Ucluelet Aquarium, as well as language curriculum development and school-based events. Nuuchahnulth language is taught in all schools in the CSBR.
- **Canadian Biosphere Reserve Association Indigenous Circle:** the CBT participates in this initiative, which seeks council from Indigenous peoples in whose territory Canadian biospheres are designated. (For more details, see page 145.)
- **Communication strategies:** the CBT’s most recent communications plan specifies several actions related to language, including working with Nuuchahnulth language keepers to update the highway sign in PRNPR welcoming visitors to the Clayoquot Sound Biosphere, specific activities that raise awareness of the International Year of Indigenous Languages in 2019, and several strategies to increase Nuuchahnulth language in CBT communications.³³

³² Canada’s First Peoples. (2007). http://firstpeoplesofcanada.com/fp_groups/fp_groups_languages.html As quoted in: Clayoquot Biosphere Trust. (2018). *Vital Signs*. p. 21

³³ Clayoquot Biosphere Trust. (2019). Communications Plan, 2019, pp. 8-10.

Name changes within the CSBR also acknowledge local cultures and languages. For example, when PRNPR renovated its interpretive centre, with the advice of a Nuu-chah-nulth working group it updated its name to the Kw̓isitis Visitor Centre. Similarly, when the Tofino Mudflats Wildlife Management Area was designated as a Western Hemisphere Shorebird Reserve in 2016, its name was updated to the Tofino Wah-nah-jus Hilth-hoo-is Mudflats to recognize Indigenous place names. This trend continues, most recently with the naming of a new multi-use path—ʔaps̓ciik tāšii—being constructed through PRNPR. (The pathway was named by an Elders working group and means “going the right way on the trail.”) And when the District of Tofino purchased a property locally known as Monks Point, it acknowledged the Indigenous name, **načiqs**, in a formal ceremony and also drafted a Declaration of Reconciliation that set out a framework for cooperation and co-management with the Tla-o-qui-aht First Nations.³⁴

PRNPR has made significant and notable efforts to work with Indigenous people of the CSBR, including cooperative management agreements that are addressed elsewhere in this review. PRNPR was one of the first national parks to create an Open Doors Program, which gives free access to the park to local First Nations. This encourages First Nations to reconnect with their traditional territories after decades of management decisions that have often excluded them. As well, the construction of ʔaps̓ciik tāšii resulted in several benefits specific to First Nations: safe access to their traditional territories, promotion of non-motorized recreation, access to the wood removed during trail construction, an Indigenous Benefits Package, and educational components related to language and culture. As well, PRNPR supported a junior guardian program for Tla-o-qui-aht First Nations and Yuutuʔitʔath̓ youth to build life skills and connections to their traditional territories.

³⁴ Martin, N. (2016). District of Tofino, Tla-o-qui-aht craft Declaration of Reconciliation draft for Monks' Point at **načiqs**. **Ha-shilth-sa**. <https://hashilthsa.com/news/2016-03-30/district-tofino-tla-o-qui-aht-craft-declaration-reconciliation-draft-monks-point-na%25C4%258D>



A Closer Look CBT Research Award on Indigenous Language Revitalization

In 2017, the CBT awarded its \$20,000 Biosphere Research Award to chuutsqa (Layla Rorick), an advanced adult learner of the Hesquiaht dialect who grew up in Hot Springs Cove and is dedicated to increasing the number of Nuu-chah-nulth speakers. Chuutsqa is a doctoral candidate at the University of Victoria, focusing her studies on Nuu-chah-nulth worldview and place-based language revitalization.³⁵

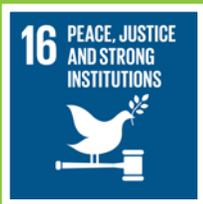
The CBT grant gave her the means to work closely with fluent Elders to collect the language and create four immersion camps. “The grant allowed me to travel, collect the audio, and teach it to people who want to learn,” chuutsqa explains, adding “it allowed me to strengthen my relationships with all of the fluent speakers.”

Today, her thesis is on hold while she works with the few remaining fluent Elders to teach the Hesquiaht language—currently via Zoom due to the COVID-19 pandemic—to over 100 students a week. She also holds multi-day immersion programs, supports language nests that match Elders with young children in an immersive language experiences, and teaches a beginner’s dialect class through North Island College. As well, she maintains two language websites, ncnlessons.com and hesquiahtlanguage.org.

³⁵ Clayoquot Biosphere Trust. [2017]. 2017 Impact Report.

The largest cohort of students in her online classes are those in their 30s and 40s. “Students are invested because they’re learning things that they never got to learn as they grew up,” chuutsqa says. “Language is getting put back into their homes.”

Her work exemplifies the tie between culture and place—“[the] Nuu-chahnulth language and worldview has grown out of a coastal location and contains environmental markers that tie our language and our daily actions to the land and seascape,” she says.



Statutory Framework of the World Congress of Biosphere Reserves

I.1 Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves

II.1 Secure the support and involvement of local people

III.3 Improve education, public awareness and involvement

2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve.

The most recent Statistics Canada census (2016) identified 30 languages spoken at home within the CSBR: Athabaskan language, Cantonese, Cebuano, Chinese, Danish, Dravidian, Dutch, English, Finnish, French, German, Greek, Hindi, Italian, Japanese, Korean, Mandarin, Norwegian, Nuu-chah-nulth, Plains Cree, Punjabi, Russian, Slovak, Spanish, Swedish, Tagalog, Thai, Turkish, Ukrainian, and Vietnamese. In the previous census in 2011, there were 31 languages spoken at home within the CSBR.³⁶

Specific to languages indigenous to the CSBR, as of 2016 1.7% of the population are fluent Nuu-chah-nulth speakers, down from 3.1% in 2012. However, in 2016 3.6% in the CSBR somewhat speak or understand Nuu-chah-nulth, up from 2.6% in 2012. This suggests that interest in language learning is increasing locally.³⁷

For details on revitalization programs for endangered languages, please see 2.3.7.

2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

Since the Clayoquot Sound Biosphere's inception in 2000, the CBT has developed strategies to improve its administrative capabilities in managing the Canada Fund and achieving the goals of UNESCO MAB. While the board structure was meant to include broad representation from throughout the region, it also led to some fractionalization in the organization's early years, with some board members seeing themselves as being advocates only for their communities rather than as part of a team charged with the well-being of the region's community and ecosystem health. Moving grant making to advisory committees made up of community members shifted decision making over the use of the Canada Fund away from the board. This approach has improved the organization's functionality—making it a community resource for the benefit of all—as has the continued strengthening of policies and strategic/business planning, which have become more rigorous over the past decade.

Inequity throughout the region is a challenge for the CBT, but is one that the organization continues to address. Due to a variety of reasons—small size of communities, limited pool of community members willing or able to participate, legacies of colonization, differing community priorities, transportation and communication (e.g., Internet and cellular reception) challenges, for example—can make it difficult for some communities to participate in all of the activities of the CBT. The CBT continues to address this with a variety of strategies as outlined in this document, but include: regular and ongoing communication with all communities as to the activities of the CBT; rotating of CBT board meetings throughout the CSBR so that the board meets in each community at least once per year; board and staff training on good governance, strategic/business planning, and Indigenous histories; and support as required and requested to ensure that communities throughout the region have access to CBT grants.

Although it is improving as more and more people engage with the CBT through various programs and initiatives, there is still some misunderstanding in the CSBR about what a biosphere reserve is, and can do, in the Canadian context. Some people assume that because the region is a “biosphere reserve” designated by UNESCO that this confers some extra level of protection. There is also confusion/misunderstanding as to why communities from outside of the Clayoquot Sound Biosphere boundaries participate so fully in the organization. The CBT continues to address this head-on, noting that communities in the CSBR were signatories to the nomination document and encouraging residents and communities to “think like a region.” There are ongoing discussions about potentially expanding the boundaries of the Clayoquot Sound Biosphere to include these communities.

When the Clayoquot Sound Biosphere was formed, this area was supported by a government-to-government joint decision-making Central Region Board (CRB) consisting of representatives from five Central Region First Nations (Hesquiaht, Ahousaht, Tla-o-qui-aht, Yuutu?i?ath, and Toquaht) appointed by the Central Region Chiefs, and non-First Nation representatives from local communities, appointed by the province. The CRB reviewed natural resource development proposals for terrestrial and foreshore areas prior to the conclusion of treaty negotiations to obtain First Nations and local community input, and guided by the Scientific

³⁶ Statistics Canada National Household Survey Community Profiles. (2011); Statistics Canada Census profile. (2016).

³⁷ Clayoquot Biosphere Trust. (2016). *Vital Signs*. p.7

Panel for Sustainable Forest Practices in Clayoquot Sound.³⁸ The region also supported a Clayoquot Sound Technical Planning Committee (CSTPC), consisting of membership from the five Central Region First Nations and the Province of BC, that worked to coordinate an integrated land-use planning process Clayoquot Sound. The CRB and the CSTPC were administered separately. Both bodies were co-chaired by First Nations and the province. The CRB was dissolved in 2009, and the CSTPC in 2010, leaving the region without a single decision-making body with a land- and resource-use mandate. This is an obstacle to regional information sharing and decision making.³⁹

2.4 Comment on the following matters of special interest in regard to this biosphere reserve: (Refer to other sections below where appropriate).

2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

A Federal Sustainable Development Strategy for Canada, 2019-2022, Government of Canada

The strategy mentions biosphere reserves, noting they are “partners taking action.” (“Many of Canada’s UNESCO designated biosphere reserves include coastal and marine areas and facilitate multi-partner initiatives to conserve the health of these waters. From grassroots stewardship projects to collaborations with Indigenous peoples, universities, youth and governments, biosphere reserves create opportunities for organizations to work together to protect aquatic species at risk and increase the protection of marine and coastal areas.”) The strategy also suggests that readers reach out to biosphere reserves to “take action.” For example: “Consider contacting the Canadian Biosphere Reserves Association to explore the potential of partnering with one of Canada’s 18 biosphere reserves on collaborative, community-based initiatives to protect our coasts and oceans.” And, “Consider contacting the Canadian Biosphere Reserves Association to find out how you can get involved in local conservation efforts with a UNESCO biosphere reserve near you.”

Creating Middle Class Jobs: a Federal Tourism Growth Strategy, 2019, Government of Canada

Although the Clayoquot Sound Biosphere is not specifically mentioned, the section “New Federal Tourism Growth Strategy: Empowering Communities to Develop Tourism Experiences” does mention biosphere reserves: “Canada’s UNESCO Biosphere Reserves and Geoparks will be positioned as key destinations for sustainable tourism, and local communities will be supported in their collective efforts to achieve and maintain these prestigious UNESCO designations.”

South Central Island Destination Development Strategy, 2019, Destination British Columbia

The biosphere reserve is mentioned in the section on the geographic description of the area. “The total land area of the South Central Island is approximately 3.4 million hectares. The landscapes and ecosystems are diverse, with rainforests, marshes, meadows, beaches, mountains, oceans, rivers, lakes, and an abundance of terrestrial and marine wildlife spanning the west coast to the inside passage. Each sub-region has its own set of key attractants. The Pacific Rim sub-region provides a mix of natural, built, and historical features of interest to visitors with iconic draws including the Pacific Rim National Park Reserve, Hot Springs Cove, the Clayoquot Sound/ UNESCO World Biosphere Reserve,”

We Rise Together: achieving pathway to Canada Target 1 through the creation of Indigenous protected and conserved areas in the spirit and practice of reconciliation, 2018 – Indigenous Circle of Experts

A case study of the Tla-o-qui-aht Tribal Parks notes that the tribal park is within the Clayoquot Sound Biosphere: “At the heart of the Clayoquot Sound UNESCO Biosphere Reserve on the West Coast of Vancouver Island British Columbia in Canada, a new model of Tribal Parks is emerging as a global example of social-ecological resiliency. The Tla-o-qui-aht have conceived an Indigenous Watershed Governance methodology that is a model of sustainable livelihoods and promotes environmental security. The keystone of this methodology is a conception of humanity that orients individuals within a rich social contract that extends ideas of justice to the environment.”

³⁸ Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. pp. 35-36.

³⁹ Retzer, B. (2021). pers. comm.

Nature Conservancy of Canada: Project Plan for Clayoquot Sound, 2018

Identifies the Clayoquot Sound Natural Area as being within the “Clayoquot Sound UNESCO Biosphere Reserve.”

Ahousaht Protocol Agreement between the Maaqutsiis Hahoulthee Stewardship Society and the Province of British Columbia, 2016

“Biosphere management” is noted as a potential partnership to explore with the Government of Canada through tripartite discussions. (Section 4.5)

Tofino Tourism Master Plan, 2014

- The town is identified as being located within a biosphere reserve.
- The appendix “Tourism Offerings and Businesses: Parks and Natural Areas” lists the Clayoquot Sound Biosphere.

Tofino Vision to Action: Sustainable Community Action Plan, District of Tofino, 2014

- The Clayoquot Sound Biosphere is mentioned in the sections: “community profile” and “natural environment.”
- In the section “Economic Development” the “UN biosphere designation” is identified as a strength in the SWOT (strengths, opportunities, weaknesses, threats) analysis.
- In the section “Environment,” the Clayoquot Biosphere Trust is identified as an opportunity in the SWOT analysis.

District of Tofino Vision Tofino Update: Official Community Plan, 2013

- The town is identified as being located within a biosphere reserve.
- The section “Economic Issues” notes: “the Clayoquot Sound UNESCO Biosphere Reserve provides opportunities for Tofino to plan for and benefit from new economic possibilities in research and development.”
- One of the document’s guiding principles, to “promote a sustainable healthy community,” specifically notes the philosophy of living within a biosphere reserve: “Healthy and sustainable communities are resilient communities of varied ages. Sustainable healthy communities ensure that built-environment, cultural, ecological, economic and social values are given shared priority, and that equity is an important consideration. Sustainable healthy communities seek to identify and improve their

quality of life indicators across built-environment, cultural, economic, environmental, and social considerations. Given Tofino’s unique location, as a sustainable healthy community it will need to value and seek to enhance/protect ecological community assets, consistent with the UNESCO Biosphere Reserve designation.”

- Policy 3.4.2.6 Resource Activity Policies, notes: “The District will work to support the objectives of the Clayoquot Sound UNESCO Biosphere Reserve.”
- The section 3.5 Environment and Natural Resources, begins by noting: “Located in the Clayoquot Sound UNESCO Biosphere Reserve, the District of Tofino is uniquely situated to benefit from the significant environmental features that exist in the region.”
- In the section on development, 4.3.1 Development Approval Information Area, which outlines goals with respect to monitoring the cumulative impacts of development on the natural environment, it is noted that “the District of Tofino is located within the UNESCO Biosphere Reserve and borders onto a provincially designated Wildlife Management Area. Development activities can have detrimental impacts on the natural environment To ensure that prudent decisions are made on behalf of the District and its staff, proposed development and activities will be required to provide information on impacts to the natural environment through expert assessments.”
- In the section 5.3 Riparian Development Permit Area, notes: “Riparian zones are areas of land and vegetation adjacent to streams that provide a range of important functions, Riparian areas need to remain in a largely undisturbed state to provide these functions. Policies within the District of Tofino Official Community Plan, Bylaw #1200, identify the importance of riparian and wetland areas within the District of Tofino. In addition, Tofino is located within a UNESCO biosphere, which is a site, recognized under UNESCO’s Man and the Biosphere Program as a place that innovates and demonstrates approaches to conservation and sustainable development.”

District of Tofino Resort Development Strategy 2012-16

- The town is identified as being located within a biosphere reserve.
- That the town’s location is within a biosphere reserve is noted as a strength in the SWOT analysis.

Pacific Rim National Park Reserve Management Plan, 2010

- The plan notes the Long Beach Unit of the national park is a “core protected area of land and sea within the Clayoquot Sound UNESCO Biosphere Reserve.”
- The plan notes that inclusion within a biosphere reserve gives the park international recognition and describes the functions of biosphere reserves and the role of the CBT. It also notes that Parks Canada has a representative on the CBT board.

2.4.2 Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.

Over the past decade there has been a notable shift toward co-management within the Clayoquot Sound Biosphere. This is described in more detail in 7.6.1, but includes:

- a shift toward more cooperative management or co-management between federal and provincial governments and First Nations in Pacific Rim National Park Reserve and BC Parks, which form the core areas of the Clayoquot Sound Biosphere,
- the creation of tribal parks by the Tla-o-qui-aht First Nations with watershed plans based on Indigenous knowledge and conservation as a pathway to self-governance; the management plan points to Indigenous Protected and Conserved Areas as a mechanism for conservation and protection,
- Wah-nah-jus Hilth-hoo-is Mudflats (Tofino Mudflats Wildlife Management area) being designated a Western Hemisphere Shorebird Reserve Network site of regional importance in 2013, and also registered as a globally and continentally significant Important Bird Area,
- Ahousaht announcing its Land Use Vision for its traditional territories in 2017, and
- the 2020 BC government announcement that it plans to temporarily defer harvesting of old growth forests, including 260,000 ha within the CSBR, for two years.⁴⁰ The deferral creates short-term certainty regarding land use within which First Nations can advance government-to-government agreements and pursue Indigenous protected and conserved area designations.

2.4.3 Continued involvement of local people in the work of the biosphere reserve.

As highlighted throughout this document, there are a variety of ways that individuals, communities, and organizations can be involved in the work of the Clayoquot Sound Biosphere. They include:

- **Board of Directors:** The CBT is structured as a co-management board with 10 volunteer directors and their alternates from the region’s five First Nations, the Districts of Tofino and of Ucluelet, and Area C of the Alberni-Clayoquot Regional District. The board also includes non-voting advisors appointed by provincial and federal governments (Environment and Climate Change Canada, Parks Canada, Fisheries and Oceans Canada, and the Government of British Columbia). Communities select board appointees and alternate directors through open and publicly accountable procedures.
- **Advisory Committees:** Anyone from the public with interest or expertise in a particular topic area is invited to be part of one of the CBT’s advisory committees: currently, arts and culture, community development, neighbourhood small grants, research and environment, and youth and education. The volunteer committee members evaluate grant applications received by the CBT during the annual granting cycles.
- **Funded Projects:** The CBT offers a range of grants designed to fund a broad range of projects and research. The funding promotes the health of individuals, communities, and ecosystems throughout the CSBR. Although most grant applications must come from registered charities, there are avenues for individuals or small “ad hoc” groups to receive funding through Neighbourhood Small Grants.
- **Vital Conversations and other events:** The CBT organizes and sponsors a variety of events, large and small, for the public throughout the year. Some recent examples include a “Vital Conversation” on sustainable tourism and a regional gathering that honored and celebrated people from all communities in the CSBR in the spirit of healing and reconciliation.
- **Scholarships and other opportunities for youth:** Youth of the region are invited to apply for education awards and scholarships administered by the CBT. As well, the CBT sponsors youth participation

⁴⁰ BC Ministry of Forests, Lands and Natural Resource Operations. 2020. Ministerial Orders for Old Growth Designated Areas. Forest Act Bulletin. Number 6. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/timber-tenures/forest_act_bulletin_old_growth_ministers_order.pdf

in experiences such as Students on Ice, an annual youth expedition to the Arctic. (For more on youth participation, see 2.4.9.)

- **School grants:** Each year the CBT provides grants to local schools for field trip experiences in the CSBR as part of the “What I Learned About My Biosphere” project.
- **Philanthropy:** as a registered Canadian charity, people can support the CBT by making a donation. As a community foundation, the CBT is also able to help donors establish endowment funds so that they have the opportunity to make meaningful and lasting impacts in areas that they deem important.

2.4.4 Women’s roles. Do women participate in community organizations and decision-making processes?

Women in the CSBR are encouraged to participate in community organizations and in all aspects of a free and democratic society as elsewhere in Canada. While there are personal and systemic barriers—access to daycare or lack of transportation, for instance—there are no legal barriers that prohibit their participation. The CBT encourages and supports the involvement of women and they play a significant role in the Clayoquot Sound Biosphere and on the CBT’s board, advisory committees, and staff. Specific supports include the provision of childcare services and travel expenses, and the recognition of volunteer contributions by offering grocery store gift cards or market food baskets. Meals are also supplied at in-person meetings.

Through this review, the CBT acknowledges that it needs to develop its understanding of the roles of women within Nuu-chah-nulth governance/society and will aim to improve through dialogue and partnership with Nuu-chah-nulth women.

Women are represented in government positions in the biosphere region’s Indigenous and non-Indigenous communities, filling 25 to 38% of the seats in public office over the last five years, including sitting as mayors of Tofino and Ucluelet, and as chief of one the region’s First Nations.^{41 42 43} As well, women fill upwards of 40% of managerial positions in the CSBR.⁴⁴



CBT co-chairs (2013-2020) Cathy Thicke and Tammy Dorward.
Photo: Nora Morrison

The role of women in the CBT has increased significantly over the past decade. In 2011, board composition (elected/appointed members) was one woman and nine men. The co-chairs for the organization’s first decade were also men. Over the past decade however, the balance has shifted reaching a composition close to 50:50 (40 to 50%) from 2013–2015, and skewing to a majority of women (60 to 70%) in 2016 through to 2020.⁴⁵ This shift is also evident in the organization’s co-chairs. Over the past 10 years, women held both of the co-chair roles for seven years. Both women joined the board in 2012, were elected co-chairs in 2013, and completed their second of their four-year terms in 2020.

Women are also well-represented as alternate directors (those who attend when the primary director is unable to), and their involvement has been steadily increasing since 2013 when just 22% were women. In 2019 and 2020, three-quarters of the alternate directors were female.⁴⁶

Women are encouraged to serve as members of the CBT’s community advisory committees and to this end, the organization covers childcare and travel expenses to allow their full participation.

As the staff of the CBT has grown, so has its complement of female employees with women currently filling seven of the organization’s eight permanent positions. During its first decade, all of the CBT’s executive

⁴¹ Clayoquot Biosphere Trust. (2014). *Vital Signs*. p. 6-7

⁴² Clayoquot Biosphere Trust, (2016). *Vital Signs*. p. 6

⁴³ Clayoquot Biosphere Trust. (2018). *Vital Signs*, p. 19

⁴⁴ Ibid

⁴⁵ Clayoquot Biosphere Trust. (2020). C. Robinson.

⁴⁶ Ibid.

directors (four over that time period) were men. Since, 2010, however, a woman has served as managing director and was promoted to executive director in 2012. The organization is working to address systemic barriers to employment by providing maternity and parental leave benefits (supplementing the federal government's benefits) and when employees are required to travel for CBT business, a policy allows for the reimbursement of dependent care expenses.

Female board members and staff have represented the Clayoquot Sound Biosphere nationally and internationally and serve on a variety of panels and committees. This includes: the Canadian Biosphere Reserves Association, EuroMAB, and the 4th World Congress of Biosphere Reserves.

Although the increase in female representation on the board, advisory committees, and staff was not planned per se, the visible presence of women within the organization makes it clear that the CBT welcomes the full participation of women.

2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

Over the last 10 years, the Hesquiaht First Nation, Tla-o-qui-aht First Nations, and Ahousaht have taken critical steps to develop their management visions for land uses and conservation areas in their respective territories. Building on the recommendations of the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound (Clayoquot Scientific Panel) and the Clayoquot Sound watershed plans, each of these First Nations are pursuing a protected area land designation and co-management agreement with the province of British Columbia. In preparation for this Indigenous-led conservation initiative, significant investments have been made to support capacity building for leadership, governance, stewardship, and economic development. If successful, the new protected area will further increase the terrestrial core area, while decreasing the buffer zone and transition areas within the designated Clayoquot Sound Biosphere.

The Clayoquot Sound Watershed Plans designate three zones that interact to allow for ecosystem-based

management of forests based on the recommendations of the Clayoquot Scientific Panel. The plans identify a network of reserves, special management zones, and harvestable areas.

The reserve network is an extension of the core protected area of the Clayoquot Sound Biosphere made up of federal and provincial parks. The reserve network is designed to protect key elements of watersheds and biodiversity: hydroriparian ecosystems, unstable terrain and sensitive soils, red- and blue-listed species, forest-interior conditions in late successional forest, areas that represent all ecosystems, and linkages among watershed planning areas.

Special management zones are buffer zones that allow for logging next to reserves under conditions that protect human values (i.e., culturally important areas, recreational and tourism values). In many cases the special management zones reduce the risk of windthrow within the adjacent reserve, and protect wildlife habitat, including wildlife trees, large trees, hiding and resting cover, nesting sites, structural diversity, downed woody material, and food resources adjacent to reserves.

Harvestable areas are transition zones where logging is subject to fewer conditions than in special management zones, but where practices that promote the recovery of ecological integrity after logging are applied. Within Clayoquot Sound, the variable retention silviculture system is applied to conserve more of the characteristics of natural forests than are maintained in conventional silvicultural systems. The application of variable retention within the harvestable area mirrors and complements the designation of reserves at the watershed level.⁴⁷

Terrestrial Core Areas

As shown in Figure 4, the terrestrial core area of the Clayoquot Sound Biosphere is comprised of 19 distinct units (the Long Beach Unit of Pacific Rim National Park Reserve,⁴⁸ 16 provincial parks and two ecological reserves designated in the Clayoquot Sound Land Use Decision in 1993), and, as noted in 2.2.2, new watershed plan reserves and three other small additions (noted below) that increase the terrestrial core area to

⁴⁷ Clayoquot Sound Technical Planning Committee. (2006). Watershed Planning in Clayoquot Sound Volume 1 Principles and Process. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/clayoquot-sound-lud/clayoquot_lud_watershedplanning

⁴⁸ Established in 1970 as a national park reserve (pending treaty negotiations). Proclaimed in 2001 under the updated National Parks Act, SC 2000, c.32; Interim Management Guidelines 1994 apply; Ecological Integrity Statement 2001.

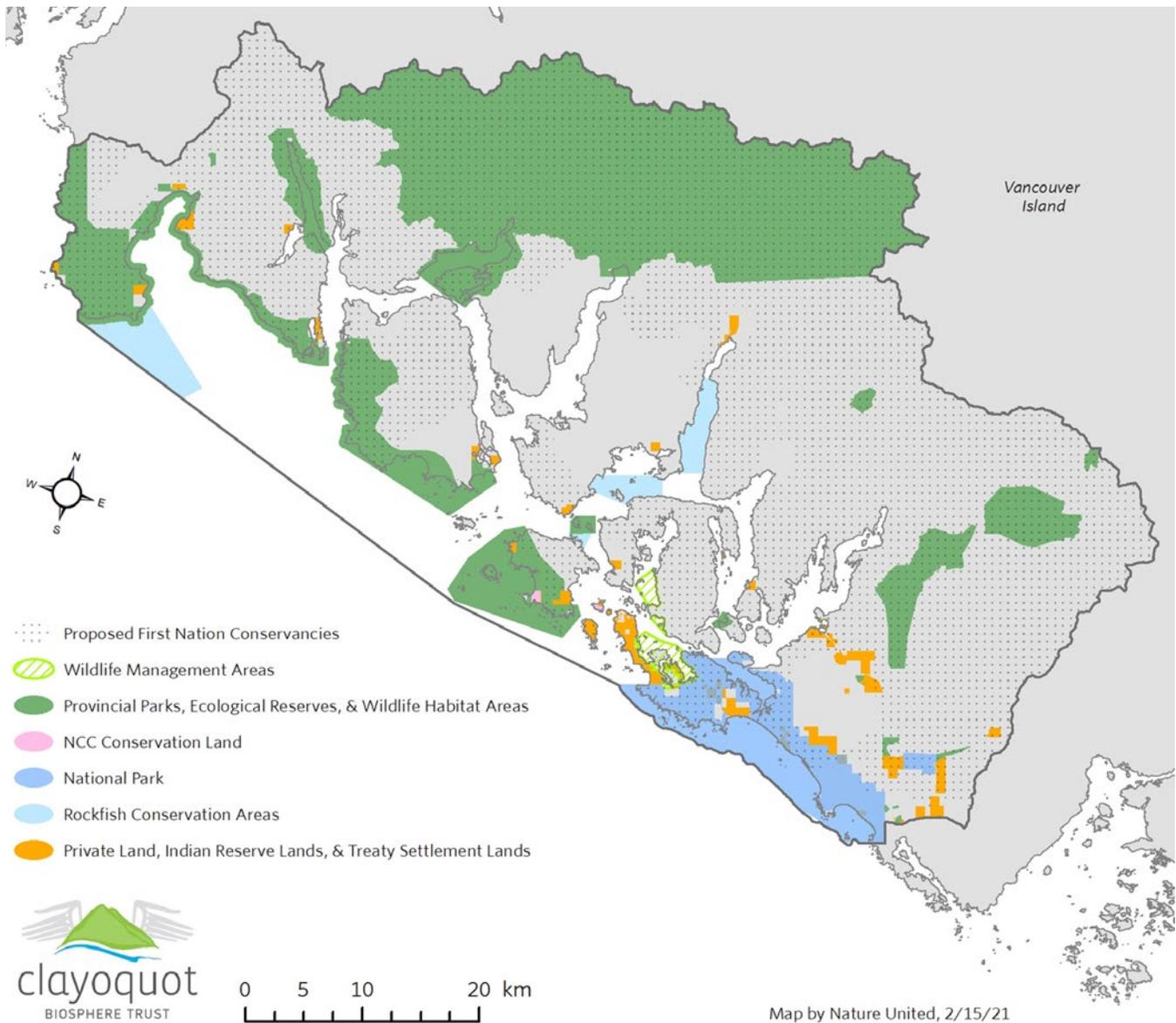


Figure 4 Conservation Context in the Clayoquot Sound Biosphere, 2020

159,148 ha,⁴⁹ up from the designated 90,412 ha when the Clayoquot Sound Biosphere was created.⁵⁰

In 1990, Stubbs Island (locally known as Clayoquot Island) was in foreclosure after plans to subdivide and develop the island with hundreds of vacation homes fell through. Susan Bloom purchased the island and set out to protect it from further development, preserve it in its natural wild state, and remove years of accumulated human garbage and refuse.⁵¹

⁴⁹ Draft data for Clayoquot Sound Summary in “ALL CLAYOQUOT WPUS – FINAL Nos. & Summ. Graphs 2006 (+ 2013 notes) – Copy.xls” provided by B. Retzer (2020). pers. comm.

⁵⁰ Francis, G., Mendis-Millar, S., Reed, M. (2010). Clayoquot Sound Biosphere Reserve Periodic Review.

⁵¹ Nature Conservancy of Canada. Clayoquot Island Preserve. <https://www.natureconservancy.ca/en/where-we-work/british-columbia/featured-projects/clayoquot-sound/clayoquot-island-preserve.html>

In 2015, Bloom donated 38 ha of mixed old growth and second growth forest on Stubbs Island to the Nature Conservancy of Canada. As such, it will be formally protected over the long term. The protected area is expected to increase as additional land is dedicated to rewilding in the future.

In 2018, the BC government designated two wildlife habitat areas (WHAs) comprised of 46 ha of wetland and surrounding forest used by northern red-legged frogs, a species listed as being of “special concern,” under the federal Species at Risk Act. Logging, road building, and pesticide use are not permitted within these WHAs under the BC Forest and Range Practices Act. These WHAs, along with an 18 ha WHA formed in 2010, occur just south of PRNPR.

Although the overall land area under the jurisdiction of parks and ecological reserves has remained unchanged, there have been changes in the size of protected habitats within PRNPR. From 2017 to 2021, Parks Canada developed the multi-use trail, ʔap-s̓ciik ʔašii, through the Long Beach Unit of PRNPR. Approximately 13 ha of forest and wetland habitats were converted to the pathway and one new parking lot. The trail winds in and out of the forest from the edge of the highway for 25 km giving it a long linear footprint that is 5.2 m wide with 3.2 m of asphalt and 1 m-wide shoulders on each side. Following the initial habitat loss, the trail is expected to have residual negative effects on habitat and wildlife including:

- increased spread of invasive plant species
- alteration and fragmentation of habitat
- modified animal movement patterns – the trail has become a travel corridor for bears, wolves, and cougars
- sensory disturbance to animals
- increased human-wildlife interaction and conflict

A variety of mitigation actions are expected to lessen these negative effects but it is unclear to what extent. For example, the project aimed to reduce damage to wetlands and other sensitive areas by using an elevated trail in certain areas, by the addition of three structural clear-span bridges, and routing the trail to avoid sensitive areas, where possible. Other techniques included in-stream restoration (4182 m² of increase in fish habitat), avoiding construction during migratory bird windows (between August 15 and September 15), plant and soil salvaging, and the installation of three amphibian crossings. Environmental surveillance officers worked with a team of consultants on restoration work, including First Nations and environmental monitors.

Before work began, the monitors went into sensitive areas to relocate important species, such as coho salmon, cutthroat trout, northwestern salamander, wandering salamander, Pacific tree frog, and northern red-legged frog. In spring, the team restored a large slope along the highway where it was widened to allow the pathway to run parallel to the road. The team stabilized the slope by adding rock seams and planting willow stakes that had been salvaged earlier. Then, with the help of the Central Westcoast Forestry Society, they planted over 700 shrubs and trees.

Long-term monitoring will be necessary to track these effects and the effectiveness of the mitigation and will be documented for the next CSBR periodic review.

Terrestrial Buffer Areas

The terrestrial buffer zone of the CSBR includes all major unprotected largely intact watersheds in which little (less than 2% of area) or no logging or other industrial activity has taken place, the upland component (420 ha) of the Tofino Wah-nah-jus Hilt-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area), and special management zones as defined in the Clayoquot Sound Watershed Plans for a total of 68,044 ha. There has been an increase in development pressure in the wildlife management area, which is discussed in section 4.1.

Terrestrial Transition Areas

The terrestrial transition areas of 31,227 ha include the ha-houlthee [traditional territories] of the Hesquiaht First Nation, Tla-o-qui-aht First Nations, and Ahousaht and their communities (Maaqutsiis, Hot Springs Cove, Hesquiaht Harbour, Esowista, and Opitsaht); the District of Tofino; private land outside of municipal boundaries; lakes; islands; major watersheds in which significant logging or other industrial activity has taken place (some of which are included in watershed plans).

As noted above, 38 ha of Stubbs Island, and two WHAs comprised of 46 ha of wetland and surrounding forest are now part of the core protected area, thus reducing the terrestrial transition zone by 84 ha. Additional lands were removed from the transition area and became buffer zone subsequent to the creation of special management zones.

Marine Core Area

As shown in Figure 4, the marine core area of the CSBR is comprised of 10 distinct parks and ecological reserves covering a total of 20,579 ha.

There have been no significant changes in the size of the marine core area since 2010. However, new marine protected areas (MPAs) may come forward in the next five years. A 2012 report from the Canadian Science Advisory Secretariat maps proposed ecologically and biologically significant areas (EBSAs) in marine waters of British Columbia.⁵² EBSAs are used for marine use planning and the development of Canada's network of MPAs under the Oceans Act and facilitating the implementation of Fisheries and Oceans Canada's sustainable fisheries framework under the Fisheries Act. The continental shelf, off of Clayoquot and Barkley Sounds, consists of "highly productive submarine banks due to convergent circulation and shallow depths."⁵³ The migration routes of several species at risk and endangered mammals follow these marine contours, including northern and southern resident killer whales, grey whales, and humpback whales.

Marine Buffer Zone

The marine buffer zone of the CSBR consists of the nearshore and intertidal components of the CSBR, including the Tofino Wah-nah-jus Hilt-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area), and the addition of Rockfish Conservation Areas (RCAs) for a total of 6,980 ha, an increase of 5,300 ha since the Clayoquot Sound Biosphere was designated in 2000.

RCAs were established between 2004 and 2007 and although they are not MPAs, they serve the function of a harvest refugia for rockfish, but do not restrict all fishing.⁵⁴ There is a large RCA (186.3 km²) off Estevan Point at the north end of Clayoquot Sound where it overlaps slightly with the foreshore of Hesquiaht Peninsula Provincial Park. Smaller RCAs were established in Bedwell Sound (15.4 km²), around Saranac Island including Hecate Bay, and from Vargas Island north to Dunlap Island overlapping with Upper Passage Provincial Park (Saranac and Dunlap are 10.9 km² combined).⁵⁵

Marine Transition Zone

All marine areas outside the core and buffer areas are within the marine transition zone, for a total of 63,386 ha. Within the last five years, DFO has implemented seasonal fishing area closures within the marine transition zones to protect specific salmon habitats for returning spawners.⁵⁶ These closed areas were negotiated through the Clayoquot Salmon Roundtable and prevent recreational sport fishing charters from targeting salmon species of concern in the summer months when tourism is most prevalent within the CSBR. (For more information on the Salmon Roundtable, see page 34.)

2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

An estimated 70 different agencies and individuals have conducted research and monitoring activities within the CSBR over the last 10 years. For a summary of research reports and published papers resulting from these research efforts, please see the bibliography in Appendix X. Local organizations and researchers comprise a significant component of these research activities, many of which receive partial funding from the CBT's annual granting program. Within the last decade, the CBT has funded over 58 research projects, for a total contribution of \$326,840 to local research activities, many of which contribute to long-term monitoring within the CSBR. See Appendix XI for a list of 2010-2020 research projects funded by the CBT.

Several local monitoring initiatives are linked internationally, including the 2019 CBT research award recipient, the Raincoast Education Society (RES). The RES, together with partnering organizations such as PRNPR and collaborators throughout the migratory shorebird pathway, are monitoring the residency and habitat use of migrating shorebirds through radio

⁵² Fisheries and Oceans Canada. (2012). Evaluation of Proposed Ecologically and Biologically Significant Areas in Marine Waters of British Columbia. <https://waves-vagues.dfo-mpo.gc.ca/Library/348081.pdf>

⁵³ Ibid p. 10.

⁵⁴ Haggarty, D. (2013). Rockfish conservation areas in B.C.: Our current state of knowledge, David Suzuki Foundation, Vancouver, B.C., 84 p. <https://davidssuzuki.org/wp-content/uploads/2017/09/rockfish-conservation-areas-BC-current-state-knowledge.pdf>

⁵⁵ See 2020 map of RCAs and coho openings at <https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/tidal-maree/co-chq/24-co-eng.pdf>; map of parks in Clayoquot Sound at http://bcparks.ca/explore/parkpgs/clayoquot-area-brochure/clayoquotsound_brochure.pdf?v=1594346673475; and http://bcparks.ca/explore/parkpgs/hesquiat_pn/hesquiat_peninsula_areamap.pdf?v=1594346673475. Information on RCAs from Haggarty (2013).

⁵⁶ Ibid.



Student-scientist workshops in Ahousaht with Royal Roads University and University of Washington-Tacoma.
Photo: Audrey Dallimore

tagging and tracking using the Motus Network of telemetry stations. The project is supported by Bird Studies Canada and at the international scale, the monitoring project will track individual western sandpipers from Northern Alaska to California.

In an effort to align CBT funded research and monitoring activities with the vision and mission of the MAB Programme Lima Action Plan 2015-2025 and the United Nations 2030 Agenda for Sustainable Development, the CBT has adopted a sustainable development goal (SDG) lens for prioritizing project funding. Accordingly, the majority of research and monitoring activities identified in Table 4 have received CBT funding for some portion of their work and align closely with the four SDGs associated with biophysical attributes of ecosystem health: SDG 6 clean water; SDG 13 climate action; SDG 14 life below water; and SDG 15 life on land.

The five most frequently cited SDG targets associated with local research activities are the following:

1. Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

- 2. Target 14.1:** By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities including marine debris and nutrient pollution. **Target 14.2:** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.
- 3. Target 15.1:** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
- 4. Target 15.9:** By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

Table 4 Research and monitoring activities within the Clayoquot Sound Biosphere Region between 2010-2020 that are linked to the United Nation Sustainable Development Goals (SDGs).

Researcher/ Knowledge Holders	Research & Monitoring Activities	Linked Sustainable Development Goals
Universities		
U of Washington Tacoma	Monitoring water properties in the inlets of Clayoquot Sound annually in late summer.	SDG 6 Target 6.3 SDG 13 Targets 13.1, 13.2 SDG 14 Targets 14.1, 14.2, 14.3, 14.5
Royal Roads University	Recovering marine sediment cores to interpret environmental changes over the past 10,000 years.	SDG 13 Targets 13.1, 13.2 SDG 14 Targets 14.1, 14.2
McGill University/University of British Columbia	Research on the long-term recovery of ecosystem services following forest harvesting.	SDG 6 Target 6.3 SDG 13 Target 13.3 SDG 15 Targets 15.1, 15.9
University of Victoria	Wolf, dog and human-wildlife interactions; grey whale research.	SDG 14 Target 14.2 SDG 15 Target 15.9
Simon Fraser University	The ecology and co-management of gooseneck barnacle fishery.	SDG 14 Target 14.2
University of British Columbia/Gathering Our Voices Society	Payment for ecosystem services.	SDG 14 Target 14.5
Government Agencies		
Parks Canada (Pacific Rim National Park Reserve, PRNPR)	Monitoring migratory shorebirds, at-sea seabird populations, nesting seabirds, songbirds, freshwater quality, salmonid fry density and escapement, amphibians, bats, forest mammal populations, old-growth forest extent, eelgrass, eelgrass fish communities, eelgrass invertebrates, wolves, human attitudes to wolves, human-wildlife conflict, effectiveness of mitigation, invasive plants, and wildlife use on trails.	SDG 6 Target 6.6 SDG 14 Target 14.5 SDG 15 Targets 15.1, 15.5, 15.8, 15.9
Environment & Climate Change Canada	Monitoring of bird use of Tofino mudflats during migration, examining effects of disturbance, tracking bird movements between beach and mudflats.	SDG 14 Targets 14.1, 14.2, 14.5
BC Ministry of Forests	Established a 1-ha long-term forest monitoring plot within PRNPR as part of a set of plots along the BC coast.	SDG 13 Targets 13.1, 13.3 SDG 15 Targets 15.1, 15.5, 15.8, 15.9

Researcher/ Knowledge Holders	Research & Monitoring Activities	Linked Sustainable Development Goals
Non-Profit Organizations		
Strawberry Isle Marine Research Society	Monitoring Bigg's (transient) killer whales, kelp canopy and structure, sea star wasting disease, Grice Bay habitat mapping, providing emergency marine mammal response, necropsies, and coastal carnivore ecology.	SDG 13 Targets 13.1, 13.3 SDG 14 Targets 14.1, 14.2, 14.3, 14.5
Vancouver Aquarium	Monitoring Steller sea lion abundance and distribution and seasonal diet of sea lions, sea lion disentanglement.	SDG 14 Target 14.1
Cedar Coast Field Station Society	Monitoring juvenile salmon, grey whales, taking oceanographic/eDNA biodiversity measurements.	SDG 13 Target 13.3 SDG 14 Target 14.2
Raincoast Education Society	Monitoring eelgrass, waterfowl, and shorebirds.	SDG 14 Target 14.2 SDG 15 Target 15.5
Central Westcoast Forest Society	Monitoring juvenile salmonids, benthic invertebrates, assessing fisheries habitat, terrain stability, riparian restoration, estuary habitat, and watershed restoration planning, stream monitoring.	SDG 6 Target 6.6 SDG 13 Targets 13.1, 13.3 SDG 14 Target 14.2 SDG 15 Targets 15.1, 15.5, 15.8, 15.9
Tofino Salmon Enhancement Society	Monitoring spawning salmon, water temperature, flow, depth and physical changes in Cypre, Tranquil, Upper Kennedy Rivers, coho stream enumeration.	SDG 14 Target 14.2 SDG 15 Target 15.9
Thornton Creek Enhancement Society	Bedwell River chinook recovery plan, human-bear risk management, juvenile coho survival.	SDG 14 Target 14.2 SDG 15 Target 15.9
Association of Wetland Stewards for Clayoquot and Barkley Sounds	Monitoring amphibian migration across roads, road mortality, effectiveness of culverts and fencing to mitigate road/recreational impacts, breeding populations of amphibians, and breeding habitats.	SDG 6 Target 6.6 SDG 15 Targets 15.1, 15.5, 15.8, 15.9
BC Conservation Foundation: WildSafe BC; Bear Smart Society	Monitoring bears and large carnivores, research on human-wildlife coexistence.	SDG 15 Targets 15.1, 15.9
Clayoquot Biosphere Trust	Monitoring soundscapes to determine baseline sound signatures for critical habitat for species at risk (grey whale, humpback whale, resident northern & southern killer whales), living wage calculation, <i>Vital Signs</i> .	SDG 14 Target 14.5

Researcher/ Knowledge Holders	Research & Monitoring Activities	Linked Sustainable Development Goals
Pacific Wildlife Foundtion	Grey whale society in Clayoquot Sound.	SDG 14 Target 14.2
West Coast Aquatic	<u>Marine ecosystem reference guide</u> , Clayoquot Salmon Roundtable.	SDG 14 Targets 14.2, 14.5
Vancouver Aquarium	Seasonal diet of Steller and California sea lions.	SDG 14 Target 14.2
Ucluelet Aquarium Society	Marine debris and ocean ecosystems, microplastic citizen science survey.	SDG 14 Target 14.1
Surfrider Foundation	Remote clean-up and Ahousaht marine debris survey.	SDG 14 Target 14.1
Uu-a-thluk	Invasive species, Indigenous knowledge, Nuu-chah-nulth language, stewardship, and traditional food.	SDG 15 Targets 15.1, 15.8
Other Knowledge Holders		
Independent naturalists	Observe presence and distribution of birds, invasive plants, introduced marine species, size of salmon runs in creeks; participate in citizen science initiatives; volunteer with local NGOs; remove invasive plants; plastic cleanup on shorelines.	SDG 6 SDG 13 SDG 14 SDG 15
Indigenous educator	Nature integrated into life, learning by observing nature.	SDG 6 SDG 13 SDG 14 SDG 15



CBT board and staff pose with the 17 SDG placards. Photo: Nora Morrison

2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

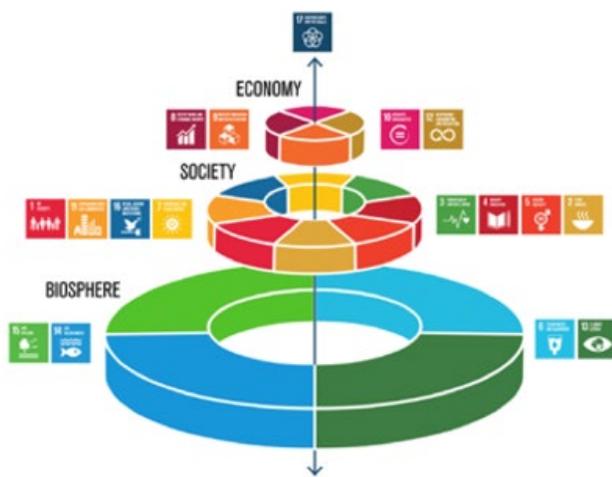
Over the past decade, several strategies employed by the CBT have strengthened its overall governance. These include clarifying board structure and bylaws and other tools of good governance as outlined in 7.1 and 7.2, as well as a rigorous scheduling of strategic/business planning, budgeting, and evaluation (program audits, board self-assessments, etc.). The CBT's biennial *Vital Signs* document compiles data from the region to identify significant trends in a range of areas critical to quality of life. (See page 125.) In turn, these results guide programming, granting, and strategic directions.

Good governance is one of the CBT's core priorities. As noted in the 2020 Strategic Business Plan, "granting and governance are two separate, but intertwined, functional areas of the CBT. Both are strategic and process-oriented, and serve as bridges that connect the broad range of CBT healthy ecosystem and community initiatives. In order for granting and governance to be effective, the CBT requires community input in partnership with the work conducted by the board and staff."⁵⁸

In 2016, the CBT added to its governance strategies alignment with the 17 SDGs adopted by the United Nations General Assembly. These goals mesh with the CBT's efforts to strengthen the development of all citizens, communities, and the ecosystems on which they depend, to ensure a sustainable future.

The CBT's mission statement notes, in part, that the organization will "assist the CSBR community to achieve its vision by providing funding and logistical support for research, education and training initiatives that promote conservation and sustainable development." As such, by its nature, the organization has many partners within the Clayoquot Sound Biosphere, and works within and convenes a variety of networks as is evident throughout this periodic review report.

As an organization that has worked to strengthen its own governance, the CBT also provides opportunities for others in the CSBR to do the same. People who sit on the CBT's board and advisory committees share best practices with other organizations for which they volunteer. As well, the CBT has organized and sponsored workshops on governance practices for local non-profits in an effort to help organizations realize their goals.



The 17 SDGs in relation to the biosphere.⁵⁷

⁵⁷ Folke, C., R. Biggs, A. V. Norström, B. Reyers, and J. Rockström. 2016. Social-ecological resilience and biosphere-based sustainability science. *Ecology and Society* 21(3):41. <http://dx.doi.org/10.5751/ES-08748-210341>, <http://www.ecologyandsociety.org/vol21/iss3/art41/>

⁵⁸ Clayoquot Biosphere Trust. [2019]. 2020 Strategic Business Plan, p. 14.

2.4.8 Please provide some additional information about the interaction between the three zones.

The CBT is guided in its vision by the Nuu-chah-nulth living philosophy of *hišukniš čawaak* (everything is one and interconnected). As such, the organization fundamentally considers the region as a whole, rather than three disparate zones. The biosphere's nomination document had signatories from provincial and federal authorities responsible for the core and buffer areas; from all five First Nations in, and adjacent to, the biosphere boundaries; and from local government authorities from communities in or adjacent to the transition area. Representatives from these authorities and communities still comprise the board of directors today.

It should be noted that from its beginnings, the CBT has been inclusive of the territories of Yuułuʔiłʔatḥ, the Toquaht Nation, and the District of Ucluelet, all of which were signatories to the UNESCO nomination and are participating communities in the CBT's governance and programs even though their communities lie outside of the CSBR boundaries.

2.4.9 Participation of young people.

Youth have been a strategic focus of the CBT since 2008⁵⁹ when "Youth and the Biosphere" was adopted as one of the three core projects of the organization. Youth, as defined by the United Nations, are people 29 and younger. More recently, the CBT's 2020 Strategic Business Plan identified empowering youth as a priority, stating "Like many rural and remote areas, the CSBR has limited resources and opportunities for youth. The CBT supports healthy youth development by empowering youth to gain the necessary skills and capacity to positively impact their lives, the lives of others, and to contribute to community change and sustainability. Education is recognized as a social determinant of health and is a key component of youth empowerment."⁶⁰

Youth support and engagement takes many forms, from financial and logistical support for programs that enrich their lives, to scholarships and grants for educational opportunities, to providing avenues for youth to express their ideas, interests, and needs in their communities and within the Clayoquot Sound

Biosphere. The CBT also administrates the Coastal Family Resource Coalition, a regional multidisciplinary network of health and social service providers that addresses the needs of children, youth, families, and communities within the region, with an overall goal to advocate for, and advance, health promotion efforts in the region.

The Youth and Education Committee is one of the CBT's community-led advisory committees. Every year, this group reviews and supports proposals for projects that will positively impact the lives of youth. Projects vary from year to year, but in 2019 the committee distributed almost \$72,000⁶¹ in grants for projects that included: Youth Leaders of Tomorrow, a leadership initiative for Tla-o-qui-aht First Nations' youth; the Wild Coast Youth Program, which gives youth within the biosphere region the knowledge to travel safely and successfully in the outdoors while learning valuable leadership skills; and a "language nest" program to support the teaching of Indigenous dialects. (Language nests are programs that immerse young people in their First Nations language.⁶²) Funded projects reflect the current needs and interests of youth, and help youth gain greater insight to their connection to the cultural and biological diversity of the Clayoquot Sound region.

Education is recognized as a social determinant of health and is a key component of youth empowerment. Since 2002, the CBT, in partnership with Genus Capital, has provided two \$12,000 education awards annually to graduating high school students to attend post-secondary school one of which is specified for an Indigenous student. The CBT also supports experiential learning for youth by providing annual field trip funding to each school in the biosphere region so that students can have hands-on learning experiences within the Clayoquot Sound area. This "What I Learned About My Biosphere" program is particularly significant for the smaller, remote communities for whom travel within the Clayoquot Sound Biosphere can be logistically challenging and expensive.

In 2011, the CBT sponsored the creation of a credit course, Sustainability Studies, through the local school district. The course for senior high school students (grades 11 and 12) provides instruction on civic engagement, environmental education, and leadership. It also

⁵⁹ Clayoquot Biosphere Trust. (2013). 2014-16 Business Plan. p. 7.

⁶⁰ Clayoquot Biosphere Trust. (2019). 2020 Strategic Business Plan.

⁶¹ Clayoquot Biosphere Trust. (2019). 2019 Annual Report.

⁶² Clayoquot Biosphere Trust. (2018). *Vital Signs*. p. 21.



Delegates at the 2019 MAB Youth forum. Photo: Karl Png

gives students ways to connect to their homes in the Clayoquot Sound Biosphere and encourages them to think about sustainability. As much as possible, learning is active and hands-on and has included work on a long-term marine debris study; visits to aquaculture operations, a main industry in the biosphere region; and opportunities to learn about local food production, including work in community gardens. More recently, the West Coast NEST surveyed local employers to ascertain skills they would like their employees to have, and then worked with the local high school to develop an outdoor education program, which alongside academic courses, builds outdoor recreation and wilderness safety skills.

The CBT provides many opportunities for youth to express their ideas and participate in their communities and youth-oriented/youth-led activities within the biosphere. In 2014, for instance, the Generation Y-Not project helped youth develop leadership skills, and provided opportunities for them to learn about the biosphere region and directly engage with their communities. Youth-led projects included a “Biosphere Youth” video workshop and a digital story workshop. In 2019, “Future Launch” grants supported bold, youth-led projects that addressed urgent community priorities. This included the program, A Heroic Journey, an outdoor-based program for grieving youth; and a youth food project that provided youth with education on cooking, nutrition, and healthy living practices.

The CBT also actively solicits the input of youth through a biennial survey on health and wellness. (The results are presented in our biennial *Vital Signs* report. For more on *Vital Signs*, see page 125.) Although the young people within the biosphere region have ready access to nature and live in close-knit communities, they can face a unique set of challenges, including a lack of programming, a lack of transportation, and prohibitive costs as barriers for engaging in recreation and personal development programs. By continually engaging youth to learn about their challenges, the CBT can better support them and allow them to give input on decisions that matter to them.

As an example, the Connecting Students to Wildlife program, initiated in the 2015/16 school year, gave 108 students from five schools in the CSBR the opportunity to develop the skills to identify and track animals, to act safely around wildlife, and to prevent negative human-wildlife interactions.⁶³ Living with wildlife is a reality in the CSBR—it is not uncommon for bears, wolves, cougars, as well as smaller mammals such as deer and raccoons, to travel through communities. This program proactively addressed how residents and visitors can live with wildlife in ways that keep humans and animals safe. A further goal of the project was to introduce students to mentors and to introduce them to

⁶³ Clayoquot Biosphere Trust. (2016). *Vital Signs*. p. 12.

employment opportunities that they might not be aware of and could consider for the future. Students in the program attended a regional wildlife science symposium to share their experiences and meet biologists and others working with wildlife and on human-wildlife interactions.

In 2019, the CBT co-hosted a Youth Vital Conversation at which approximately 50 teens from throughout the CSBR came together to discuss how to make our region a better place to grow up. They shared thoughts on quality education, personal and professional development, mental health, substance use, transportation, recreational programming, and many other topics.⁶⁴ Youth were also encouraged to participate in a community forum on sustainable tourism in Tofino to give them the opportunity to express how the tourism economy intersects with their lives.⁶⁵

The CBT encourages youth to demonstrate leadership, and supports them with learning opportunities so that they can gain experience and skills, and build relationships as they prepare for the future. The CBT support youth leadership and decision-making by inviting youth to participate on the CBT Board of Directors and advisory granting committees. And since 2011, the CBT has hired an annual summer student giving youth a direct way to engage with the Clayoquot Sound Biosphere and the work of the CBT. This has led to opportunities to engage with the broader biosphere reserve network. In 2017, for instance, an Indigenous summer student travelled to the Manicouagan-Uapishka Biosphere Reserve in Quebec for a co-building sustainability and reconciliation conference.

The CBT participates in national and international conversations about youth and the biosphere. The current office and communications coordinator is a member of the Canadian Commission for UNESCO Youth Advisory Group (CCUYAG) and attended the 2nd MAB youth forum in the Changbaishan Mountain Biosphere Reserve in China in 2019 where he joined 125 other youth delegates from biosphere reserves in 82 countries. At the conclusion of this meeting, he helped draft several recommendations for youth involvement,⁶⁶ and created and hosted a webinar "Youth Engagement in Canadian Biosphere Region" for staff, board, and youth involved in Canadian biosphere reserves.

⁶⁴ Clayoquot Biosphere Trust. (2019). Annual Report. <https://clayoquotbiosphere.org/files/file/5f18bd83cd4e7/Youth-Vital-Conversation-Data-Analysis.pdf>

⁶⁵ Ibid.

⁶⁶ Robinson, C. (2019). Reflecting on the 2019 Youth Forum. <https://clayoquotbiosphere.org/files/file/5f1b822b367b7/Reflecting-on-the-2019MAB-Youth-Forum-1-2.pdf>



CBT director Hannah Nicholls. Photo: Nora Morrison

A Closer Look Youth Representation in Governance

Despite the fact that the biosphere region is quite youthful—30% of the region’s population is between the ages of 15 and 34⁶⁷—youth were not well represented on the CBT board for the organization’s first decade or so. In 2013, the board recognized this and began to make a concerted effort to encourage youth participation at the governance level. A 2013 call for interest for an at-large director made a point of encouraging youth to apply and this call was answered by Hannah Nicholls who had just turned 25 at the time. Hannah was fairly new to the region and was looking to get involved. She also has some knowledge of biosphere reserves, having grown up near the Cascade Head Biosphere Reserve in Oregon. “I thought joining the board might be a great way to know the community better and to start making Tofino my home,” she says. Hannah was successful in her application and in 2021 will complete the second of two four-year terms with the CBT. During this time, she served as at-large director, participated on the investment committee, and in 2020 became treasurer for the organization and part of its executive committee.

In 2013, Mariah Charleson, also in her early 20s, was appointed by the Hesquiaht First Nation to be the community’s representative to the board. Encouraged by this youth engagement, the board made a specific effort to recruit youth in 2015 with a call for youth to fill an open at-large seat. Since that time, the board has continued to attract youth and have had one or two (out of 10) younger board members at any one time. Since 2014, several youths have served as alternate directors.

Having youth on the board is beneficial for both parties. “I provided a more youthful voice on the board,” explains Hannah, adding that the board was also

⁶⁷ Clayoquot Biosphere Trust. [2018]. *Vital Signs*. p. 3.

lacking a voice from someone working directly in tourism. “Almost everyone who comes to Tofino gets their first job in tourism,” she says, “and if the experience is positive, they may stay and make this place their home.” She knew what people needed to stay, but she also knew about the difficulties and what caused people to leave. “Working in tourism is hard,” she says, “it’s a drain and it impacts the employees and the town.”

Being on the board was eye-opening for Hannah. “I learned a long list of things,” she says, including gaining an understanding of how a board should run. “Our board operates with a lot of professionalism and dignity; it’s very equitable,” she says. Hannah has used these skills as she’s joined other boards and help friends establish their own non-profit organizations. “I understand what has to be done to make an effective organization,” she says, “and how to consider all of the facets of the community when making decisions.”

As more youth are engaged with the CBT—as part of its board, a member of an advisory committee, or even as staff—the understanding of the Clayoquot Sound Biosphere and the CBT continues to grow. “I think the name recognition is going up a lot,” says Hannah. “When I joined the board, my friends had little understanding of the organization, but it’s building. And the board does seem more youthful, or at least more youthfully influenced now as we have more youth participation.”



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

II.3 Integrate biosphere reserves into regional planning

III.1 Improve knowledge of the interactions between humans and the biosphere

III.3 Improve education, public awareness and involvement



Culturally modified cedar tree. Photo: Cayley Webber

3. Ecosystem Services

3.1 If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

Four ecosystem services (ES) studies were completed in the CSBR within the last decade in which a number of different value systems were either used or compared, to determine community benefits.^{68 69 70 71}

We discuss these studies later in this section, and in section 3.4 we highlight recent research on riparian and upland forests in the Kennedy Lake watershed using Indigenous knowledge and cultural values to determine nine biophysical forest ES indicators.

However, more discussion is needed on how we reconcile the different value measures of a Nuu-chah-nulth cultural worldview of local benefits—as compared to value measures of an economic or ecological worldview of benefits—and value measures of other local community members.

As one example of how the CSBR might achieve this goal, in 2019 the CBT contributed to the concept paper *Assessing Ecosystem Services in UNESCO Biosphere*

Reserves, which focused on the need for local communities to identify the ES that most benefit them in their biosphere region.⁷² Given the importance of wild salmon and its core conservation priority for the Clayoquot Salmon Roundtable, the CBT provided an ES assessment framework based on the social and ecological values of wild salmon. The metrics integrated the United Nation's SDGs with Nature's Contributions to People and the Millennium Ecosystem Assessment framework.

To address the broader question of what ES *could* be monitored in the future, based on existing and ongoing research programs and local observations, we asked 12 local researchers and eight local knowledge holders: (1) which ecosystems they monitored, (2) what ES they addressed with their research/observations, and (3) to identify the beneficiaries of the ES related to the ecosystems they monitored.

Figure 5 illustrates the broad types of terrestrial and marine ecosystems currently being monitored by researchers within the CSBR which could potentially contribute to an ES assessment in the future, whereas Figure 6 identifies the range of ES (provisioning, regulation, habitat, and cultural) local researchers perceive these ecosystems are contributing.

⁶⁸ Levine, J., Muthukrishna, M., Chan, K.M.A., and Satterfield, T. (2016). Sea otters, social justice, and ecosystem-service perceptions in Clayoquot Sound, Canada, *Conservation Biology*, Volume 31, No. 2, 343–352.

⁶⁹ Martone, R., Naidoo, R., Coyle, T., Stelzer, B., and Chan, KMA. (2020). Characterizing tourism benefits associated with top-predator conservation in coastal British Columbia, in *Aquatic Conservation: Marine Freshwater Ecosystems* 30:1208-1219.

⁷⁰ Guerry, A.D., et al. (2012): Modeling benefits from nature: using ecosystem services to inform coastal and marine spatial planning, *International Journal of Biodiversity Science, Ecosystem Services & Management*: <http://dx.doi.org/10.1080/21513732.2011.647835>

⁷¹ Sutherland, I. J., Bennett, E. M., Gergel, S. E., (2016). Recovery trends for multiple ecosystem services reveal non-linear responses and long-term tradeoffs from temperate forest harvesting, *Forest Ecology and Management* 374: 61-70.

⁷² Vasseur, L. and Siron, R. (2019). *Assessing Ecosystem Services in UNESCO Biosphere Reserves*, concept paper prepared for Canadian Commission for UNESCO, Ottawa, Canada.

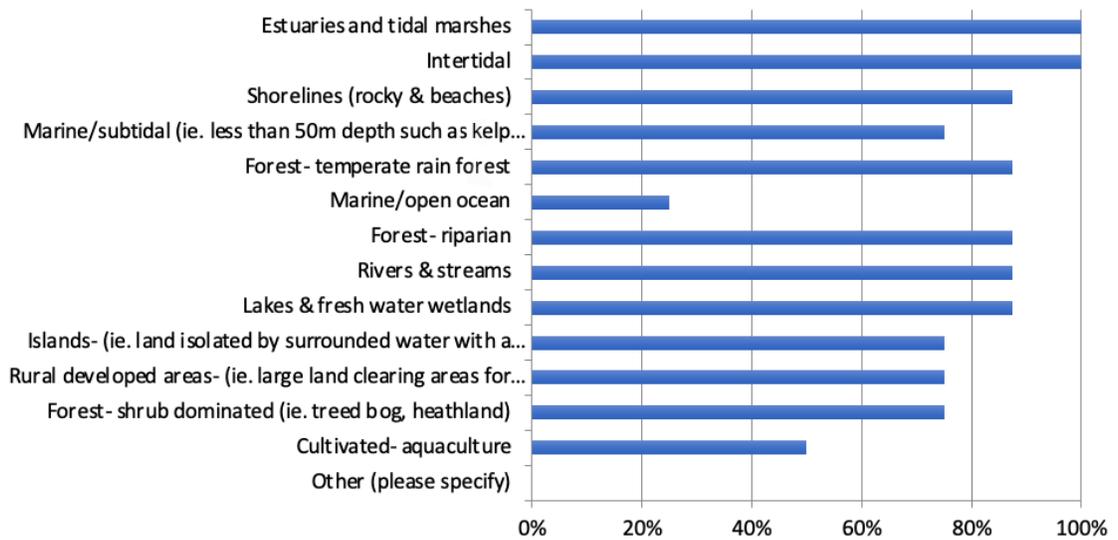


Figure 5 Researchers selected the ecosystems that they monitor from a list of ecosystem types that occur in the CSBR region.

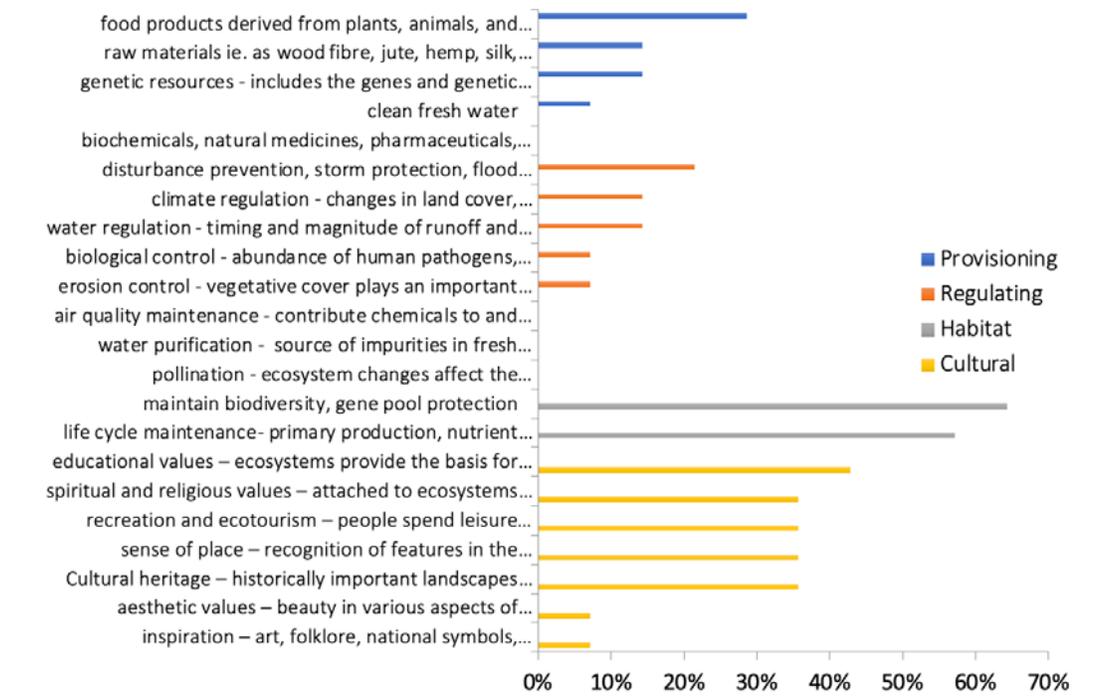


Figure 6 Ecosystem services selected from a list from the Millennium Assessment⁷³ by researchers who monitor ecosystems within the CSBR (N=12).

As mentioned above, more discussion is required to reconcile the wide range of different value preferences within the CSBR before ES benefits can be appropriately assessed. For example, in our survey of local researchers, the three beneficiaries listed most often were local communities/ all people living in the region (43%), local Nuuchahnulth nations (36%), and visitors (36%).

⁷³ Millennium Ecosystem Assessment. (2005). <https://www.millenniumassessment.org/en/About.html>

Two researchers who study forests identified “all people globally” as beneficiaries of the ES related to their research because of the role trees play in carbon storage. Some respondents identified economic sectors that benefit, including ecotourism (wildlife viewing, whale watching, bird watching, Ucluelet Aquarium), aquaculture, commercial fishing, sports fishing, timber industry, and the botanical floral industry. One respondent did not identify who benefits and explained there is a challenge communicating ES related to research that represents the natural ecosystem in the area over 10,000 years.

The identification of ES benefits needs to be further contextualized within the conservation actions that lead to both positive and negative impacts for different groups, and within the different cultural contexts in which these groups frame their value measures. For example, the reintroduction of sea otters in the CSBR may be considered an important contribution to the conservation of kelp beds and associated species. However, commercial and recreational fishers, and First Nations people who depend on invertebrates for their livelihood and food source, have disproportionately experienced the costs of sea otter population increases, while wildlife tourism operators have benefited significantly.^{74 75}

A different ES assessment approach in the CSBR used spatial modeling to identify three marine use management scenarios, depending on different value preferences: (1) no change, (2) conservation, and (3) industry expansion. The idea in this example is to use the modeling process to generate dialogue about the gains and losses in prioritizing different ecosystem services and their beneficiaries. Understanding these trade-offs prior to implementing different conservation strategies can better inform planning processes of the complex balancing act between various management approaches and the potential impacts on the community's economy, ecology, and social well-being.⁷⁶

3.2 Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

The ES assessment framework has not been formally adopted as an evaluation tool among the organizations conducting the most extensive research and monitoring activities within the CSBR. However, there are advancements in new research approaches in Clayoquot Sound in which cultural values are embedded within the indicators and evaluation framework and this broader approach to ES assessment is discussed in sections 3.3 and 3.4. That said, there is a growing interest in evaluating ES and there will be more opportunities to discuss this topic further in the upcoming Clayoquot Sound Knowledge and Research Symposium planned for 2021.

3.3 Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

The most recent and detailed work, in terms of linking biodiversity to ES, was conducted by Sutherland et al.⁷⁷ We describe the significance of this work for the management of Indigenous protected and conserved areas (IPCA) in section 3.4. With respect to an updated description of biodiversity, Sutherland et. al. developed a set of biophysical indicators for estimating ES capacity and examined how it changes with forest succession. The researchers measured forest stand biophysical attributes and then used them to calculate indicators for estimating 13 ecosystem services in the Kennedy Lake watershed based on the ES framework categories: habitat services, regulating services, cultural, and provisioning ES (Figure 6).

⁷⁴ Levine, J., Muthukrishna, M., Chan, K.M.A., and Satterfield, T. (2016). Sea otters, social justice, and ecosystem-service perceptions in Clayoquot Sound, Canada, *Conservation Biology*, Volume 31, No. 2, 343–352.

⁷⁵ Martone, R., Naidoo, R., Coyle, T., Stelzer, B., and Chan, KMA. (2020). Characterizing tourism benefits associated with top-predator conservation in coastal British Columbia, in *Aquatic Conservation: Marine Freshwater Ecosystems* 30:1208-1219.

⁷⁶ Guerry, A.D., et al. (2012): Modeling benefits from nature: using ecosystem services to inform coastal and marine spatial planning, *International Journal of Biodiversity Science, Ecosystem Services & Management*: <http://dx.doi.org/10.1080/21513732.2011.647835>

⁷⁷ Sutherland, I. J., Bennett, E. M., Gergel, S. E., (2016). Recovery trends for multiple ecosystem services reveal non-linear responses and long-term tradeoffs from temperate forest harvesting, *Forest Ecology and Management* 374: 61-70.

The research also incorporated the traditional knowledge of Joe Martin, a master canoe carver, who identified attributes of large cedar trees, which influence their cultural use for totem poles, canoes, and bark stripping.

Varying site conditions affect ES and ES recovery after logging. These include site productivity, disturbance regimes, and topographic position. For example, forest stands of differing ages, species composition, or tree density may provide different amounts of carbon storage, habitat, and wild edible foods.^{78 79 80} Sutherland was able to develop a relatively precise set of indicators for collecting data on 10 ES through fieldwork comparing rich riparian and less rich upland sites (e.g., directly weighing ES provided by salal) and interviewing a First Nation carver to understand size and qualities of cedar wood needed for traditional use (e.g., large cedars used for building canoes, carving ceremonial poles, stripping cedar bark for use in weaving).

While it is clear that old-growth riparian forests provide significantly more ES than old growth cedar forests growing in the upland regions do, each forest stand provides a distinct bundle of ES based on their unique forest age and structure. The significant difference in the provision of ES between different forest stands highlights the importance of developing value preferences and trade-offs between the distinct ES bundles prior to harvesting. However, land management objectives and measurable criteria and indicators needed for responsible stewardship of these cultural resources are lacking. Overall, we need legislated land management objectives framed around providing a diverse set of ES rather than solely providing timber.

3.4 Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

ES frameworks⁸¹ are rapidly evolving to include multiple categories of human benefits.⁸² More recent literature on assessing ES in UNESCO biosphere reserves recognizes the importance of cultural values as well as the cultural context in which values are prioritized.^{83 84 85} However, broadening the view of ES assessment frameworks to include more holistic value systems also requires more nuanced assessment tools to differentiate a diversity of benefit streams that are culturally appropriate while not necessarily based on monetary values, and therefore, not comparative in narrowly defined economic terms.

Within the context of the Clayoquot Sound Biosphere designation, the contemporary land-use visions of the Nuu-chah-nulth people, which are evolving into co-management plans, are inextricably linked with their cultural values and interconnected relationships with the land and waters in their traditional territories. For example, the Tla-o-qui-aht Tribal Parks land relationship plan emphasizes the cultural significance of physical-spiritual human benefits, which speaks to a more holistic cultural context in which human well-being is directly linked with the health and wellness of local ecosystems and therefore all living beings must be respected equally. These cultural values are reflected in the following interview with a Tla-o-qui-aht person:

⁷⁸ Trofymow, J., Stinson, G., Kurz, W., (2008). Derivation of a spatially explicit 86-year retrospective carbon budget for a landscape undergoing conversion from old-growth to managed forests on Vancouver Island, BC. *For. Ecol. Manage.* 256 (10), 1677–1691.

⁷⁹ Clason, A.J., Lindgren, P.M.F., Sullivan, T.P., (2008). Comparison of potential non-timber forest products in intensively managed young stands and mature/old-growth forests in south-central British Columbia. *For. Ecol. Manage.* 256 (11), 1897–1909.

⁸⁰ Pollock, M.M., Beechie, T.J., Imaki, H., (2012). Using reference conditions in ecosystem restoration: an example for riparian conifer forests in the Pacific Northwest. *Ecosphere* 3 (11), art98.

⁸¹ Millennium Ecosystem Assessment. (2005). <https://www.millenniumassessment.org/en/index.html> The MEA defines ecosystem services as “the benefits people obtain from ecosystems. These include provisioning, regulating, and cultural services that directly affect people and supporting services needed to maintain the other services” (p. 57).

⁸² Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., et al., 2015. The IPBES conceptual framework—connecting nature and people. *Curr. Opin. Environ. Sustain.* 14, 1–16.

⁸³ Martone, R., Naidoo, R., Coyle, T., Stelzer, B., and Chan, K.M.A. (2020). Characterizing tourism benefits associated with top-predator conservation in coastal British Columbia, in *Aquatic Conservation: Marine Freshwater Ecosystems* 30:1208-1219.

⁸⁴ Levine, J., Muthukrishna, M., Chan, K.M.A., and Satterfield, T. (2016). Sea otters, social justice, and ecosystem-service perceptions in Clayoquot Sound, Canada, *Conservation Biology*, Volume 31, No. 2, 343–352

⁸⁵ Vasseur, L. and Siron, R. (2019). Assessing Ecosystem Services in UNESCO Biosphere Reserves, concept paper prepared for Canadian Commission for UNESCO, Ottawa, Canada.

...[when I] talk about what the intention of Tribal Parks is with the Elders, they tell me that from what it sounds like, what I'm talking about from a Nuu-cha-nulth perspective, is *teechmis-ochkin*. Teechmis-ochkin is about what sustains us physically and what sustains us spiritually. When I say spiritually, I mean all of the intangible elements of self, including our intellect, our emotions, our ideas about spirituality, and maybe even our sense of humour. [S]o it's what sustains us spiritually and also what sustains us physically. So teechmis-ochkin is sort of the intercept of that physical-spiritual existence. So in that vein of what Tribal Parks is, it's a modern day application of traditional governance values, processes, and structures. Including values like *hishuk ish tsa'walk*, which is everything is one and everything is interconnected.⁸⁶

The Cultural and Ecological Context of *Hishuk ish tsa'walk*

The Nuu-chah-nulth principle *hishuk ish tsa'walk* (everything is one) reflects the cultural context in which Nuu-chah-nulth people's relationships with all beings in the natural world are respected and held sacred. As explained by the Tla-o-qui-aht master canoe carver, Joe Martin, the Nuu-chah-nulth values are passed down from generation to generation as a practice of teaching how to be respectful human beings, recognizing that in order for humans to receive benefits from the surrounding old growth temperate rainforest ecosystem, the benefits for other beings must also be respected.

My Dad, when we were looking for suitable tree to make a canoe, told me that one has to be very careful when finding the proper tree. I was not allowed to cut a tree before making sure that there was no eagle's nest within a distance of 100 meters. Or, that there was no wolf's den, or a salmon stream. It was against the law for us to disturb the creatures that the Creator has put here for us. If we did, then it would be the Creator himself who would punish your whole family. That is why it is important to be aware of all of our surroundings. Those are the teachings of my father and grandfather. — Joe Martin, master carver, Tla-o-qui-aht

First Nations, October 2010⁸⁷

Over 95% of the Clayoquot Sound Biosphere is temperate rainforest, primarily with coastal western hemlock (85%) and mountain hemlock (12%) forest types, characteristic of the coastal western hemlock biogeoclimatic zone.⁸⁸ Out of this expansive rainforest ecosystem, it is estimated that over 55% of these forest stands are old growth (>250 years).⁸⁹

Temperate rainforest ecosystem structures, and functions, are driven by a forest succession regime important for biodiversity, known as "gap dynamics." This is a pattern by which the forest stand replaces itself one tree at a time, depending on when a gap is created by the death of a single tree and the understory tree(s) that grow to fill-in the canopy gap. As a result, temperate forest ecosystems are highly complex, consisting of multiple layers of understory, high canopies, large woody debris, and contain some of the oldest trees in the world. Some old growth forest stands on the west coast of Vancouver Island are over 6,000 years old, meaning they have

⁸⁶ Murray, G. and King, L. (2012). First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve, *Human Ecology* 40: 385-395, p. 391.

⁸⁷ Bunsha, Dionne. (2012). *Two Approaches to Ecosystem Based Management in British Columbia*, MA Project, Simon Fraser University, Resource and Environmental Management Program.

⁸⁸ See <https://www.for.gov.bc.ca/hre/becweb/>

⁸⁹ Nature Conservancy of Canada. (2018). Clayoquot Sound Natural Area Conservation Plan (unpublished report).



Joe Martin, master carver, Tla-o-qui-aht First Nations, teaching about the cultural values of cedar trees.
Photo: West Coast NEST

not been disturbed by fire⁹⁰ or stand-replacing windthrow events⁹¹ for that duration. Researchers have found individual trees to be older than 1,400 years and with a diameter of 15 metres.⁹² The complexity of old growth forest structures (e.g., old trees, multiple layers, canopy height, woody debris) creates numerous habitats and hence contains high biodiversity.

Because of the long intervals between disturbances, most stands are dominated by old trees of species that are among the largest and most long-lived in the world (e.g., western redcedar and yellow-cedar).⁹³ Old-growth forests in Clayoquot Sound can represent true all-aged stands. For instance, in one stand containing amabilis fir, western red cedar, yellow-cedar, and western hemlock, ages were distributed continuously from young saplings to trees almost 1,000 years old. These forests are structurally complex and provide microhabitats for a great variety of plants, animals, fungi, and micro-organisms.⁹⁴

Broadening Ecosystem Services Assessments to Include Nuu-chah-nulth Cultural Values

Recognizing the globally significant shift in values and an increased level of protection for culturally and ecologically important areas in Clayoquot Sound in the late 1990s, recent research completed within the CSBR has focused on the specific biophysical attributes of forests that support culturally important harvesting and processing practices.^{95 96} For example, Sutherland et al. compared the bundles of ecosystem services provided by old growth and second growth forests within productive riparian and upland forests within the Tla-o-qui-aht Tribal Park and Kennedy Lake watershed. They consulted master carver Joe Martin to determine the indicators for cedar trees suitable for First Nation traditional uses and referenced a number of sources of traditional knowledge to determine a range of harvesting practices that align with Tla-o-qui-aht cultural values while servicing numerous local beneficiaries (Table 5).⁹⁷

⁹⁰ Gavin, D.G., Brubaker, L. B., and Lertzman, K.P. (2003). Holocene fire history of a coastal temperate rainforest based on soil charcoal radiocarbon dates. *Ecology* 84:186-201.

⁹¹ Stand-replacing wind disturbances have been rare in Clayoquot Sound watersheds sheltered from southeast storm winds in the past 100 years based on research by Pearson, A.F. 2000. Natural disturbance patterns in a coastal temperate rain forest watershed, Clayoquot Sound, British Columbia. Ph.D. thesis. University of Washington, Seattle.

⁹² Austin, M.A., Buffet, D.A., Nicolson, D.J., Scudder, G.G.E., and Stevens, V. (eds.). (2008). Taking Nature's Pulse: The Status of Biodiversity in British Columbia. Biodiversity BC. Victoria, BC. 268pp.

⁹³ Pojar, J. & MacKinnon, A. (editors). (1994). Plants of Coastal British Columbia. Lone Pine Publishing, Edmonton, Alta. (see p. 16).

⁹⁴ Clayoquot Sound Scientific Panel. (1995). Sustainable Ecosystem Management in Clayoquot Sound; Planning and Practices. p. 23.

⁹⁵ Sutherland, Ira. (2015). Long-Term Recovery of Ecosystem Services Following Forest Harvest in Coastal Temperate Rainforests of Vancouver Island, British Columbia, Canada, Masters Thesis, McGill University, Montreal, Canada.

⁹⁶ Sutherland, Ira J., Bennett, Elena M., Gergel, Sarah E., (2016). Recovery trends for multiple ecosystem services reveal non-linear responses and long-term tradeoffs from temperate forest harvesting, *Forest Ecology and Management* 374: 61-70.

⁹⁷ Sutherland, Ira J., Gergel, Sarah E., Bennett, Elena M., (2016). Seeing the forest for its multiple ecosystem services: Indicators for cultural services in heterogeneous forests, *Ecological Indicators* 71:123-133.

The following examples express the link between cultural values, ecosystem services, and beneficiaries.

- Cedar trees are known as the “tree of life” to coastal BC First Nations. Cedar bark is traditionally stripped from trees then woven into baskets, clothing, hats, and crafts. Large cedar trees are used for house construction and carving ceremonial totem poles. The finest quality red cedar logs are carved out to build ocean-going canoes.
- Endangered species (marbled murrelet) and species of concern (Pacific salmon), have emblematic and cultural value for a wide range of people.
- Above-ground carbon storage benefits people locally and globally by regulating the global climate.
- The timber industry generates primary jobs for local rural communities as well as taxes for the government.
- Salal⁹⁸ harvesting from the forest understory benefits local harvesters who tend to be youth or migrant workers due to the relatively hard physical labour and seasonality of salal collecting.
- Wild edible berries are seasonally abundant food sources traditionally harvested in large volumes by the BC coastal First Nations and they enhance satisfaction of forest visits for tourists and hikers.
- Coarse woody debris stores carbon and nutrients and provides critical habitat for amphibians and small mammals on land, and for salmonids within river systems.
- Dead trees provide habitat for numerous wildlife species including emblematic species such as raptors and cavity nesting birds.

Table 5 Indicators of Culturally Informed Ecosystem Services

Forest Stand Attribute	Indicator
Coarse woody debris	Instream woody debris volume Coarse woody debris biomass
Tree stand	Dead tree biomass Live tree biomass Wood volume by species Potential nesting sites (marbled murrelet) Trees suitable for canoe carving
Understory plants	Percent cover of berry producing plants Salal greenery of harvestable quality

⁹⁸ Salal (*Gaultheria shallon*), a very common understory plant in the coastal temperate rainforest, is used in the floral industry.

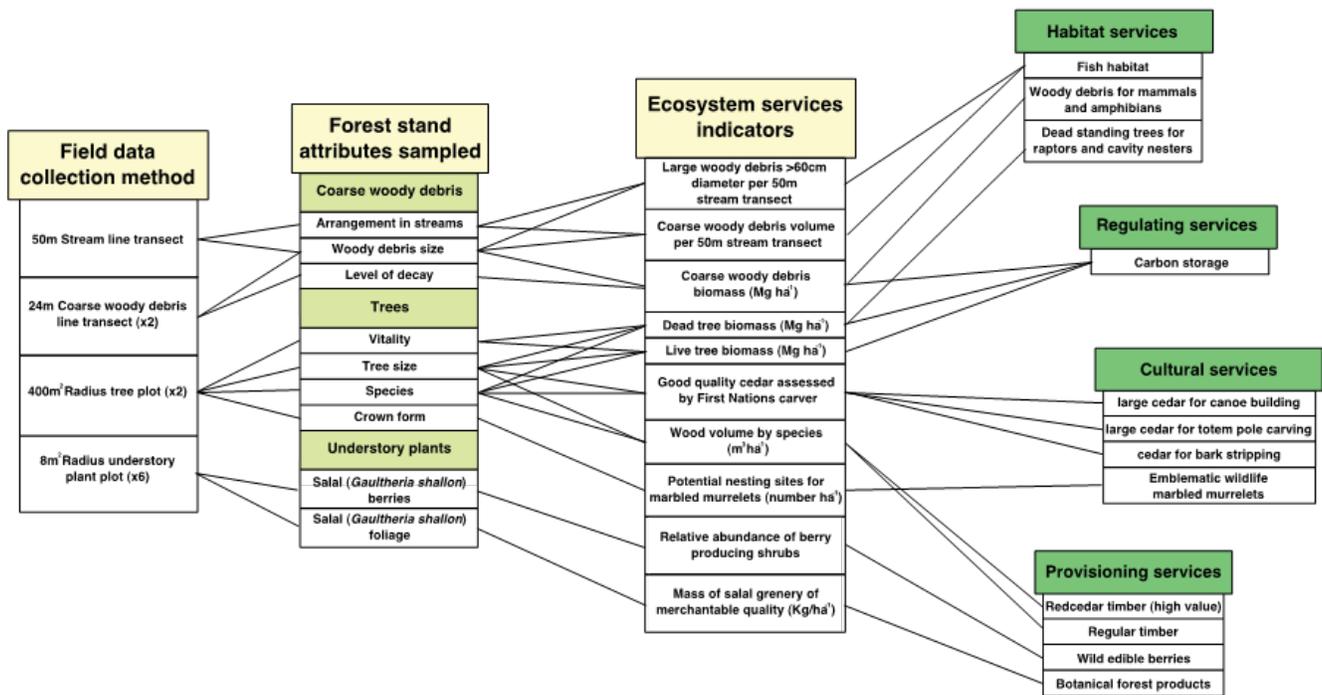


Figure 7. The relationship between field sample plots, forest attributes, ecosystem service indicators, and ecosystem services.⁹⁹

In Figure 7, Sutherland illustrates their methodology for estimating 13 ecosystem services within the Kennedy Lake watershed rainforest ecosystems delineated by: (1) habitat services, (2) regulating services, (3) provisioning services, and (4) cultural services ecosystem.

⁹⁹ Sutherland, Ira. (2015). Long-Term Recovery of Ecosystem Services Following Forest Harvest in Coastal Temperate Rainforests of Vancouver Island, British Columbia, Canada, Masters Thesis, McGill University, Montreal, Canada.

4. The Conservation Function

4.1 Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

There have been significant changes to Clayoquot Sound Biosphere ecosystems in recent years in both positive and negative ways.

For this question we gathered information from a number of sources: (1) terrestrial and marine ecosystem databases for Clayoquot Sound, (2) published and unpublished research and monitoring reports, (3) researchers' responses to survey questions about changes in habitat quality, and (4) naturalists' responses to interview questions about changes they have noted over the past 10 years. The following is a synthesis of the changes identified/discussed by these sources for each main ecosystem type.

Coastal Temperate Rainforest

Forest type and cover in the Clayoquot Sound Biosphere is shown in Figure 8.

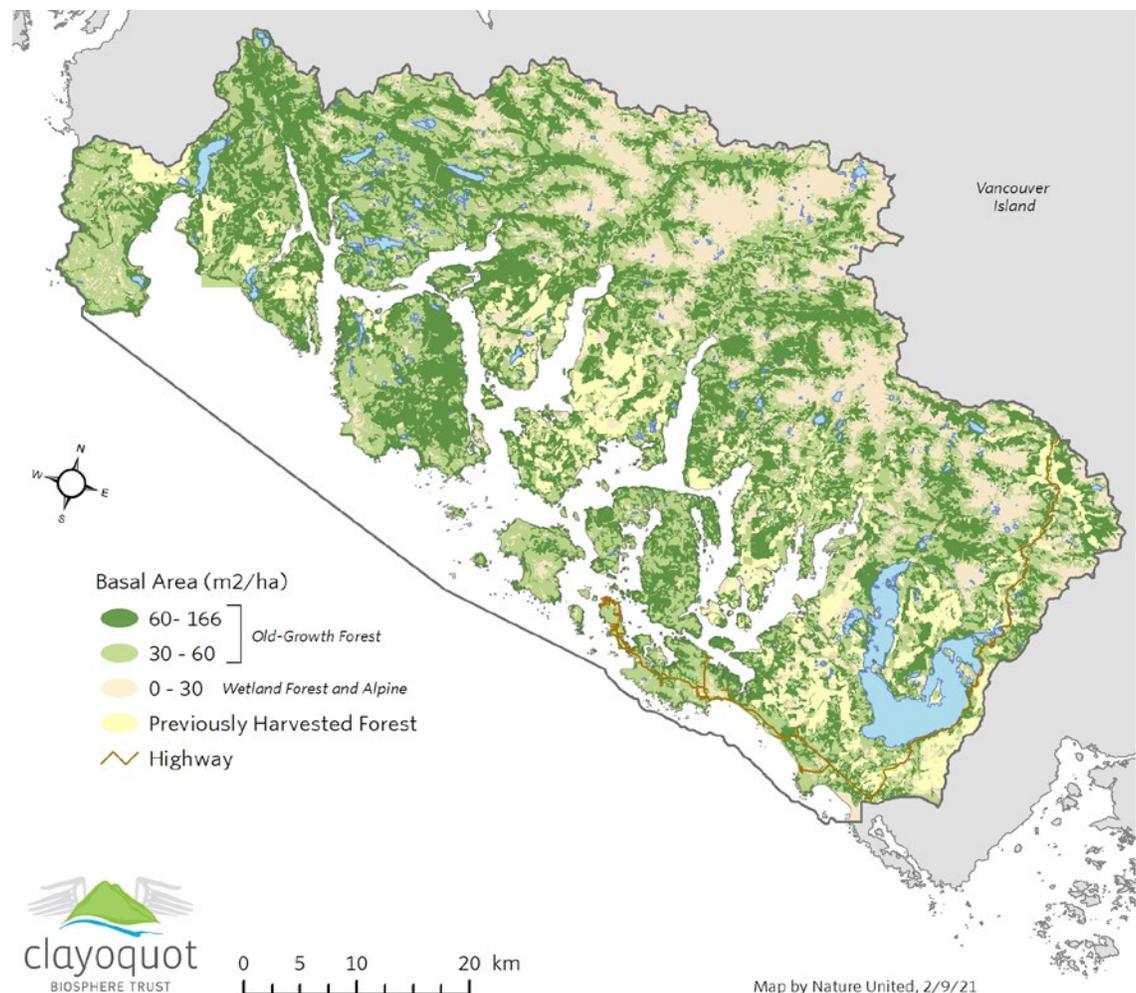


Figure 8 Forest Cover in the Clayoquot Sound Biosphere, 2020

Changes Due to Logging

Between 2010 and 2017, a total of 1441 ha of old growth forest (forests >241 years) and 55 ha of second growth (<100 years) were logged within 95 cutblocks spread across the transition zone of Clayoquot Sound.¹⁰⁰ Cutblocks happened mainly in watersheds where industrial logging had occurred over the last 80 years. All of the large intact watersheds remained undisturbed. The rate of cut within Clayoquot Sound was much lower than surrounding areas and structural elements were retained to help sustain stand level biodiversity. The CSBR continues to have the largest area of old growth rainforest remaining on Vancouver Island.^{101 102 103}

At a broad scale across all of Clayoquot Sound's forests (252,270 ha), less than 1% of the ecosystem was altered during the last 10 years, however, within individual watersheds, recent logging has had a substantial impact on wildlife habitat and species of cultural and economic importance. More than 5% of the forest in the Kennedy Flats was logged over the past 10 years, including 99 ha of old growth, which was rare within this historically logged watershed. Researchers saw an immediate decline in the breeding population of northern red-legged frogs at Swan Lake in the Kennedy Flats after 64 ha of its adjacent forest habitat was cut in 2016.¹⁰⁴

This happened despite protection provided by an 18-ha wildlife habitat area surrounding the frogs' breeding site, including a 30-metre buffer on the cutblock side of the lake. Researchers will continue monitoring to see whether the breeding population of northern red-legged frogs will recover to its former size once the forest regrows enough to shade the forest floor again.

Longer-term effects of logging on wildlife habitat and species of cultural and economic importance became apparent when the ecosystem services provided by second growth (30–40 years) versus old growth (>250 years) stands were compared in the Kennedy Flats.¹⁰⁵ Old growth forests had three times higher carbon storage, nine times higher wood volume, and 18 times higher canopy habitat services (i.e., potential nesting platforms for marbled murrelets). Old growth cedar trees with potential for First Nations traditional uses were absent in second growth stands. Further, the closed canopy forest structure of second growth precludes direct sunlight and the development of understory vegetation in second growth for approximately 12 to 140 years after logging. Without understory vegetation, there is no foraging habitat for wildlife such as deer and bears, and no nesting habitat for many songbirds. This condition persists over most of the Kennedy Flats Watershed.¹⁰⁶ The lack of habitat is the main reason why deer and, consequently, their predators—wolves and cougars—have become more abundant in the nearby town of Ucluelet where forage is relatively plentiful.¹⁰⁷ The attraction of wildlife to town has led to a higher frequency of human-wildlife conflict and the ultimate destruction of many large carnivores.

Changes in Forest Due to Restoration

The poor habitat provided by closed canopy forest structure has led some researchers to propose restoration steps that would cause the forests to acquire older structural features faster and become more diverse than they would under the longer time period required for natural forest succession.¹⁰⁸ From 2011 to 2014, the Central Westcoast Forest Society created old growth characteristics in several sections of riparian

¹⁰⁰ Cutblocks averaged 22 ha in size (range: 1.6 to 126 ha). B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. RESULTS – Openings sww layer queried in iMap BC.

¹⁰¹ As of 2019, over 80% of the forested land base in Clayoquot Sound was greater than 141 years of age with 59% exceeding 251 years.

¹⁰² Greer, D. And K. Kucey. 1997. Where the forest meets the sea: the evolution of place and people. In *Seeing the ocean through the trees: a conservation-based development strategy for Clayoquot Sound*. Ecotrust Canada. 104 pp.

¹⁰³ Gorley, A. And G. Merkel. 2020. A new future for old forests: A strategic review of how British Columbia manages for old forests within its ancient ecosystems. Report to Minister of Forests, Lands, Natural Resource Operations and Rural Development. <https://engage.gov.bc.ca/app/uploads/sites/563/2020/09/STRATEGIC-REVIEW-20200430.pdf>

¹⁰⁴ The frog breeding population declined steadily each year after logging to become half its original size by 2019. Beasley, B. (2020). Association of Wetland Stewards for Clayoquot and Barkley Sounds grant report to Clayoquot Biosphere Trust. May 2020.

¹⁰⁵ Sutherland et al. (2016). *Ecological Indicators* 71:123-133. <http://dx.doi.org/10.1016/j.ecolind.2016.06.037>

¹⁰⁶ Approximately 44,850 hectares (17% of the forested area) in all of Clayoquot Sound Biosphere Reserve had closed canopy structure in 2019 and will remain so over the next 80 years. B.C. Ministry of Forests, Lands and Resource Operations. Vegetation Resources Inventory (VRI) (2019). Age class query using Hectares BC (<https://hectaresbc.org/app/habc/HaBC.html>)

¹⁰⁷ Hansen, B. WildSafe BC Pacific Rim Coordinator. (2020). Interview response.

¹⁰⁸ Overall, the recovery of old growth forest characteristics after logging is extremely slow. It typically takes at least 140 years. Sutherland et al. (2016). *Forest Ecology and Management* 374:1-70. <http://dx.doi.org/10.1016/j.foreco.2016.04.037>

forest within the Kennedy Flats (including Pacific Rim National Park Reserve [PRNPR]) by falling/topping/girdling trees to create small gaps and planting understory plants.¹⁰⁹ The influence of this treatment in opening up the forest canopy structure was immediate. Long-term monitoring is still required to see whether the treatment will ultimately increase biodiversity, and restore riparian ecological integrity and cultural/economic resources at a faster rate than in untreated (control) areas of riparian forest.

Changes in Forest Due to Variable Retention

The recovery of wildlife habitat and ecological integrity of forests is expected to be hastened by the retention of forest structure within cutblocks.¹¹⁰ Cutblocks logged within Clayoquot Sound over the last 10 years typically included 30% retention of standing trees in variable configurations. Strong winds blow down some of retained trees. Monitoring is needed to test the effectiveness of this variable retention in the CSBR.

Changes in Forest Due to Residential/Tourism Development

In human populated areas of the CSBR there has been a continuous incremental loss of forest habitat for residential and commercial/tourism development. The gravel quarries outside the southeast boundary of PRNPR have expanded over the past 10 years and the material from those quarries has been used to construct new buildings, roads, and walking trails in local town sites, and through the surrounding forest and along the coast (see section on mudflats below). Even within the PRNPR portion of the core protected area of CSBR, trees have been topped or removed for sight-lines adjacent to the Tofino-Long Beach Airport, and the forest has been converted to create a 25-km paved multi-use path and one new parking lot. New roads and trails are important amenities for

people but can have negative impacts on plant biodiversity and wildlife beyond the construction footprint. Gravel brought to some construction sites has been contaminated with invasive plant seeds, including Scotch broom. Scotch broom has spread quickly and displaced native plants around new construction areas.¹¹¹ Pavement on roads and trails creates barriers to movement by several types of animals (e.g., beetles) that are reluctant to cross openings. Other animals (e.g., amphibians) are frequently killed by vehicle traffic.¹¹² In an attempt to mitigate this, PRNPR installed three amphibian underpasses under the Pacific Rim Highway. As well, 78 underpasses were installed during the construction of the new multi-use path through the park—60 designed specifically for amphibians and 18 others that are multipurpose (for drainage, insects, amphibians, and other wildlife). Increased edge habitat created along roads and trails has attracted crows, ravens, and jays. These species prey on forest songbirds and can alter the species composition in the local area. Bears and large carnivores use trails for travel and consequently come into more frequent contact and conflict with people than they would otherwise.¹¹³

Streams and Estuaries

Changes in Salmon Habitat Due to Continued Effects of Historic Logging

The numbers of returning Pacific salmon have declined in the rivers of Clayoquot Sound over the last 10 years, which is a continuation of a 50-year trend.¹¹⁴ The degradation of freshwater and estuarine habitat from forestry operations is believed to be a leading factor in the decline. Landslides, debris flows, extensive bank erosion, and changes to watershed hydrology from forestry and road building operations have resulted in extensive bedload movement, aggradation, and infilling of high quality spawning and rearing habitat in streams

¹⁰⁹ Hutchinson, J. (2011). Monitoring riparian restoration: lessons learned in Clayoquot Sound. M.Sc. thesis. Royal Roads University. Victoria, B.C.

¹¹⁰ Variable retention of standing trees in a cutblock is meant to retain habitat refuges for wildlife throughout the early stages of regeneration. It also provides some older forest characteristics in the stand as it regrows. Retention levels of 30 to 70% were recommended by the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound. 1995. For a review of biodiversity effects of VR see: Beese et al. (2019). *Ecol Process* 8, 33 (2019). <https://doi.org/10.1186/s13717-019-0181-9>.

¹¹¹ Brittain, E. Local naturalist. (2020). Interview response.

¹¹² Beasley, B. (2006). Wildlife Afield 3-1 Supplement:23-28; Mitigation has partially addressed the impacts of trails and roads in the Clayoquot Sound Biosphere Reserve. Four amphibian passages were installed under Highway 4 to improve habitat connectivity and reduce road mortality where hundreds of animals were killed each year. The new bicycle path within Pacific Rim National Park Reserve includes over 80 culverts to allow fish and wildlife to pass beneath the trail itself (Beasley 2020 pers. obs.)

¹¹³ Through his work as the WildSafe BC Coordinator for Pacific Rim, Bob Hansen sees expanding roads, lots and trails as creating more habitat fragmentation and more interface between humans and wildlife. District planners are talking about increasing density to slow fragmentation, but this will also increase the capacity for more people to live in/visit our region, and increase the potential for wildlife to interact with people. Hansen, B. 2020. Interview response.

¹¹⁴ Fisheries and Oceans Canada. (2020). New Salmon Escapement Database System (NuSEDS). <https://open.canada.ca/data/en/dataset/c48669a3-045b-400d-b730-48aaf8c5ee6>; Palfry, D. Tofino Salmon Enhancement Society. 2020. Interview response.

including Tranquil, Hydro Hill, Toquaht, Chenatha, and Ah'ta'apq, and the Atleo and Bedwell Rivers over the past 10 years.¹¹⁵ Frequent spring flooding and infilling from landslides have washed out much of the salt marsh habitat located at the mouth of the Tranquil River. A significant change in the Tranquil estuary resulted from the dredging and habitat alteration for booming grounds and a logging camp. Researchers have detected a net increase in salt marsh habitat perhaps due to infilling of channels from aggradation and subsequent vegetation establishment.¹¹⁶

Restoration of Salmon Habitat

Central Westcoast Forest Society has restored spawning habitat, overwintering and rearing habitat, fish passage, and watershed connectivity in 15 watersheds throughout the CSBR in the past 10 years.¹¹⁷ Restoration efforts have focused on accelerating the recovery of processes that form and sustain habitats, adopting a holistic approach that restores the processes governing the sediment supply, woody debris recruitment, organic and nutrient inputs, shading, and hydrologic regime. They have deactivated roads, removed log jams and small woody debris clogging streams, placed boulders and large logs in streams to provide habitat, added spawning gravel, replaced culverts under the highway to restore fish passage, constructed off-channel habitat, planted conifers, shrubs and sedges, and removed tons of garbage from logging roads every year. Since 2016, they have focused much of their effort in restoring habitat for salmon in the Tranquil estuary. This has involved in-stream works involving excavation and construction to restore natural riffle/pool sequences, and mitigate erosion and bed load movement while increasing habitat complexity, as well as riparian restoration using structures to catch fine sediments, and plantings to stabilize active gravel bars and promote vegetation growth. The rebound of salmon population after restoration has been slower than desired but long-term monitoring has shown improvement. For example, smolt trap

monitoring at Lost Shoe Creek has captured a mean migration of 735 coho smolts per year compared to none prior to 25 years of restoration work in the Lost Shoe watershed.¹¹⁸

Mudflats and Beaches

Changes in Habitats for Migratory Birds Due to Land Development & Recreation

The Tofino Wah-nah-jus Hilth-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area) was designated as an internationally significant migratory shorebird site within the Western Hemisphere Shorebird Reserve Network in 2013 (Figure 10). The site includes mudflats and beaches along the Esowista Peninsula and Meares Island that provide stopover habitat for more than 20,000 migrating shorebirds each year.¹¹⁹ The mudflats are also home to large numbers of wintering waterfowl, a significant portion of the at-risk northwestern population of the great blue heron, and numerous other wildlife species including wolves and bears. Over the past 10 years, residential and tourism development have expanded next to Doug Banks' Flats and Jensens Bay¹²⁰, an important high tide roost area for shorebirds and a storm refuge area for waterfowl.¹²¹ A forested buffer of 10 to 15 metres has been retained between most of the buildings and the edge of shore but various trails and structures have been established to provide property owners and their guests with access to the water. Despite a loss of riparian habitat and an increase in human disturbance, counts of western sandpipers and wintering waterfowl using the mudflats have remained high over the past 10 years while counts of larger shorebirds (e.g., dowitchers) have declined.¹²² It seems that disturbance rates have not been high enough to alter the habitat quality and/or the behaviour of the majority of species using the site. Disturbance is likely to increase in the near future as more people are being invited to discover the mudflats through the expansion of a resort located at Doug Banks' Flats. There is also increased promotion of birding, kayaking,

¹¹⁵ Hutchinson, J. Central Westcoast Forest Society. (2019). Survey response.

¹¹⁶ Spice, C. (2020). Effects of logging-induced sediment loading on Chinook Salmon rearing habitat in Tranquil Estuary, B.C. and implications for estuary restoration. M.Sc. Thesis, SFU and BCIT, Burnaby.

¹¹⁷ <https://clayoquot.org/projects>

¹¹⁸ Hutchinson, J. (2019). Ibid; Clayoquot Biosphere Trust. (2018). *Vital Signs*.

¹¹⁹ Maximum single day high count in 2019 was 189,749 individual shorebirds presumed to be western sandpipers in Mafeti, M. (2019). Shorebird surveys of the Tofino Wah-nah-jus Hilth-hoo-is Mudflats. Raincoast Education Society Report for Canadian Wildlife Service.

¹²⁰ Google Earth imagery shows more than twice number of buildings in 2020 than 2012 along a 1.6 km length of mudflats shoreline in Jensen's Bay.

¹²¹ Eggen et al. (2002). Tofino Mudflats Wildlife Management Area Management Plan.

¹²² Mafeti, M. (2018). Abundance and diversity of overwintering waterfowl and other birds within Tofino Mudflats Wildlife Management Area. Raincoast Education Society; Mafeti, M. (2019). Ibid.

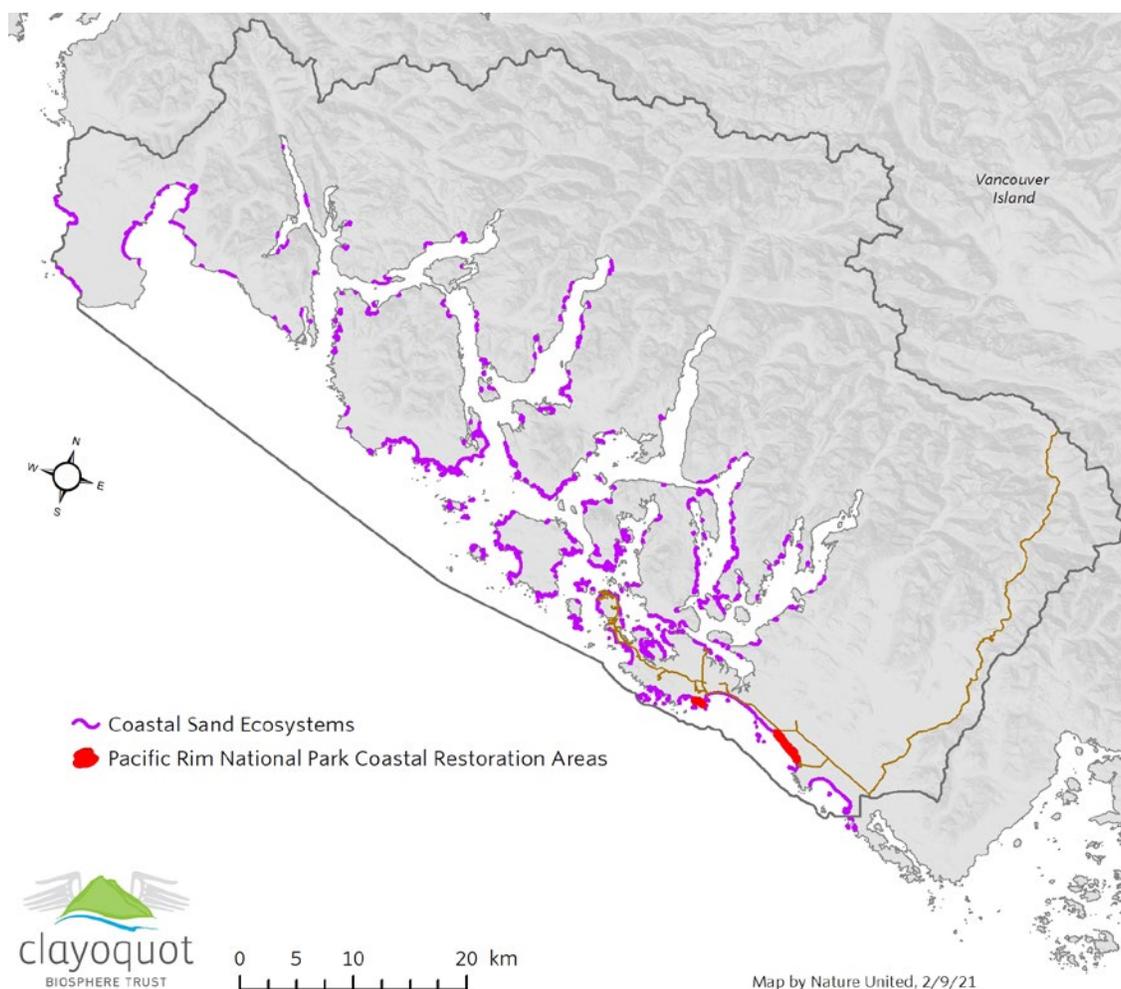


Figure 9 Coastal Sand Ecosystems in the Clayoquot Sound Biosphere, 2020

and stand up paddle boarding, and an upcoming development of several affordable housing units in close proximity to the mudflats.

Shorebird habitat at the outer beaches has been subject to much greater human impact that has steadily increased over the past 10 years. The beaches are accessible to both visitors and residents and hundreds of people and their pets¹²³ are drawn to the sand and surf especially in spring and summer when shorebirds are migrating. Researchers have shown that shorebirds are displaced from beach areas wherever/whenever large numbers of people and dogs are present.¹²⁴ Visitors to PRNPR are legally required to keep their dogs leashed, however compliance with this law has been low except when the national park has invested substantial effort in enforcement and educational outreach in the form of beach patrols.¹²⁵

¹²³ The annual number of visits to PRNPR has risen to exceed 1.1 million [CBT *Vital Signs* 2018] and the number of dogs on and off leash counted during shorebird surveys was >160 per season. Parks Canada. <https://open.canada.ca/data/en/dataset/e0aa39b6-67c0-4863-bdad-d74e73870697>

¹²⁴ Drever et al. (2016). *Waterbirds* 39:125-135; Murchison et al. (2016). *Environmental Management* 58:386-398.

¹²⁵ Compliance ranged between 37-70% between 2011 and 2018. The highest rate of compliance was in 2017 when 70% of people with dogs had their dogs on leash as a result of tripling the number of patrol hours that year. Compliance dropped the following year when patrol effort was reduced. Zharikov, Y. (2019). *Pacific Rim National Park Reserve: Shorebird Monitoring and Beach Patrol Report – 2011-2018*. Presentation made to the Tofino Shorebird Festival. May 4, 2019.

The challenge of maintaining adequate effort has led to calls for prohibiting dogs and seasonal closures of beach sections within PRNPR, however these conservation actions have not been put in place yet. Local residents have noted changes during periodic closures.¹²⁶

Plastic Pollution

Beaches are also where marine debris, especially plastic pollution, washes ashore. Researchers have found increasing amounts of microplastics over the past two years at beaches used by shorebirds in PRNPR.¹²⁷ Shorebirds, like birds at sea, are known to ingest plastic,¹²⁸ which can be toxic and/or fill up their digestive systems and cause starvation. Some microplastics at the beach come in the form of tiny pellets known as “nurdles” that come from shipping containers accidentally lost at sea. Others break down from common consumer items such as bottles, straws, and packaging when they are exposed to water, sun, and wave action. The source of these plastics includes global and local origin. In an effort to reduce the toxic impacts of plastics in the environment, several non-profit organizations in Clayoquot and Barkley Sounds have organized volunteers to do beach cleanups. For example, between 2015 and 2018, Surfrider Foundation removed over 25 tonnes of marine debris from beaches in Clayoquot Sound.¹²⁹ The Ucluelet Aquarium, District of Ucluelet, and Clayoquot CleanUp also conduct beach cleanups and debris audits.

Natural Erosion and Accretion

Beach habitat has shifted within PRNPR as a result of natural processes. Sandhill Creek eroded portions of

Combers Beach where several hectares were lost. A smaller area of beach was gained at Green Point.¹³⁰

Sand Dune Restoration

The ecological integrity of sand dune ecosystem within CSBR has improved over the last 10 years. Parks Canada has removed invasive European dune grass, tree islands, and beach logs. Their removal has restored habitat for native dune plant species and the specialist invertebrate species that depend on these plants.¹³¹ (Figure 9) There has also been a continuous volunteer effort to keep the dunes free of invasive Scotch broom. One measure of success is the 1000-fold decrease in the number of Scotch broom seedlings removed per year from the Wickaninnish dunes over the past 10 years.¹³²

Rocky Intertidal and Subtidal

Populations of some species of sea stars have declined and even disappeared within CSBR due to sea star wasting disease.¹³³ Populations of other species fell and then rebounded. A few species remained stable. Losing a keystone species such as the sunflower star has likely created changes in food webs and community structure such as lower levels of biodiversity in rocky intertidal and subtidal ecosystems.¹³⁴

Another noteworthy species of the rocky subtidal is the endangered northern abalone. Populations both within and outside the core protected areas of CSBR have not recovered despite fisheries closures. This is the case across all of coastal British Columbia. Continued illegal harvest and low recruitment levels have had predominant and widespread impacts and are the most

¹²⁶ Wildlife at Schooner Beach increased during a period when the PRNPR trail was closed. Martin, G. First Nation Educator. 2020. Interview response.

¹²⁷ The volume of microplastics collected from Wickaninnish Beach increased between 2018 and 2019. Over 400 mL of microplastics (hard plastics, nurdles, and Styrofoam) were found from 40 square meters along the high tide at Wickaninnish Beach between January and March 2019. Ucluelet Aquarium Society 2019. Microplastics and Marine Debris Initiative Quarterly Report.

¹²⁸ Rossi et al. (2019). <https://doi.org/10.1016/j.marpolbul.2018.11.051>

¹²⁹ Woodbury, L. Pacific Surfrider reported in Clayoquot Biosphere Trust. (2018). *Vital Signs*.

¹³⁰ Brittain, E. Local naturalist. (2020). Interview response.

¹³¹ Silky beach pea increased with the removal of invasive plants. Yellow sand-verbena has also increased, providing more habitat for the threatened sand-verbena moth. Pink sand-verbena was successfully re-introduced after restoration. Parks Canada Open Government Portal <https://open.canada.ca/data/en/dataset/4d51e33b-c94b-4f18-aea7-91fb8d329c85>

¹³² Past volunteers pulled 70,000 Scotch broom seedlings per year and now he pulls approximately 70 per year from the sand dunes at Wickaninnish Beach. Brittain, E. Local naturalist. 2020. Interview response.

¹³³ Segal, M. (2018). Sea Star Wasting Disease Survey Report. Strawberry Isle Marine Research Society.

¹³⁴ Harvell, et al. (2019). Science Advances 5 Vol. 5, no. 1, eaau7042 DOI: 10.1126/sciadv.aau7042



Researchers conduct juvenile salmon monitoring in Clayoquot Sound.
Photo: Cedar Coast Field Station

significant threats to northern abalone recovery.^{135 136}

¹³⁷ Preliminary results from joint research by Parks Canada and Fisheries and Oceans Canada (DFO) indicate that significant mortality events may occur upon settling of larvae, which also contributes to overall low recruitment.

Other threats to northern abalone include predation by sea otters where the two species coexist, and habitat loss and degradation resulting from unregulated underwater works and development, as well as laundering of wild northern abalone in the marketplace. Direct effects from climate change are not expected to occur for several years as British Columbia is well within the global distribution of the species.¹³⁸

Nearshore Coastal Waters

Changes Due to Global Warming and Other Oceanographic Conditions

Phytoplankton and water quality of the coastal waters of Clayoquot Sound shifted during the period of

unusually warm water in the northeast Pacific, referred to as “the Blob” in 2014 and 2015. There was a decrease in phytoplankton and an increase in harmful toxins between 2013 and 2017.¹³⁹

Temperature inversions, anoxic dead zones, and high salinity have likely all contributed to making the conditions of the water column less suitable for salmon in Tranquil Inlet and Herbert Inlet.¹⁴⁰

Changes Due to Salmon Aquaculture

There are 21 open-net-pen salmon farm tenures in the near shore environment of Clayoquot Sound, the second highest density of salmon farms in British Columbia. Most of these farms hold Atlantic salmon (500,000 to 1 million fish), while some hold chinook. In 2018, Clayoquot salmon farms reported the highest number of sea lice per fish on record for the region.¹⁴¹ Lice abundance was far above the Fisheries and Ocean Canada management threshold from March to June when juvenile chum and chinook salmon fry were

¹³⁵ Fisheries and Oceans Canada (DFO). (2007). Recovery Strategy for Northern Abalone (*Haliotis kamtschatkana*) in Canada. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi + 31 pp.

¹³⁶ Lessard, J., and Campbell, A. (2007). Describing Northern Abalone, *Haliotis kamtschatkana*, habitat: focusing rebuilding efforts in British Columbia, Canada. *Journal of Shellfish Research* 26:677-686.

¹³⁷ COSEWIC. (2009). COSEWIC assessment and update status report on the Northern Abalone (*Haliotis kamtschatkana*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 48 pp.

¹³⁸ Ibid

¹³⁹ Greengrove, C., Masura, J. and Keil, R. (2018). Physical Oceanographic Conditions in Clayoquot Sound, British Columbia, Canada, September 2013-2017, University of Washington Tacoma, poster presentation, Tofino, British Columbia; Barry, T., Classen, L., Greengrove, C., and Masura, J. (2018). Temporal and Spatial Variability of Phytoplankton Assemblages in Clayoquot Sound, BC, Canada. University of Washington Tacoma, poster presentation, Tofino, British Columbia.

¹⁴⁰ Bartlett, M. Cedar Coast Field Station. (2019). Survey response.

¹⁴¹ <https://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/lice-ab-pou/index-eng.html>

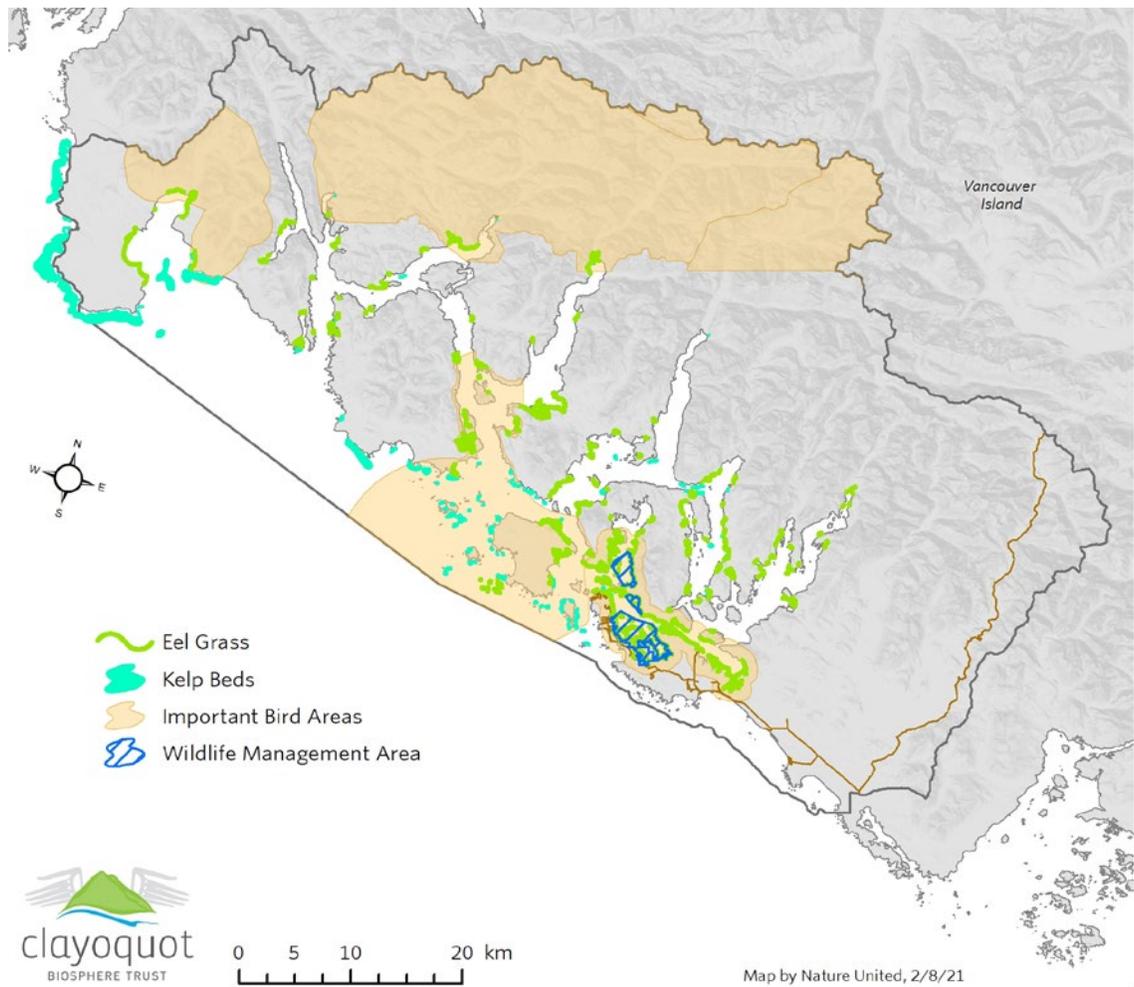


Figure 10 Nearshore Ecosystems and Areas of Significance for Wildlife in the Clayoquot Sound Biosphere, 2020

out-migrating to sea past the infected farm sites. Salmon fry are small and do not have fully developed immune systems, which puts them at risk of reduced growth and survival when infected by sea lice. The prevalence of infection and the abundance of lice per fry were much higher in juvenile chum sampled in 2018 than in previous years. Hence, it is expected that the outbreak in 2018 will decrease the marine survival and impact adult returns in coming years.¹⁴²

Changes in Eelgrass Beds

PRNPR researchers monitor 12 eelgrass meadows in Clayoquot Sound by sampling fish each year (Figure 10). The relative numbers of

fish in species that spawn and feed in different parts of the eelgrass are used as indicators to assess the ecological structure and function of eelgrass meadows. These indicators showed declining trends between 2004 and 2018.¹⁴³ There were fewer fish that typically spawn in the benthos (e.g., greenlings and flatfish), fewer that spawn on vegetation (e.g., stickleback and clingfish), fewer that feed on invertebrates (e.g., gunnells), and fewer that feed on zooplankton (e.g., poachers). The fish community became less diverse. Rare fish species became less abundant while common species increased and came to dominate the communities. These changes indicate that Clayoquot Sound eelgrass meadows have

¹⁴² Bartlett, M. et al. (2018). Juvenile salmon and sea lice monitoring in Clayoquot Sound 2018. Cedar Coast Field Station.

¹⁴³ Yakimishyn, J. (2018). Eelgrass monitoring program in Pacific Rim National Park Reserve 2004-2018. 2018 Status Report.

become poorer in providing nursery habitat and poorer in supporting complex food webs over the past 14 years. This sort of pattern happens in response to changes in the environment caused by natural or anthropogenic stress. Certain species, particularly those that are rare, are less able to adapt to change.

Conditions that caused the declining trends in the eelgrass meadows have not been determined. The size of the meadows remained stable. It is possible that changes in water quality caused by “the Blob” and increased amounts of human sewage may have played a role. Between 2014 and 2018 the shellfish contamination closure area in Tofino Harbour and surrounding area grew from 2,330 to 3,318 ha.¹⁴⁴ Nitrate-rich waters are known to increase certain species of epiphytes on eelgrass blades, and thereby diminish certain types of fish prey associated with the blades.¹⁴⁵

Another potential threat to eelgrass meadows is looming as the incidental catch of European green crabs in Clayoquot Sound has increased over the past five years.¹⁴⁶ The impact of this introduced species to nearshore soft sediment ecosystems should be closely monitored. Eelgrass density declined rapidly when European green crabs were placed at high densities in experimental plots in Barkley Sound.¹⁴⁷

Kelp Beds

Unlike eelgrass meadows, kelp forests in Clayoquot Sound have not been well studied/monitored despite their importance to commercial/recreational fisheries and biodiversity. Local water taxi drivers and fishing guides who have spent many years on the water, believe

the canopy-forming kelp beds have increased in size in some areas, and decreased in others.¹⁴⁸ Baseline data collection and mapping of kelp beds happened at several sites in 2016 (Figure 10). Follow-up monitoring is needed to assess trends. This work should be a priority given a recent report on the loss of canopy-forming kelp within Barkley Sound.¹⁴⁹

Marine Mammals

Researchers who track marine mammals in Clayoquot Sound have detected positive trends over the past 10 years. The number of sea lions entangled in plastic has decreased.¹⁵⁰ It is possible that this trend is a result of a change in human behaviour due to projects that were funded in part by the Clayoquot Biosphere Trust: educational messaging about the effects of marine pollution and media coverage of the rescues of several entangled animals. In recent years the abundance of Bigg’s (transient) killer whales and the frequency of their visitations to Clayoquot Sound has increased.¹⁵¹ Population growth of the entire the west coast population of Bigg’s killer whales has been attributed to the recovery of harbour seals since the 1970s.¹⁵²

Sea otters, which first began to re-establish as rafts of males in Hesquiaht Harbour at the north end of Clayoquot Sound in 2004 (with females arriving in 2010), have dispersed south throughout the sound. Surveys of sea otters between 2004 and 2013 showed an annual population increase of 8.9%.¹⁵³ This was deemed a relatively low rate of population growth compared to what researchers expected at the expanding southern edge of the range¹⁵⁴ but the effects of this expanded population have been notable.

¹⁴⁴ Department of Fisheries and Oceans, 2014 and 2018. Shellfish Sanitary Contamination Closures, Area 24. Reported in *Vital Signs* 2018.

¹⁴⁵ Yakimishyn, J. (2018). Eelgrass monitoring program in Pacific Rim National Park Reserve 2004-2018. 2018 Status Report.

¹⁴⁶ Yakimishyn, J. Monitoring Ecologist PRNPR. (2019). Survey response.

¹⁴⁷ Howard et al. (2019). Biological Invasions 0123456789, 3607-3618. <https://doi.org/10.1007/s10530-019-02072-z>

¹⁴⁸ Water taxi drivers, sport fishing guides and commercial fishermen from Ahousaht, Tla-oqui-aht and Tofino identified three areas where the upper canopy kelp had increased and two areas where it had decreased between 2011 and 2016 in Edwards, J. (2016). Canopy forming kelps and their role in structuring invertebrate communities. Strawberry Isle Marine Research Society Final Grant Report to CBT; Collapse in kelp over past five years was also described by local kayak guide. Murray, A. 2020. Interview response.

¹⁴⁹ Starko, S. and Neufeld, C. (2020). Kelp forest declines in Barkley Sound: lessons from the Outer Coast. <https://ssec.confex.com/ssec/2020/meetingapp.cgi/Paper/4657>

¹⁵⁰ Szaniszlo, W. (2019). Vancouver Aquarium/Ocean Wise and DFO. Survey response.

¹⁵¹ Segal, M. (2019). Strawberry Isle Marine Research Society. Survey response.

¹⁵² Towers, J. et al. (2012). Photo-identification catalogue of Bigg’s (transient) killer whales from coastal waters of British Columbia, Northern Washington and Southeastern Alaska. Fisheries and Oceans Canada. Canadian data report of fisheries and aquatic sciences 1241.

¹⁵³ Nichol, L.M. et al. (2015). Trends in the abundance and distribution of sea otters (*Enhydra lutris*) in British Columbia updated with 2013 survey results. DFO Can. Sci. Advis. Sec. Res. Doc. 2015/039. Vii + 31 p.

¹⁵⁴ For comparison, the annual rate of population growth from where sea otters were reintroduced at Checleset Bay to Estevan Point was 19% from 1972 to 1985. This rapid rate was due to expansion into an area with abundant food and little intra-specific competition.

Sea otters are seen as having begun to have both positive and negative impacts on the nearshore ecosystem and a number of traditionally and economically important species¹⁵⁵ even though most of the research showing the effects of reintroducing sea otters has been collected in areas where sea otters had been present for longer periods of time than in Clayoquot Sound.¹⁵⁶

The positive effects created by sea otters are in restoring the ecological integrity of our ocean through a trophic cascade.¹⁵⁷ By consuming large quantities of kelp-grazing sea urchins, sea otters promote the growth of kelp forests. This increases primary production, fixes carbon, and provides habitat for fish such as lingcod, rockfish, greenling, and salmon.

On the other hand, sea otters consume large quantities of shellfish, including crabs, clams, and mussels, which are valuable food resources for First Nations and commercial fisheries. Research has been done to examine different peoples' perceptions of the gains and losses in terms of ecosystem services provided by having sea otters reintroduced in the CSBR.¹⁵⁸ Nuuchahnulth communities, women in particular, value having access to and collection of edible marine invertebrates and see a great loss in the return of sea otters. Men who like to fish are able to appreciate the benefits of improved kelp habitat that will increase the types of fish that they like to catch and eat. People involved in ecotourism benefit substantially from increased prospects of being able to show their clients charismatic sea otters.¹⁵⁹

¹⁵⁵ Levine, et al. (2016). Sea otters, social justice, and ecosystem-service perceptions in Clayoquot Sound, Canada. *Conservation Biology* 31:343-352.

¹⁵⁶ Singh et al. (2013). Sea otters homogenize mussel beds and reduce habitat provisioning in a rocky intertidal ecosystem. *PLOS ONE* Volume 8 Issue 5 e65435.

¹⁵⁷ Gregr et al. (2020). Cascading social-ecological costs and benefits triggered by a recovering keystone predator. *Science* 368:1243-1247.

¹⁵⁸ Levine, et al. *Ibid*

¹⁵⁹ Martone et al. (2019). Characterizing tourism benefits associated with top-predator conservation in coastal British Columbia. *Aquatic Conservation: Marine and Freshwater Ecosystems*. 2020; 30:1208-1219.



Dr. Cheryl Greengrove with student researchers during annual water quality monitoring research expedition.
Photo: Cheryl Greengrove

A Closer Look University of Washington Water Quality Monitoring

Since 1998, Dr. Cheryl Greengrove, a physical oceanographer and associate professor of geoscience in the Environmental Science Program at University of Washington Tacoma, has been conducting oceanographic studies in Clayoquot Sound. Often working with a small budget, Cheryl has worked diligently and creatively to maintain continuity in the annual sampling. “You piece it together,” she says. Her work has resulted in a long-term data set for water quality in Clayoquot Sound, measuring and tracking a suite of parameters including temperature, salinity, density, dissolved oxygen, chlorophyll-a, nutrients, phytoplankton, and microplastics. Cheryl has received grants from the CBT, and for the past three years the organization has partnered on this monitoring by providing annual support of \$5,000/year.

It’s important to Cheryl that she involves students and community. “Doing science in the community and getting students into the field is one of our guiding values,” she says. Cheryl often brings students with her for field courses, working out of the R/V *Barnes* from the University of Washington, or from a base in Tofino. Cheryl, her students, and colleagues such as Audrey Dallimore from Royal Roads University, also give presentations on their work to the community and offer education outreach. One year, for example, she did plankton tows and microplastic studies with students in Ahousaht.

Their decades-long study has produced a valuable data set for waters within Clayoquot Sound, and it also shed some insight into cascading marine ecosystem changes in response to the 2014 “Blob,” a period of unusually warm water in the northeast Pacific. “We were able to see this warming pulse of water coming into Clayoquot Sound and had the data from years before to compare it to,” Cheryl says. Temperature inversions, anoxic dead zones, and high salinity all contributed to making the conditions of the water column less suitable for salmon in Tranquil Inlet, a significant headwater for migratory salmon. Their work also showed that between 2013 and 2017, there was a decrease in phytoplankton and an increase in harmful algal toxins, both of which could affect the abundance and quality of food available for salmon. Changes in temperature and salinity can also affect the abundance of sea lice in the Sound, a threat to juvenile salmon, and could contribute to the prevalence of sea star wasting disease and declines in eelgrass abundance.^{160 161}

Even during 2020, when travel to the CSBR was not possible due to the global pandemic, Cheryl, with logistical support from the CBT, arranged for local researchers to do some sampling for her, thus maintaining continuity in the data set. “It so hard and so valuable to get these data sets over time,” says Cheryl. “I’ve managed to keep it going because I think Clayoquot Sound is a magical place on the planet and I feel fortunate to be able to do this for science and for the local community.”

Data sets like hers are rare for the region, and her records establish a valuable baseline. “You need data to see the baseline and what’s changing,” she says. Cheryl shares her data with other researchers and the CSBR communities. Fisheries and Oceans Canada, for example, is using her work to ground truth oceanographic models for the west coast.



Statutory Framework of the World Congress of Biosphere Reserves

III.1 Improve knowledge of the interaction between humans and the biosphere

III.2 Improve monitoring activities

¹⁶⁰ Greengrove, C., Masura, J., and Keil, R. (2018). Physical Oceanographic Conditions in Clayoquot Sound, British Columbia, Canada, September 2013-2017, University of Washington Tacoma, poster presentation, Tofino, BC.

¹⁶¹ Barry, T. L. Classen, Greengrove, C., and Masura, J. (2018). Temporal and Spatial Variability of Phytoplankton Assemblages in Clayoquot Sound, BC, Canada. University of Washington Tacoma, poster presentation, Tofino, BC.



Chinook egg-take on the Bedwell River. Photo: Tofino Salmon Enhancement Society

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones.

A key priority identified in the CBT mission statement (see section 2.5.7) is to “provide funding and logistical support for research, education and training initiatives that promote conservation and sustainable development.” As a community foundation, the CBT provides funding support for many conservation program partnerships within the Clayoquot Sound Biosphere through its network of local research and monitoring organizations. In 2015, the CBT Research and Environment Committee introduced a new grant evaluation process to help prioritize projects that met the following criteria:

- supports the development of local research capacity
- responds to an identified conservation need or priority
- addresses a key conservation threat within the region

- has a developed community engagement plan
- has local partners/support
- links to indicator/data for *Vital Signs*
- reflects the spirit of the UNESCO Biosphere designation

Consequently, many of the conservation programs in the CSBR are led by local research organizations who receive CBT grants and conduct research and monitoring with a wide range of partners, throughout all zones of the CSBR. Table 6 outlines the main conservation programs conducted over the past 10 years, many of which are ongoing. It should also be noted that the 2012, 2014, 2016, and 2018 CBT *Vital Signs* reports contain monitoring and indicator data from many of these conservation programs.

Table 6 Main Conservation Programs, Goals, and Activities in the CSBR 2010-2020

Conservation Programmes	Main Goals	Activities
Marine habitat & water quality monitoring	<ul style="list-style-type: none"> monitor marine environment for long-term changes understand the natural ocean, atmosphere and primary productivity cycles in the Clayoquot Sound area over the past 10,000 years, as a baseline for interpreting modern environmental data and monitoring monitor eelgrass to maintain & protect ecological integrity of marine ecosystems 	<ul style="list-style-type: none"> oceanographic/eDNA biodiversity monitoring¹⁶² recovering marine sediment cores to interpret environmental conditions & change over time¹⁶³ water property monitoring¹⁶⁴ eelgrass fish monitoring program¹⁶⁵, eelgrass mapping¹⁶⁶, eelgrass invertebrate assessment, ecomorphology of eelgrass meadows
Migratory shorebird & waterfowl monitoring, nesting seabirds, at-sea bird population monitoring	<ul style="list-style-type: none"> conserve habitat for migrating shorebirds & waterfowl protect migratory birds, species at risk and their habitats 	<ul style="list-style-type: none"> monitoring migrating shorebirds at the Tofino Mudflats Wildlife Management Area¹⁶⁷ monitoring nesting seabirds, at-sea birds, songbirds
Human-animal coexistence monitoring & research	<ul style="list-style-type: none"> restore and/or maintain ecological integrity for wolves 	<ul style="list-style-type: none"> Wild About Wolves research project¹⁶⁸
Salmon habitat restoration & population recovery	<ul style="list-style-type: none"> conserve salmon populations in Clayoquot Sound by reducing local marine impacts preserve ecological health through place-based research & education restore wild salmon habitat and populations 	<ul style="list-style-type: none"> juvenile salmon monitoring¹⁶⁹ salmon escapement enumeration & enhancement¹⁷⁰ watershed restoration assessments. estuary assessment, fisheries habitat assessment, benthic invertebrate monitoring¹⁷¹ salmonid density & escapement monitoring¹⁷²

¹⁶² Cedar Coast Field Station¹⁶³ Royal Roads University¹⁶⁴ University of Washington¹⁶⁵ Pacific Rim National Park Reserve¹⁶⁶ Raincoast Education Society¹⁶⁷ Association of Wetland Stewards for Clayoquot & Barkley Sound¹⁶⁸ Pacific Rim National Park Reserve¹⁶⁹ Cedar Coast Field Station¹⁷⁰ Tofino Salmon Enhancement Society¹⁷¹ Central Westcoast Forest Society¹⁷² Pacific Rim National Park Reserve

Conservation Programmes	Main Goals	Activities
Amphibian population and habitat conservation	<ul style="list-style-type: none"> • conserve wetland habitats for amphibians & other wildlife • maintain populations at levels to contribute to ecological processes • restore connectivity across roads so wildlife can transfer energy & nutrients across landscape 	<ul style="list-style-type: none"> • conservation of amphibian migration across roads • monitoring & stewardship for amphibian populations & wetland habitats¹⁷³ • protection of juvenile western toads along recreational shorelines
Marine mammal monitoring & research	<ul style="list-style-type: none"> • increase understanding of grey whale population & habitat • establish long-term monitoring of marine life unique to Clayoquot Sound • conduct marine mammal research, conservation, rescue, and education 	<ul style="list-style-type: none"> • grey whale monitoring¹⁷⁴ • Biggs killer whale monitoring¹⁷⁵ • Grice Bay habitat mapping • Steller sea lion abundance and distribution in Clayoquot Sound¹⁷⁶ • seasonal diet of sea lions • soundscape monitoring species at risk marine habitat¹⁷⁷
Marine spatial planning	<ul style="list-style-type: none"> • establish indicators and monitor overall ecosystem integrity. 	<ul style="list-style-type: none"> • created marine spatial plan¹⁷⁸
Marine debris removal and micro-plastics monitoring	<ul style="list-style-type: none"> • remove marine debris from coastline 	
Old growth forest monitoring & restoration	<ul style="list-style-type: none"> • preserve old-growth forests, wildlife habitat & restore biodiversity • research & educate to protect old-growth forests • ensure multiple ecosystem services are considered in resource planning • wilderness area protection 	<ul style="list-style-type: none"> • research on long-term recovery of multiple ecosystem services in old growth forests¹⁷⁹ • riparian restoration assessment • 1-ha long-term monitoring plot¹⁸⁰ • forest mammal populations, old-growth forest extent¹⁸¹

¹⁷³ Association of Wetland Stewards for Clayoquot & Barkley Sounds

¹⁷⁴ Pacific Wildlife Foundation

¹⁷⁵ Strawberry Isle Marine Research Society

¹⁷⁶ Vancouver Aquarium

¹⁷⁷ Clayoquot Biosphere Trust

¹⁷⁸ West Coast Aquatic

¹⁷⁹ University of British Columbia, Central West Coast Forest Society, Quebec Center for Biodiversity Science, NSERC, Canadian Forest Service, BC Ministry of the Environment, BC Ministry of Forests, McGill University

¹⁸⁰ Dr. Andy MacKinnon, BC Ministry of Forests, Parks Canada

¹⁸¹ Pacific Rim National Park Reserve, Ditidaht First Nation, ECCC-Canadian Wildlife Service, Trent University



AWSCBS volunteer researchers in Clayoquot Sound wetland habitat. Photo: Barb Beasley

A Closer Look Association of Wetland Stewards for Clayoquot and Barkley Sounds

Over 20 years ago, local biologist Barb Beasley became concerned about the number of amphibians she was seeing dead on the 40 km stretch of highway between Tofino and Ucluelet. To determine the “hot spots” for amphibian movement, she enlisted a team of volunteers who would head out on rainy nights looking for amphibians on or near the road and occasionally moving them safely to the other side. (Since most of the frogs, newts, and salamanders were dead, the informal group began to refer to themselves as SPLAT, the Society for the Prevention of Little Amphibian Tragedies.)

This work helped Barb and the volunteers identify that the major concentration of amphibians was within 500 metres of a 4 ha wetland. The ad-hoc group was formalized as the Association of Wetland Stewards for Clayoquot and Barkley Sounds (AWSCBS) and it has worked tirelessly to conserve amphibian populations in the CSBR. The CBT has supported AWSCBS’s work since 2009, contributing almost \$75,000, including a \$20,000 research grant in 2016.

AWSCBS’s goals include conserving wetland habitat for amphibians and other wildlife, maintaining amphibian populations at levels that contribute to ecological integrity; restoring connectivity across roads; and protecting shoreline habitat for toads after metamorphosis. Thanks to their research, Swan Lake, just outside of the southern boundary of Pacific Rim National Park Reserve is recognized as one of the most productive breeding sites in all of Canada for northern red-legged frogs, a species listed as “special concern” under the federal *Species at Risk Act*. AWSCBS has

been involved in mitigation work, including the installation of amphibian culverts, and the research that led to the designation of three provincial wildlife habitat areas comprising 64 ha of wetland and surrounding forest used by northern red-legged frogs. “They’re like postage stamps,” says Barb, “but they helped secure forest between breeding sites and the highway that probably would have otherwise been logged.”

Her work on mitigation—protected corridors, wildlife culverts, habitat preservation—is being shared beyond the region. Because of her successes, the province asked Barb to help create guidelines¹⁸² for amphibian and reptile conservation during road building and management activities. “I’m proud that our 2011 amphibian culvert was one of the first projects in the province that helped inspire others,” she says.

Given that Barb and her team are often working in the rain at the side of the road, the work has garnered a lot of interest over the years. “One of the most important things is that people see us care enough to be on the side of the road helping these small creatures,” she says. “Over the years we’ve engaged many people as volunteers, or in short-term employment, so we’ve really raised the profiles of these not-so-charismatic creatures.” The group takes the “stewardship” part of its name seriously and their research and education efforts are resulting in more holistic views of ecosystems in the region. “The Ministry of Transportation and Infrastructure used to only worry about salmon, but now we’ve got them thinking about amphibians,” says Barb. “We need an abundance of animals and species to have fully functioning ecosystems. Amphibians are these incredible creatures that take resources from wetlands into the forest and back again. They’re little packets of energy that are critical in food webs.”



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support of local people

II.3 Integrate biosphere reserves into regional planning

III.1 Improve knowledge of the interaction between humans and the biosphere

III.2 Improve monitoring activities

III.3 Improve education, public awareness and involvement

¹⁸² <http://a100.gov.bc.ca/pub/eirs/finishDownloadDocument.do?subdocumentId=11201>

4.3 In what ways are conservation activities linked to, or integrated with, sustainable development issues?

We highlight, throughout this report, numerous ways in which conservation research and activities within the CSBR are closely integrated with conservation action and sustainable development. For example, Table 4 in section 2.4.6 identifies the monitoring activities in alignment with specific United Nation's SDGs and targets, Table 6 in section 4.2 identifies the main conservation programs, and the "A Closer Look" case studies provide more detailed descriptions of the conservation goals and activities of many local research organizations. As an illustration of the inherent link between conservation activities and local sustainable development issues, we asked local research organizations to identify: (1) the United Nation's SDGs and biosphere zonation their research addresses, (2) changes they have observed based on the indicators they measure, and (3) the conservation actions needed to address these changes. Looking at sustainability issues through the lens of local researchers allows us to focus more closely on local sustainability priorities. The following four examples highlight key ways in which conservation activities are helping to mitigate important sustainable development issues.



Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Clayoquot Sound Biosphere zonation: terrestrial core protected area, buffer zone, and transition zone

- **Association of Wetland Stewards for Clayoquot & Barkley Sounds** have been monitoring the red-legged frog (*Rana aurora*) since 2008 and their research findings have resulted in 64 ha of new designated wildlife habitat areas in the CSBR terrestrial buffer zone, adjacent to the core protected area in the Pacific Rim National Park Reserve (PRNPR). In addition, they've conducted egg mass surveys over the last five years which show declines at some wetland sites and stable populations at others. It's possible that logging, water contamination, and mitigation at roads (culverts) are contributing factors (see section 4.2). More

research to develop direct measures of impact will continue in partnership with BC Ministry of Transportation and Infrastructure, PRNPR, and the BC Ministry of Forests, Lands and Resource Operations and Rural Development. These research efforts and partnerships demonstrate the important feedback loop between long-term local research, monitoring, and habitat conservation to support sustainable development.



Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Clayoquot Sound Biosphere zonation: marine core protected area and transition zone

- **Cedar Coast Field Station** research indicates increased sea lice levels on local farmed fish and wild juvenile salmon, combined with cumulative impacts from over fishing and changing ocean conditions, are likely contributing to high mortality of wild salmon juveniles (see section 4.1). Policy changes are needed to reduce allowable levels of sea lice on fish farms and to implement enforceable thresholds or limits on the production of farmed salmon, especially during spring migration of juvenile salmon when they are most vulnerable to sea lice exposure. Cedar Coast Field Station has contributed their data to Fisheries and Oceans Canada and is helping to convene a network of environmental scientists to better understand how the finfish aquaculture industry in Clayoquot Sound can be better managed to reduce negative effects on marine ecosystems, especially for the surrounding wild salmon populations and habitat. These findings are shared at the Clayoquot Salmon Roundtable and without this local research, this important sustainable development issue would likely remain unaddressed.



Targets 6.6., 14.2, 15.5, 15.9

Clayoquot Sound Biosphere zonation: terrestrial core protected area, buffer zone, and transition zone; marine transition zone

- **Central Westcoast Forest Society** has been conducting research and habitat restoration for over 16 years within most salmon bearing rivers of the CSBR watersheds (see section 4.1). The loss of local salmon populations, and their habitat, is one of the most important sustainable development issues in the CSBR, particularly as Nuu-chah-nulth First Nations continue to assert their right to access to their traditional territories and regain important relationships with their surrounding salmon ecosystems. Through its far-reaching network of partnerships, including those with the five Nuu-chah-nulth First Nations within the CSBR, the Central Westcoast Forest Society is able to monitor juvenile salmonids, salmon escapements, water quality, riparian vegetation, and benthic invertebrates, and assess fish habitat. Indicators of declining wild salmon returns in important areas of salmon spawning habitat highlight the need to strengthen the regional commitment to salmon species recovery initiatives and habitat restoration. More long-term funding is needed to stabilize riparian forest ecosystems that were significantly disturbed from clear cutting logging practices in the late 1960s and long-term monitoring is required to help fill critical data gaps, including the impact of human activities on the different life cycle stages of local salmon populations throughout their migration, such as finfish aquaculture, marine pollution, climate change, and over fishing.

Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, prevent the extinction of threatened species.

Clayoquot Sound Biosphere zonation: terrestrial core protected area, buffer zone, and transition zone

- **Pacific Rim National Park Reserve** is conducting a major five-year research collaboration, Wild About Wolves, to determine how wolf populations are using the local landscape and specific types of habitat, at what times, and how often. Habitat changes due to logging, increased tourism, and increased land development are directly and indirectly influencing an increase in human-wolf conflict in the CSBR. The data findings from this research collaboration will be shared with the *Izaak sin hay tiič ʔmis* Regional Coexistence Network, with an aim to guide more informed land-use planning practices and improved human behaviour to reduce impacts on important wolf habitat, reduce habitat loss due to poor development practices, and restore old growth forest habitat and canopy cover within the CSBR.

4.4 How do you assess the effectiveness of actions or strategies applied? (Describe the methods, indicators used).

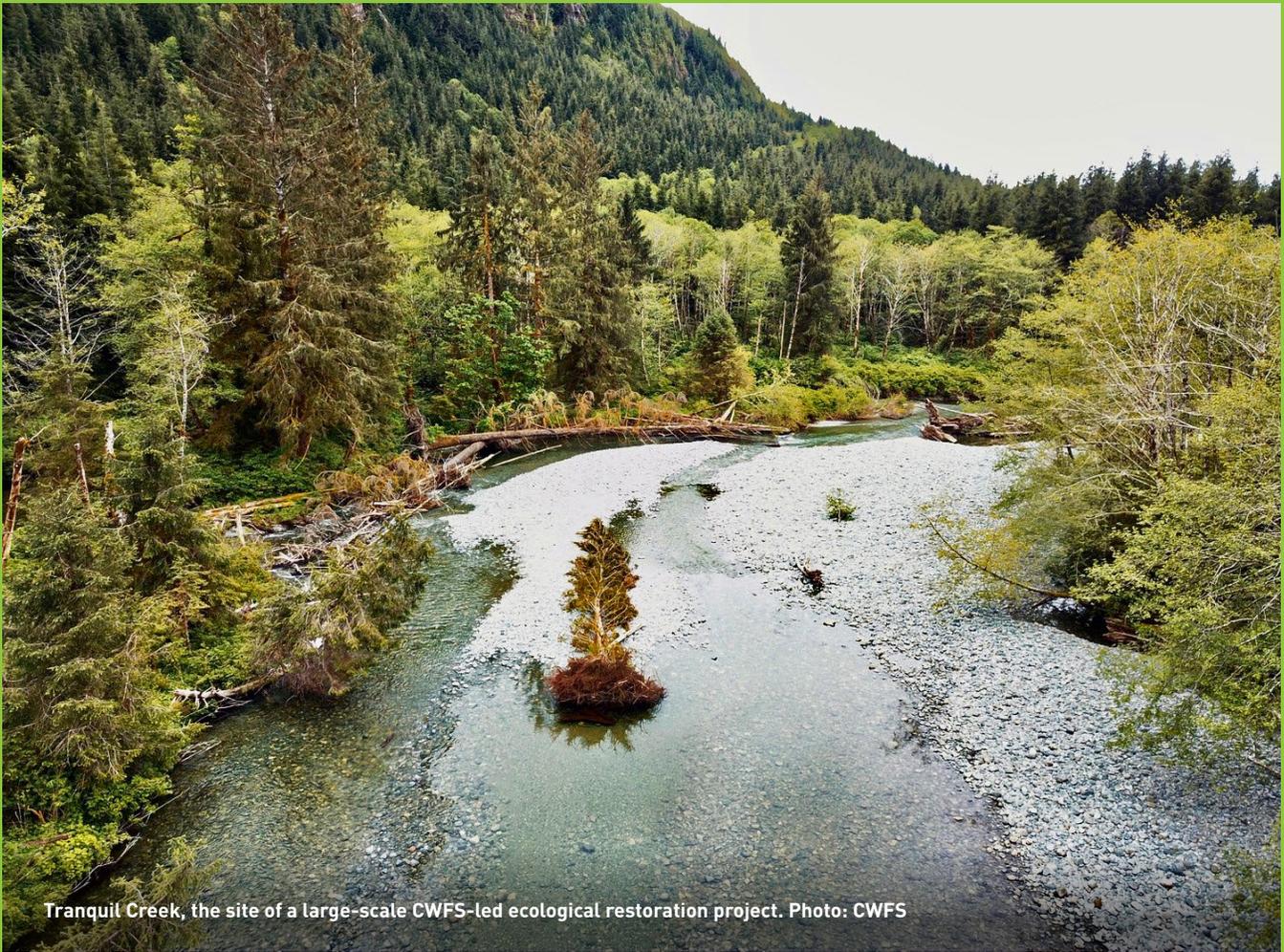
In the following two sections (4.4 and 4.5) we draw upon our on-line survey results from 22 respondents, including 14 researchers and eight local observers. Eleven researchers described ways that they assess the effectiveness of conservation actions or strategies applied by their organizations (Table 7). Many described using the same indicators and methods as those for monitoring biophysical properties. For example, monitoring population trends, habitat use, and habitat quality are good ways to assess whether the strategies to conserve populations and restore habitat are working.

Most respondents use measures such as the level of engagement and support from partners and community members (i.e., number of volunteers, feedback from communities and local partners, social media metrics, number of presentations delivered, etc.) as indicators of the effectiveness of their activities for outreach, communications, education, and training.

Table 7 Methods and indicators used to assess effectiveness of actions and strategies

Conservation Action/ Strategy	Methods/Indicators of Effectiveness
Research & Evaluation Monitoring	<ul style="list-style-type: none"> • Use baseline measurements from which we can compare changes
Outreach & Communications	<ul style="list-style-type: none"> • Number of community members involved, expanding volunteer base, increased curiosity and enthusiasm to support research and conservation • Number of public presentations, newsletters, posts on Facebook and blogs • Citations; number of views on films; number of talks given, location, and who attended • Social media metrics, number of audience members, number of media outlets that cover stories associated with our work, local community reaction including the formation of public demonstrations
Education & Training	<ul style="list-style-type: none"> • Feedback from partners and communities • Possible ideas include a repeatable survey for locals and visitors to evaluate their knowledge around human-wolf conflict/coexistence, including their sources of information; number and severity of interactions between humans and wolves; and the number of management destructions of wolves in the region • Interactions with community volunteers to assess outputs for education • Raised awareness and knowledge about marine environment; identification of marine issues of common concern for many groups so they can be addressed

Conservation Action/ Strategy	Methods/Indicators of Effectiveness
Conservation Planning & Protected Area Designation	<ul style="list-style-type: none"> • Population trends of songbirds, resident/migratory shorebirds, amphibians, some seabirds, pinnipeds, anadromous salmon, etc. • Number of amphibian egg masses laid in protected /unprotected wetland habitats • Multi-stakeholder and organization meetings such as the Clayoquot Salmon Roundtable are used to assess the progress of conservation planning
Legal Policy & Frameworks	<ul style="list-style-type: none"> • Government changes to policy that are associated with our monitoring projects
Organizational Development	<ul style="list-style-type: none"> • Increase in observations and documentation of entangled sea lions as a result of building collaborative relationships with other organizations that have eyes on the water and will share data, including archived data • Increased partnerships throughout the region, expansion of the breadth and scope of research project area, engagement and support of local community members and businesses
Ecosystem & Natural Process Restoration	<ul style="list-style-type: none"> • Pre- and post-mitigation monitoring of road mortality and movements of amphibians through culverts • <i>Biological indicators:</i> juvenile salmonid monitoring using beach seines and snorkel surveys, escapement monitoring, benthic invertebrate monitoring, invasive species monitoring. <i>Physical indicators:</i> pre- and post-restoration monitoring of pool depth, frequency, and area at reach level; lidar and topographic surveys to monitor changes in channel profile; UAV monitoring; pre-and post-restoration monitoring of spawning gravel quantity and quality and sediment loading; changes to large wood distribution, frequency, positioning, size and abundance; water quality: temperature, pH, dissolved oxygen, turbidity, air photo analysis. <i>Approaches:</i> control-impact pre- and post-restoration monitoring plots to evaluate changes to stand structure, tree height, growth, coarse woody debris, dead or dying trees, shrub height, native plant diversity and abundance; 1-3 plots per hectare to monitor health and vigour of all planted trees; control-impact pre- and post-restoration acoustic monitoring for bat species; species detected and duration of bat activity, species stratified by habitat type; duration of habitat use by time and tide.



Tranquil Creek, the site of a large-scale CWFS-led ecological restoration project. Photo: CWFS

A Closer Look Central Westcoast Forest Society

The non-profit organization Central Westcoast Forest Society (CWFS) was founded in 1995 by a group of loggers, First Nations, biologists, and forestry professionals who recognized the need to address the loss of habitat in order to preserve our wild fish stocks. They coalesced around the idea that “the only thing more integral to the fabric of coastal British Columbia than the ancient forests is the Pacific salmon” and have been conducting research and habitat restoration for over 16 years within most salmon-bearing rivers of the CSBR.¹⁸³

The CWFS works closely with the five Nuu-chah-nulth First Nations of the CSBR. The nations provide direction and share their expertise and traditional knowledge, and the partnership creates employment and training opportunities, and also builds capacity and expertise within the CSBR. Employment with the CWFS is particularly rewarding in that it often provides work opportunities for people within their own traditional territory on what is arguably the most culturally significant resources on the west coast: salmon. As George Frank, a field technician from Ahousaht, noted, “It’s the greatest feeling ... when I get off the boat and [my grandchildren] ask me what I had been doing? And I told them, ‘I’m out there fixing up the creeks so that you can have fish when you grow up.’”

¹⁸³ <https://clayoquot.org>

Through its network of partnerships, the Central Westcoast Forest Society monitors juvenile salmonids, salmon escapements, water quality, riparian vegetation, benthic invertebrates, and assesses fish habitat. They've also restored spawning habitat, overwintering and rearing habitat, fish passage, and watershed connectivity in 15 watersheds throughout the CSBR in the past 10 years.¹⁸⁴ The CWFS "by the numbers" page on their website attests to the organization's critical efforts: 46,614 trees planted, 21,931 kg of garbage removed, 85.43 km of streams restored, 100.48 ha of riparian habitat restored, and much more.

The CBT has been a regular funder of CWFS projects, and in 2018 awarded the organization a \$20,000 research award for a chinook salmon restoration and conservation project.



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

III.1 Improve knowledge of the interactions between humans and the biosphere

III.2 Improve monitoring activities

III.3 Improve education, public awareness, and involvement

III.4 Improve training for specialists and managers

¹⁸⁴ <https://clayoquot.org/projects>

4.5 What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective for conservation for sustainable development?

As noted in the previous section, the three main factors that positively influence the success of conservation efforts in the CSBR are the following:¹⁸⁵

- long-term funding which supports long-term monitoring necessary for baseline comparisons;
- partnerships that support the research, provide funding security, and include management decision-making authorities; and
- public awareness and support for conservation measures and interventions.

Key factors which can negatively influence the success of conservation efforts include:

- the inability to legally protect or conserve an area of significant ecological value;
- lack of stewardship knowledge or ethical behaviour among visitors;
- unsettled Indigenous land claims and title to traditional territories; and
- knowledge gaps, and limited access to traditional ecological knowledge, that could support improved land-use policies and planning tools for conservation and stewardship.

Gaps in knowledge are certainly an impediment to achieving conservation. We asked local and visiting researchers, and knowledge holders, to identify knowledge gaps they encountered in conducting their research and/or what they wished they could measure. Every respondent noted knowledge gaps related to the different biophysical attributes they observe and measure (Table 8) and most indicated there is a lack of baseline data with which to compare to contemporary data.

Table 8. Knowledge gaps identified by researchers and knowledge holders, organized by ecosystem type and biophysical attributes studied/observed.

Ecosystem Types / Biophysical Attribute	Knowledge Gaps	Wish List of Indicators
Shorelines, estuaries & tidal marshes / Migratory shorebirds	<ul style="list-style-type: none"> • Residence time of migratory shorebirds in Long Beach–Tofino area • Connections with shorebird habitats outside Clayoquot area • Baseline data & accurate shorebird counts to assess whether there is a real decline 	<ul style="list-style-type: none"> • Abundance and energetic content of prey items (intertidal invertebrates) on beaches and mudflats

¹⁸⁵ These three factors were found to be the most common responses from our survey with 13 local researchers.

Ecosystem Types / Biophysical Attribute	Knowledge Gaps	Wish List of Indicators
Freshwater streams & marine ecosystems / Salmon	<ul style="list-style-type: none"> • Adult salmon residence time during spawning • Early rearing marine life phase for juveniles • Disease and pathogen transfer • Detailed population assessment 	<ul style="list-style-type: none"> • Further testing for disease and pathogen transfer in marine environment • Monitoring migration routes for juvenile salmon in marine environment • Juvenile salmonid production and egg to fry survival • Bedload movement and redd scour • More analyses on data already collected during surveys: seals, water visibility, % of morts pre-spawn, % new fish, drought conditions, swimmer experience
Marine – open water / Water quality	<ul style="list-style-type: none"> • Stream flow data • Baseline marine water data • Oceanographic data • Primary production and planktonic assemblages 	<ul style="list-style-type: none"> • Year-round sampling for stream flow data for major rivers in area • Increased oceanographic monitoring including plankton assessments
Freshwater streams and riparian forest	<ul style="list-style-type: none"> • Watershed productivity & health • Pre-disturbance habitat conditions 	<ul style="list-style-type: none"> • Further assessments on intact watersheds • LIDAR for all of Clayoquot Sound
Forest / Wolves / Bears	<ul style="list-style-type: none"> • Habitat selection by wolves inside and outside park reserve, i.e., dens and rendezvous locations • How human attitudes, beliefs, and values drive people’s behaviour associated with wolf interactions • Role of social media in human-wolf conflict • Lessons from traditional knowledge to help prevent conflict in modern context 	<ul style="list-style-type: none"> • Some measure of level of habituation of wolves and other wildlife • Camera network throughout communities to track how wildlife adapt to avoid people in the core of our communities as land is developed over long term • Radio-collar wolves to find key habitats

Ecosystem Types / Biophysical Attribute	Knowledge Gaps	Wish List of Indicators
Forest structure and ecosystem services	<ul style="list-style-type: none"> • Rates of tree growth, mortality, and windfall • How the architecture of forest stands influences multiple ecosystem services • How to identify cultural cedar resources 	<ul style="list-style-type: none"> • Link to landscape scale assessment using remote sensing data • Monitor diversity and habitat of mosses
Freshwater wetlands and surrounding forest / amphibians	<ul style="list-style-type: none"> • Minimum viable population size of amphibian species • Time it takes for breeding populations to recover • Disease transfer and predation effects of corralling amphibians through road crossing structures 	<ul style="list-style-type: none"> • A direct measure of the effect of logging versus other factors on population size • Numbers of amphibians that try to cross roads but do not use culverts, get caught by predators along fences • Breeding success in outer coast ponds relative to wetland habitats • Role of amphibians in outer coast habitats • Recruitment rate and mortality of western toads between juvenile stage and breeding adult
Marine subtidal / Sea lions	<ul style="list-style-type: none"> • Spring diet data for California sea lions 	<ul style="list-style-type: none"> • Seasonal changes in diet of California sea lions to compare to Steller sea lions. • Abundance/availability of prey species relative to what is in diet
Marine subtidal / Eelgrass	<ul style="list-style-type: none"> • Extent of eelgrass meadow for entire CSBR • Impacts of green crab invasion; subtidal and intertidal invertebrate species 	<ul style="list-style-type: none"> • Mapping of other important nearshore marine habitat (e.g., kelp)
Marine subtidal & intertidal / Species	<ul style="list-style-type: none"> • Baseline data on species • Impact of losing sunflower stars and giant pink sea stars on kelp and/or invertebrate communities 	<ul style="list-style-type: none"> • Conduit to researchers who are/ could be doing studies related to knowledge gaps in other regions
Human behaviour	<ul style="list-style-type: none"> • How to make people better environmental citizens 	<ul style="list-style-type: none"> • Social dimensions that affect human use

4.6 Other comments/observations from a biosphere reserve perspective.

In this section on conservation we've highlighted the importance of local research organizations, partnerships, and funding models that can support long-term baseline ecosystem monitoring to inform appropriate conservation strategies. In addition, we provide the following observations with respect to conservation challenges in the CSBR: (1) an integrated watershed management governance gap; (2) conservation threats originating from outside the CSBR; and (3) the need to coordinate core protected area managers.

Governance Gap in Watershed Management

The shift to First Nation co-management in the CSBR is a positive step towards achieving pathway to Canada Target 1 and Indigenous Protected and Conserved Areas. That said, with the loss of the Central Region Board (CRB) [a land-use planning committee consisting of Central Region First Nations [Hesquiaht, Ahousaht, Tla-o-qui-aht] and community representatives appointed by the province that served as a coordinating administrative body to oversee an integrated land-use planning process in the CSBR; see 2.3.9), there is a gap in the governance model that oversees participatory and integrated watershed planning. Currently, provincial and federal government agencies are negotiating new conservation strategies with First Nations and their respective partners, but there is a lack of integration and communication with local municipal level governments, community members, the business community, and non-government stewardship organizations. Without an integrated governance model, we can anticipate a lack of coordinated planning and increased uncertainty among different groups seeking access to First Nation territories, particularly for watershed research and monitoring purposes.

External Conservation Threats

Conservation threats impacting ecosystems within the CSBR can occur as a result of human activities outside the CSBR designation. For example, the rate of urban land development expansion along the southern coast of Vancouver Island is impacting species migrations and human-wildlife conflicts in CSBR. The CBT plays an important role in both intraregional and inter-regional collaborations such as the *lisaak Sin Hay Tiic?mis* Regional Coexistence Network (see page 133) and the Indigenous Led Stewardship Corridor.

In the future, the CBT will need to explore what types of organizational arrangements best support these types of network initiatives.

Core Protected Area Management Coordination with CBT

There is an opportunity for more communication and collaboration between key organizations responsible for the management of the core protected areas within the CSBR, such as BC Parks, Tla-o-qi-aht Tribal Parks, Pacific Rim National Park Reserve (PRNPR), Maaqtusiis Halhoulthee Stewardship Society, Tla-o-qui-aht First Nations, Hesquiaht First Nation, Ahousaht, and the CBT. For example, in 2004, the Canada National Parks Act was amended in order to remove 86.4 ha of land from PRNPR to increase the land base for housing development in the Tla-o-qui-aht community of Esowista (Bill C-28). In a presentation to Standing Senate Committee on Energy, the Environment and Natural Resources, who were to consider the amendment, Alan Latourelle, chief executive officer of Parks Canada at the time, suggested the removal of the lands would not compromise the ecological integrity of the park, and stated that Parks Canada, "will work with the provincial government, in this case, British Columbia, over time to see if there are opportunities for them to transfer part of their Crown lands to the federal government though a federal-provincial agreement."¹⁸⁶ There is an opportunity to continue this discussion with federal and provincial agencies, First Nations, and local stewardship organizations, including the CBT should an appropriate table for discussion exist.

¹⁸⁶ Senate of Canada. (2004). Proceedings of the Standing Committee on Energy, Environment and Natural Resources. <https://sencanada.ca/en/Content/Sen/committee/373/enrg/05ev-e>

5. The Development Function

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve.

Over the past several decades, the CSBR has shifted from a resource-based economy to one that is highly reliant on tourism. Over one million visitors a year¹⁸⁷ come to enjoy the forests and beaches, enjoying surfing, kayaking, wildlife watching, hiking, camping, sports fishing, and more. Forestry and fishing, once major employers, have gone through a marked decline for various reasons. Despite optimism in the early 2000s that the shellfish aquaculture could expand in the region, it has declined from an estimated 68 shellfish tenures in Clayoquot and Barkley Sounds in 2003, to about five to seven tenures in 2016.¹⁸⁸ In contrast, salmon aquaculture continues to be strong and well-resourced, providing significant employment in the CSBR, including well-paying jobs for First Nations people particularly in remote communities. (As of January 2021, 34 employees living in Ahousaht, Tofino, or Ucluelet worked at Cermaq's Tofino fish processing facility. Of those employees who work on Cermaq's Clayoquot Sound-Ahousaht territory farm sites, 19 have self-identified as having First Nations heritage.¹⁸⁹) The sector faces significant resistance and regulatory challenges, however, particularly over concerns that it may adversely affect the marine environment and wild salmon.

While less extractive than resource-based industries, the increasing reliance on tourism is not without its challenges. Jobs tend to have lower wages and are often seasonal and/or part-time. The higher cost of living and low availability of stable, affordable housing continues to be a challenge to residents of the CSBR. As well, the benefits of tourism are not spread equitably throughout the region. The COVID-19 pandemic, and subsequent months-long shut down in spring 2020, quickly exposed the vulnerabilities of such a heavy reliance on tourism.

A recent SWOC analysis from the report *Clayoquot Sound Regional Economic Analysis* gives an overview of the CSBR's economic landscape.¹⁹⁰

¹⁸⁷ Loucks, L. (2018). Clayoquot Sound UNESCO Biosphere Region, Canada: Nature, Education, Sustainability, Transformation (NEST). <https://www.communityconservation.net/wp-content/uploads/2018/03/NEST-Community-Story-Final.pdf>

¹⁸⁸ EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis. p. 26

¹⁸⁹ pers. comm. Janice Valant, Cermaq Canada Ltd., January 27, 2021.

¹⁹⁰ EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis. p. 8

<p>Strengths</p> <ul style="list-style-type: none"> • young workforce • strong and growing tourism sector • high speed internet and cell coverage in some areas (but not in all First Nations communities) • entrepreneurial culture, as well as a strong and supportive small business sector • considerable natural assets and strong First Nations culture 	<p>Weaknesses</p> <ul style="list-style-type: none"> • remoteness (high transportation costs, access to markets) • unaffordability (housing, food) negatively impacts employee recruitment, quality of life • commercial/business land affordability • slow or expensive internet in outlying and First Nations communities
<p>Opportunities</p> <ul style="list-style-type: none"> • recovering resource sectors transition to sustainable harvesting levels long-term • local First Nations labour force • locally produced food • remote workers, amenity migrants (people who migrate due to natural or culture assets) • growth of conservation economy 	<p>Challenges</p> <ul style="list-style-type: none"> • uncertainty from United States which could impact key sector such as tourism and forestry (e.g., exchange rates, interest) • the need to grow capacity to be able to take advantage of market opportunities (such as shellfish) • climate change

For more about the tourism industry in the CSBR, see 5.2. For more about other key sectors, including forestry, fishing, and aquaculture, see 5.3.

5.2 Describe the tourism industry in the biosphere reserve. Has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve?

For several decades, and particularly in the last 10 years, the tourism industry has grown steadily as employment in resource sectors—primarily fishing and forestry—has declined. Tourism is currently the main economic driver in the CSBR, with over one million visitors a year¹⁹¹ coming to enjoy its spectacular scenery, outdoor recreation opportunities, mild climate, and rich culture. Popular activities include surfing, beach walking, sea kayaking, sport fishing, hiking, camping, cycling, and unique nature-based activities such as whale watching, wildlife viewing, and storm watching.

Tofino is both a destination and a gateway for tourism within Clayoquot Sound. The community has a full range of visitor accommodation, facilities, and services. Ucluelet offers similar services for the Barkley Sound area and also provides services for visitors to the Clayoquot Sound Biosphere. Situated between the two communities is Pacific Rim National Park Reserve (PRNPR), a significant portion of the CSBR’s core protected area.

¹⁹¹ Loucks, L. (2018). Clayoquot Sound UNESCO Biosphere Region, Canada: Nature, Education, Sustainability, Transformation (NEST). <https://www.communityconservation.net/wp-content/uploads/2018/03/NEST-Community-Story-Final.pdf>

Although tourists visit year-round, the bulk arrive in the summer and early fall. A recent report estimated that Tofino hosts an average of 6,600 visitors per day during July and August, more than three times the resident population.¹⁹² In 2017, PRNPR had over 1.1 million visits, mostly between April and October.¹⁹³

Since 2011, the value of Tofino-Ucluelet tourism has more than doubled¹⁹⁴ and tourism jobs make up the bulk of the seasonal and permanent workforce. In Tofino, for example, 55% of the workforce is employed in seasonal tourism-based livelihoods such as those offered in accommodation, and food and retail services.¹⁹⁵

The provincial and federal governments are both very supportive of the tourism industry in British Columbia, and have many programs and initiatives that bolster and market the industry. In 2013, for example, the British Columbia government established Destination British Columbia, a crown corporation with a mandate to market British Columbia domestically and internationally. Destination Canada is a similar program at the federal level.¹⁹⁶

Although First Nations have been underrepresented in the tourism sector—and this is largely still the case for some Indigenous communities within the CSBR—their participation is growing. The biggest barriers are gaps in capacity and competition from established businesses, however First Nations possess several competitive edges, including a growing interest in Indigenous tourism and access to popular destinations. (In the CSBR these would include Hot Spring Coves, Meares Island, and Flores Island, for example.) Provincial and federal programs, such as Indigenous Tourism BC, are supporting First Nation initiatives as interest in Indigenous tourism continues to grow.¹⁹⁷

All of the First Nations within the CSBR are active in some capacity within the tourism sector although given the size of the industry in the region, their participation is limited. Ventures include campgrounds, accommodation, water taxi service, hiking trails,

sport fishing, ecotours, a boat launch, galleries, and restaurants and there are plans to expand existing services.

The CBT supports tourism amenities that enhance the understanding of the natural and cultural heritage of the CSBR. This includes support for festivals and events of interest to both visitors and local residents, such as the: Tofino Shorebird Festival, Pacific Rim Whale Festival, Carving on the Edge Festival, Cultural Heritage Festival, Indigenous Film Festival, Pacific Rim Arts Society Summer Festival, and more. The CBT has also served as an incubator, and over the past 20 years has provided funding and support for many projects as they grew and developed programs and initiatives that are now important amenities for both tourists and local communities. This includes support for the Wild Pacific Trail, the Ucluelet Aquarium, the Raincoast Education Society, the Thornton Creek Hatchery, and more.

As with any successful industry, there are benefits and challenges. Tourism brings both to the CSBR. Please refer to 5.4 for specifics on the benefits.

Despite the success of tourism, and, in general, it's minimal impact on the ecosystems of the CSBR—especially when compared to more extractive industries such as logging or mining—the steady growth of tourism has exposed several stressors that impact communities of the CSBR. As identified in the CBT's 2018 *Vital Signs* report, they include:

- unequal access to opportunities; at present, remote communities do not have the same access to the livelihoods afforded by a tourism sector,
- low wages; up to one-third of the labour force is employed in accommodation, retail and food services, which generally have low skill requirements and low wages; as well, many of these jobs are seasonal and/or part-time (The 2018 *Vital Signs* report notes that 16% of women and 18% of men in the CSBR earn less than \$10,000/year.),

¹⁹² District of Tofino. (2019). Tofino Resort Development Strategy 2019-21, p. 4. <https://tofino.civicweb.net/document/98877>

¹⁹³ Clayoquot Biosphere Trust. (2018). *Vital Signs*. p. 9.

¹⁹⁴ EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis.

¹⁹⁵ Loucks, L. (2019). Tofino's Vital Conversation on Sustainable Tourism. <https://clayoquotbiosphere.org/files/file/5d6b225f941bf/2019-Vital-Conversation-on-Sustainable-Tourism---Summary-Report.pdf>

¹⁹⁶ EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis.

¹⁹⁷ Ibid

- lack of awareness about living near wildlife, including bears and wolves—and a poor understanding on how to safely secure food and garbage—is leading to food-conditioned animals and possible injury to humans and/or animals,
- the growing number of people and off-leash dogs on the region’s beaches is increasing disturbance of shorebirds during spring and fall migrations,
- the seasonal increase in population is stressing infrastructure such as water, sewer, and solid waste management, and places an increased pressure on health and emergency services, and
- conversion of properties from long-term to nightly accommodation and increasing real estate prices means many residents have insecure and/or unaffordable housing.¹⁹⁸

In an effort to help the region tackle the challenges with tourism, and to help define sustainable tourism in the context of the CSBR, the CBT has initiated, participated in, and/or sponsored several initiatives that meet these challenges head-on.

Perhaps the most impactful initiative began in 2011 when local leaders convened a learning committee to identify ways to diversify tourism livelihoods in the “knowledge economy.” They invited BC’s Minister of Advanced Education to the region to discuss ways the region could develop partnerships with post-secondary institutions to deliver education, skills, and training programs locally with a goal to add to the region’s culture and economy. Communities partnered to conduct market research and to complete a capacity and asset inventory in 2015, and following a branding and marketing project, the West Coast NEST (Nature. Education. Sustainability. Transformation.) regional collaboration was launched under the CBT with local First Nations, municipal governments, local education organizations, and destination marketing organizations. The first education coordinator was hired in 2017 with provincial funding. This education tourism initiative seeks to attract a different type of visitor to the CSBR: one who wants to stay longer in the region, to learn from local people, to experience local culture, and to contribute to stewardship of this ecologically significant place. (For more on West Coast NEST, please see page 101.)

Another significant initiative occurred in 2019, when the CBT and the District of Tofino held a Vital Conversation on Sustainable Tourism in 2019. At this event, 32 local community members met with the District of Tofino staff and council to better understand how Tofino’s tourism economy interrelates with community life in Tofino and to consider this experience through the lens of varied community stakeholders. Participants discussed the key pressures that tourism brings, community vulnerabilities, and also how the region can build opportunities that build community resilience.

To highlight the disparity between typical salaries in the region and the actual expenses, the CBT calculated the first regional living wage in 2015. A living wage is different from minimum wage, which is the legal minimum employers must pay as determined by the provincial government. A living wage is the hourly pay that each parent must earn to cover the basic expenses of an average family of four. It considers housing, food, transportation, child care, health care, and is the “bare bones” a family needs for an adequate quality of life. A living wage is not only influenced by employers, but also by economic and social policies that increase affordability for families (such as child care subsidies and public transit). In 2019, the living wage for the CSBR was \$19.63.¹⁹⁹ The CBT updates this tool every two years and presents the results to community stakeholders, inviting conversation about how factors impacting affordability and quality of life can be positively influenced across the region.

Several projects within the CSBR, many supported financially by the CBT, also help mitigate the challenges of tourism. Examples of projects include:

Be a Better Beach Goer – beach etiquette brochure by the Ucluelet Aquarium

West Coast Ambassador Program – a four-part program for seasonal staff, newcomers, and business owners to better understand the region’s history, culture, and ecosystems, including information on UNESCO biosphere reserves

¹⁹⁸ Loucks, L. [2019]. Tofino’s Vital Conversation on Sustainable Tourism. <https://clayoquotbiosphere.org/files/file/5d6b225f941bf/2019-Vital-Conversation-on-Sustainable-Tourism---Summary-Report.pdf>

¹⁹⁹ Clayoquot Biosphere Trust. [2019]. The 2019 Living Wage for the Clayoquot Sound Biosphere Region. https://clayoquotbiosphere.org/files/file/5d7a7e0733b3b/Livingwage_19_web.pdf



Visitors learning about intertidal stewardship during a beach seine hosted by the Raincoast Education Society.
Photo: West Coast NEST

***Iisaak Sin Hay Tiič̓mis* Regional Wildlife Coexistence Network** – In collaboration with Pacific Rim National Park Reserve, the CBT is co-secretariat for this network. It brings together local community planners and stakeholders, including representatives from the tourism sector, municipalities, and Nuuchahnulth communities, to create plans to help humans and wildlife coexist in the CSBR. (See page 133 for more information.)

Thornton Creek Human-Bear Hazard Assessment and Conflict Management Plan – a comprehensive plan to mitigate conflict between visitors to the hatchery and black bears that come to feed on the spawning salmon



Visiting University students learning from Ahousaht elder, Moy Sutherland, in Clayoquot Sound.
Photo: West Coast NEST

A Closer Look West Coast NEST

West Coast NEST (Nature. Education. Sustainability. Transformation.) is a regional collaboration led by the CBT along with communities, organizations, businesses, and individuals from throughout the CSBR that was convened to expand local education opportunities, diversify the economy, and establish further employment opportunities.²⁰⁰

The NEST works to diversify the region's economy by supporting the development of an education tourism sector that connects visitors with experiential learning opportunities. Local experts and knowledge holders lead informative talks, guided tours, and hands-on workshops about a variety of topics such as nature, science, history, sustainability, language, culture, and art.

Education tourism is a sustainable and restorative economy and its growth contributes to the development of healthy ecosystems and communities. Many outdoor experiential learning opportunities provided on the west coast are centred around the Nuuchahnulth First Nations philosophies of *iisaak, qwa' aak qin tiic mis* and *hišukniš čawaak*. In support of a sustainable, healthy ecosystem, NEST initiatives increase learning opportunities in off-peak seasons and in less-visited communities.

The NEST provides funding and logistical support for education and training initiatives that promote conservation and sustainable development.

²⁰⁰ Clayoquot Biosphere Trust. (2019). 2020 Strategic Business Plan.



By supporting the development of education programs and communicating those education opportunities to both local and visiting learners, NEST is supporting the CBT's mission to facilitate the sharing and exchange of knowledge and experiences locally and globally. NEST is also working to increase the participation of Nuu-chah-nulth people in the tourism section, this includes ensuring that people who have not traditionally been paid to share their knowledge are compensated fairly for their time and contributions.

NEST core activities include: supporting the creation of new education and skills training programs for community members and visitors; communication and marketing of the region's education programs to visiting learners; coordinating the delivery of education programs for visiting high school, university, and adult learners; and testing a financial sustainability model for this regional education tourism initiative.

The project is guided by the seven principles for education tourism:

- **attract co-learners:** we welcome others to learn with us
- **community reciprocity:** we share benefits with local communities
- **local knowledge holders are experts:** local people are reimbursed for sharing their knowledge
- **learning networks of practice:** together, we are creating a culture of learning and collaborative problem solving
- **stewardship-in-place:** every community has an outdoor classroom and a place to learn from the land
- **holistic hands-on learning:** we learn best by applied learning and practice
- **cultural safety and sharing:** we create safe spaces for learning and healing across cultural boundaries

Recent initiatives of West Coast NEST include: a 5-day critical incident stress management course with CSBR First Nations; an Ocean Fair to highlight ocean research in the region; a Nuu-chah-nulth tourism training program; an ethical seafood harvesting workshop; workshops and guided tours for visiting academic groups that include instruction on Nuu-chah-nulth culture, and forest ecology, management, and restoration; and sharing of events and course listings on the NEST website (in 2018 this included 94 courses and 572 educational events).²⁰¹

Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support of the local people

II.3 Integrate biosphere reserves into regional planning

²⁰¹ West Coast NEST. (2018). Annual Report.

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry.

Forestry

There has been little forest activity in the CSBR since the last periodic review in 2010. (Although, as noted in 4.1, some valuable timber [old growth] was harvested. For example, 99 ha of old growth was harvested from the Kennedy Flats, a historically logged watershed in which old growth trees were rare.) The recommendations from the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound, adopted by the provincial government in 1995, significantly changed the way industrial forestry was practiced in the region. The approach uses a sustainable development management framework to protect watershed integrity, biological diversity, and other human values such as cultural sites, and recreational and scenic sites. The recent harvest level is about 15% of what it was in the 1980s²⁰² and at a broad scale, logging between 2010 and 2017 accounted for less than 1% of Clayoquot Sound's forest ecosystem.²⁰³ In 2020, the BC government announced that it plans to temporarily defer harvesting of old growth forests, including 260,000 ha within the CSBR, for two years.²⁰⁴ The deferral creates short-term certainty regarding land use within which First Nations can advance government-to-government agreements and pursue Indigenous protected and conserved area designations.^{205 206}

The five First Nations of the CSBR are partners in Ma-Mook Development Corporation and the sole shareholder of MaMook Natural Resources that holds six timber licences and tree farm licenses (TFL) 54 and 57. (MaMook takes an asset management role and outsources logging to others.) TFL 54 covers about 15% of Clayoquot Sound's land base and TFL 57

covers approximately 32%.²⁰⁷ The annual allowable cut translates into 190.4 hectares per year for TFL 54 and 222 hectares/year for TFL 57, based on recent management plans.²⁰⁸ Outside of the TFLs, provincial Timber Supply Areas (TSA) extend into the region. Within the TSA, BC Timber Sales and companies with volume-based licences may operate (e.g., Interfor). There is also some privately managed forest land, owned by Island Timberlands and managed by Mosaic Forest Management, and both Ahousaht and Toquaht hold woodlot licences.²⁰⁹

Market vagaries, labour shortages, mechanization, climate change, and many other factors make the future of forestry in the region unclear. As well, the three First Nations in Clayoquot Sound—the Hesquiaht, Tla-o-qui-aht, and Ahousaht—are in the process of creating land visions. To date, only the Ahousaht's plan has been released and it clearly opposes “industrial forestry.”

New models and opportunities are being explored in the region as it continues to grapple with forest land use. This includes conversion of TFLs into conservation areas, smaller scale local forestry (including community forests or First Nations woodland licenses), and the growth of value-added forest products and/or non-timber forest products sectors.

An example of a community forest is the Barkley Community Forest, a partnership between the Toquaht Nation and the District of Ucluelet who are joint shareholders in the Barkley Community Forest Corporation (BCFC). (The community forest is outside, but adjacent to, the boundaries of the Clayoquot Sound Biosphere.) Led by a board of directors, the corporation worked with the Ministry of Forests, Lands and Natural Resource Operations to identify suitable lands that

²⁰² EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis. p. 43.

²⁰³ Calculated using GIS data from RESULTS opening layer in iMapBC and Vegetation Resource Inventory 2019 layer in Hectares BC.

²⁰⁴ BC Ministry of Forests, Lands and Natural Resource Operations. 2020. Ministerial Orders for Old Growth Designated Areas. Forest Act Bulletin. Number 6. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/timber-tenures/forest_act_bulletin_old_growth_ministers_order.pdf

²⁰⁵ In his mandate letter to Katrine Conroy, Minister of Forests, Lands, Natural Resource Operations and Rural Development, Premier John Horgan instructed her to: “implement the recommendations of the Old Growth Strategic Review in collaboration with Indigenous leaders, labour, industry, and environmental groups to protect more old-growth stands – in addition to the 353,000 hectares protected in September 2020.”

²⁰⁶ Gorley, A. and Merkel, G. (2020). A New Future for Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems. <https://engage.gov.bc.ca/app/uploads/sites/563/2020/09/STRATEGIC-REVIEW-20200430.pdf>

²⁰⁷ EcoPlan International. (2019). Clayoquot Sound Regional Economic Analysis. p. 43.

²⁰⁸ Ibid. p. 39

²⁰⁹ BC Government. South Island Natural Resource District Profile. (2021). https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/district-contacts/south_island_district_profile.pdf

could be managed sustainably for the long-term benefit of both communities. The first harvest was in 2017. The District of Ucluelet recently received \$3,250,000²¹⁰ in dividends generated from the community forest. In 2019, funds were allocated to support tsunami sirens and the initial feasibility review for a new health centre. Plans for 2020 include reserves for affordable housing, supporting the development of the Amphitrite Centre (a decommissioned coast guard facility that will be used for community groups, including the local historical society), and a new emergency generator for the high school.²¹¹ The Toquaht Nation put some of their \$3,250,000 towards the construction of a new community centre. As a condition of awarding harvesting contracts, the BCFC requires contractors to hire local loggers. This equates to up to 30 people during the harvesting periods.²¹²

Fisheries

Fishing has been a mainstay of the First Nations people of the CSBR for generations and remains so today. Commercial fishing also provided significant employment to the communities of Ucluelet and Tofino as they were settled. Government fisheries management policies in the 1980s and '90s, however, significantly changed this industry. The shift to a total allowable catch (TAC) and catch share systems, resulted in the shift in quotas from individual fishers to investors and large companies, who then lease the licenses back to fishers, often at inflated prices. This, and other factors, saw significant reduction in the commercial fleet in the CSBR. The lack of processing facilities and/or restrictions over where fishers must sell their product also introduced challenges.

Although fishing still occurs, including a healthy guided sports fishing sector, few fishers have access to enough quota to make commercial fishing viable full-time employment. First Nations continue to press for access to the resource.

In 2009, the British Columbia Supreme Court (BCSC) found that five Nuuchahnulth Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and

Tla-o-qui-aht) have an Aboriginal right to fish and to sell their fish (all species except geoduck) within their court defined area (CDA). (Three of these nations, Ahousaht, Hesquiaht, and Tla-o-qui-aht, are located in Clayoquot Sound.) Starting in 2012, “demonstration fisheries,” called T’aaq-wiihak fisheries (T’aaq-wiihak means “fishing with the permission of the Ha’wiih [hereditary chiefs]”),²¹³ were established for a variety of salmon and groundfish fisheries. Since 2019, the five First Nations have been fishing under a multi-species fishery management plan (FMP) for their rights-based fisheries within the CDA that was developed in response to the BCSC decision. The current FMP (2020/21) was developed in consultation with the five nations and includes harvest opportunities for salmon, groundfish, crab, prawn, and gooseneck barnacles. Sustainably caught chinook salmon, gooseneck barnacles, and halibut have been sold through the Ha’oom Society, the five First Nations’ wild seafood brand, which is recommended as ocean friendly through the Ocean Organic²¹⁴ sustainable seafood labelling program.²¹⁵

The fishing industry is further challenged by declining resources, particularly poor returns of salmon, and changing oceanographic conditions due to climate change. Still, interest in the sector remains high in the region and the relatively pristine marine environment in the CSBR means that possibilities for innovation—small scale fisheries, niche/artisanal products, local specialty processing—and continued efforts in salmon habitat restoration, are encouraging.

Aquaculture

Despite having suitable nearshore habitat and good water quality, the shellfish aquaculture industry remains small in Clayoquot Sound, with fewer than 10 active oyster farms (Figure 11). The industry was larger in the early 2000s, but high start-up costs, significant lag between start-up and initial harvest, lack of local processing facilities, and low profit margins tempered the initial optimism for growth. It remains an industry with undeveloped potential however, with emerging and/or high-end markets in species other than oysters, including geoducks, sea urchins, sea

²¹⁰ Lyons, G. November 28, 2020, pers. comm.

²¹¹ District of Ucluelet. (2019). Annual Report. https://ucluelet.ca/images/Ucluelet_Annual_Report_v6-optimized-2.pdf

²¹² Lyons, G. November 28, 2020, pers. comm.

²¹³ Foxcroft, D., Hall, D., Cowan, L. (2016). West Coast of Vancouver Island, Canada: The Nuuchahnulth Continue to Fight for Their Aboriginal Fishing Rights Even After These Rights Were Recognized in Ahousaht et al vs Canada (2009). <https://www.communityconservation.net/wp-content/uploads/2016/12/Nuuchahnulth.pdf>

²¹⁴ <https://organicocean.com/>

²¹⁵ Ibid.

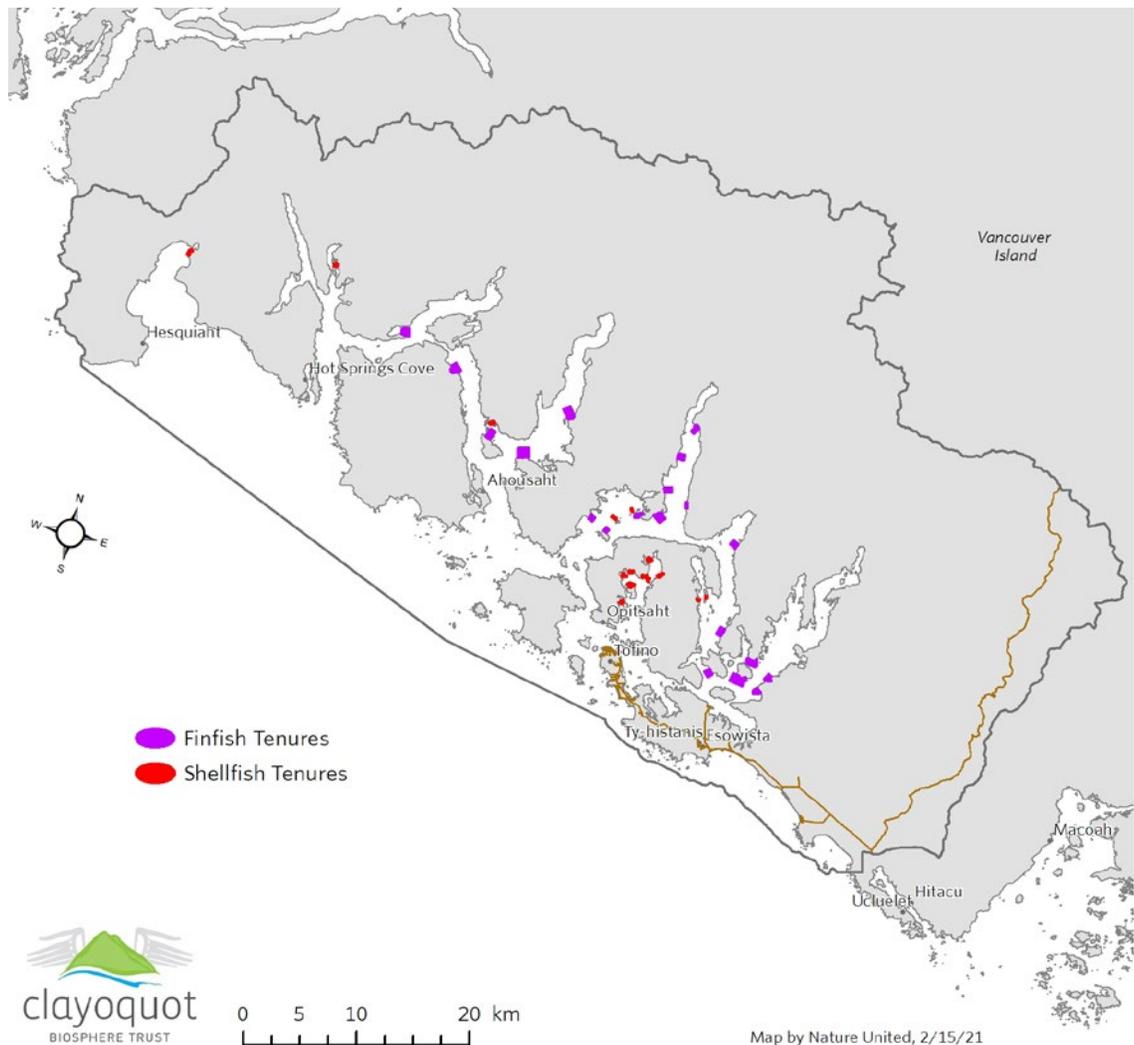


Figure 11 Shellfish and Finfish Aquaculture Tenures in the Clayoquot Sound Biosphere, 2020

cucumbers, and seaweed.

Salmon aquaculture, in contrast, has steadily increased as the market continues to expand. There are 21 licensed farm sites in the CSBR, operated by two companies: Cermaq (15 sites) and Creative Salmon (6 sites), although not all farms are necessarily active at any one time (Figure 11). The farms, and the processing plant run by Cermaq, are significant employers in the region, and both companies have agreements with local First Nations. Cermaq has a protocol agreement with Ahousaht, in whose territory the company's farms are located. The agreement includes a formal conflict-resolution process, funding support for community programs including training and education, and employment opportunities.

Concerns over water pollution and the threats that fish farms could pose to wild salmon mean that, for some, salmon aquaculture is unacceptable in Clayoquot Sound or elsewhere in British Columbia. This brings a high degree of scrutiny to the sector and considerable regulatory oversight. In 2018, the Government of British Columbia stipulated that by 2022 tenures will be granted (new and renewals) only to salmon farm operators that demonstrate they have reached agreements with the First Nation(s) in whose traditional territories they intend to operate,

and also that they can ensure that their operations will not adversely impact wild salmon.²¹⁶ In the 2019 Minister of Fisheries and Oceans Canada mandate letter, the Government of Canada committed to create a responsible plan to transition from open net-pen salmon farming in coastal British Columbia waters by 2021.²¹⁷ Fisheries and Oceans Canada is also exploring opportunities for area-based management to address local concerns. Despite the industry's current strength, the changing regulatory landscape, vagaries of the marketplace, and ongoing controversy leaves some uncertainty in the sector.

Agriculture and Food Security

While the climate of the CSBR region has never supported a large agriculture sector, historically people tended to provide for themselves by harvesting from the land and sea and with small household gardens. Today, of course, most people purchase all or most of their food, however poverty and geographical challenges mean that several communities within the CSBR experience some food insecurity, leaving their residents at a higher risk for poor physical, social, and mental health. For example, only two of the eight communities within the CSBR have grocery stores, which adds travel costs (by boat or by more than 20 km by car) and logistical challenges to accessing food.

In 2008, the CBT began to focus on regional food security as a core regional priority with funding from the Island Health Community Food Action Initiative and with research previously conducted by a Ucluelet community initiative to help understand the region's needs and assets. The CBT's work first focused on community and school gardens and supporting grant recipients under the CBT's annual grant program. The scope was expanded under the name Eat West Coast to support a wider range of regional and cross-sectional projects and partnerships, to increase funding and capacity within the region for food security, and to provide leadership for the Island Health's Food Hubs across eight Vancouver Island regions. (For more on Eat West Coast, see page 107.) To date, the CBT has invested over \$150,000 to support food security and food system projects in the CSBR. Projects vary in scope, from food preservation programs, support for community kitchens, and gardening skills and seed swaps, to community hunts and guidance on the safe and sustainable harvest of traditional foods. A full list of projects can be found at www.eatwestcoast.ca/projects.

Initiatives through NEST have also contributed to food security, for example, offering courses on sustainable and ethical food harvesting. Plans for the CBT's permanent home, the Biosphere Centre, also include assets to help with food security, including a Food Safe teaching kitchen for food preservation programming.

²¹⁶ Government of BC. (2011). Land Use Operational Policy: Aquaculture. <https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/aquaculture.pdf>

²¹⁷ Government of Canada. (2019). Minister of Fisheries, Oceans and Canadian Coast Guard Mandate Letter. <https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-fisheries-oceans-and-canadian-coast-guard-mandate-letter>



Residents participating in a food preservation course made possible by Eat West Coast.
Photo: H el ene Descoteaux

A Closer Look Eat West Coast

Eat West Coast (EWC) is a regional food security initiative of the CBT.²¹⁸ EWC is a member of Island Food Hubs, a collective of organizations working together under the regional health authority, Island Health, to address food security issues and ultimately improve health across Vancouver Island.

Food security exists when everyone in a community has physical and economic access to adequate amounts of nutritious, safe, and culturally appropriate food. As a CBT priority, food security encompasses many of the things that lead to health: a clean environment, employment, cultural relevance, education, and self-esteem. This program aims to help communities and organizations in the CSBR develop effective, community-based responses to food access challenges and increase the understanding of healthy, affordable food choices.

EWC helps achieve the CBT's broad vision by bringing a holistic approach to food security program design and delivery, focusing on regional resilience and community building. The Nuu-chah-nulth philosophy of *iisaak* (living respectfully) is a recurring theme in EWC's work, highlighting the important connections between food, the environment from which it comes, the people who eat it, and the systems of which they are a part.

²¹⁸ Clayoquot Biosphere Trust. (2019). 2020 Strategic Business Plan.

Given the integrated nature of food and food security, EWC helps deliver on CBT's mission broadly, through education and training focused on developing sustainable patterns of resource use in the biosphere region. More specifically, EWC facilitates the sharing and exchange of knowledge (including traditional knowledge) and skills at the local level. Through grants from national and international institutions, this local work is also transmitted globally.

EWC's food focus is strongly linked to CBT's Living Wage and *Vital Signs* projects. Access to food—as a critical measure of poverty and socioeconomic health—is tracked and recorded as part of these projects. As EWC programming grows, there is increasing opportunity to continue formalizing connections between regional food security initiatives and the broader environmental, conservation, and biosphere sustainability conversations that are convened by CBT.

In the past two years, EWC has focused on building partnerships across organizations and communities to support local priorities and increase local capacity. Priorities include strengthening food access networks, addressing food issues for children, emergency food planning for natural disasters, and recognition of west coast food security in the Alberni-Clayoquot Regional District (ACRD) priorities and strategic/business plans, including designing a coastal portion of the ACRD's agriculture plan recognizing marine products as an important component of the plan.

EWC bridges the CBT's biosphere reserve and community foundation mandates. Moving forward, there is potential to make greater connections between regional food initiatives and regional research on the environment, climate change, and sustainable development. To strengthen these relationships, it is important to build on the existing capacity and knowledge of communities in the biosphere region.



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support of the local people

II.3 Integrate biosphere reserves into regional planning

III.2 Improve monitoring activities

5.4 How do economic activities in the biosphere benefit local communities?

As noted in 5.2 and 5.3, tourism is currently the primary economic activity in the CSBR, with finfish aquaculture, shellfish aquaculture, commercial and sports fishing, forestry, various community support sectors (education, health, emergency services, etc.), and civil service completing the economic picture. Wages provided through these jobs, as well as extended healthcare and pension benefits if offered, obviously benefit the employees and local communities as they provide the means for people to support other businesses and participate in, and contribute to, their community.

While wages are often lower than in resource-based jobs, the tourism sector is often the entry for young people coming to the region, many of whom decide to stay and make it their home. Entrepreneurship is relatively high, with 19.2% of the CSBR population being self-employed, compared to 13.9% in the province.²¹⁹ More recent data shows that between 2015 and 2018, the number of business licenses issued in the region increased 24%.²²⁰

The tourism sector also provides local youth with more employment opportunities than what is typically available in rural communities. In 2018, for instance, 39% of high school-aged youth worked part- or full-time and 71% said it wasn't hard to find a job.²²¹

Although the seasonal population to the CSBR swells, the residential population is only about 6,462 people, and the small towns within the region have a strong sense of community. Volunteerism is high as is engagement with charities and non-profit societies. In 2017, for instance, there were 32 registered charities in the region. Overall, they had 72 part-time employees and 29 full-time employees and contributed nearly \$4.4-million in annual expenditures to the region.²²² Also in 2017, local organizations, largely supported by volunteers, hosted 50 events and festivals.

There is a strong sense of giving back among the CSBR's business community. Businesses sponsor a variety of initiatives that support local organizations and programs. For example, Long Beach Lodge in Tofino regularly supports the Raincoast Education Society through direct donations and sponsored events; Ocean Outfitters, a Tofino-based adventure tourism company, donated \$640,000 in 2018–2019 to local conservation-focused organizations and initiatives; the local Co-op grocery stores annually sponsor the CBT's What I Learned About the Biosphere project that helps local children explore the Clayoquot Sound Biosphere; and Tofino Resort + Marina launched Fish for the Future, an annual catch-and-release fishing tournament, and established the Fish for the Future donor-advised fund with the CBT to raise money for the protection of wild fish in Clayoquot Sound. Cermaq Canada also offers a donations and sponsorship program. Areas of support include salmon enhancement, ocean and shoreline restoration and mitigation work, and support for youth-focused activities such as sports, the arts, and after-school care.²²³ These are just a few of the many ways in which businesses support local initiatives, large and small.

There are also several specific initiatives that directly support First Nations within the CSBR. Many companies in Tofino, for instance, are Tribal Park Allies—businesses committed to supporting the Tla-o-qui-aht First Nations' vision of achieving a socially and ecologically just conservation economy. In 2019, the Tribal Park Allies raised \$84,321,²²⁴ money which is used to support ecological protection and restoration of the Tribal Parks ancestral lands and the resurgence of Tla-o-qui-aht culture and governance.²²⁵ Understanding and support for this voluntary ecosystem service contribution is steadily growing.

In Pacific Rim National Park Reserve, one of the Clayoquot Sound Biosphere's core areas, Parks Canada is working with the Tla-o-qui-aht First Nations and Yuutu?it?ath to ensure that the construction of a

²¹⁹ 2016 Census Data, Statistics Canada.

²²⁰ Clayoquot Biosphere Trust. (2018). *Vital Signs*. p. 9

²²¹ Ibid p. 16.

²²² Ibid p. 19.

²²³ pers. comm. Janice Valant, Cermaq Canada Ltd., February 27, 2021

²²⁴ <https://tribalparkalliance.com/news/> March 2020, Spring Equinox newsletter

²²⁵ <https://tribalparkalliance.com>

new 25-km multi-use trail,²²⁶ ʔapsčiiik ʔašii, closely involves local nations. This includes: collaborating with an Elders Working Group on pathway routing, Nuu-chah-nulth language and interpretive cultural content; employing First Nations monitors and labourers (derived from an Indigenous Benefits Program); and, developing a Junior Guardian program, which involves youth from Tla-o-qui-aht First Nations and Yuutuʔitʔath in projects that help protect and present the natural and cultural heritage within their traditional territories.²²⁷

The West Coast NEST initiative (see page 101) also makes specific efforts to ensure that First Nations' knowledge holders are compensated fairly for sharing their knowledge, and works in the spirit of the Truth and Reconciliation Commission of Canada's calls to action by respectfully supporting First Nations community members in their efforts to develop and deliver new education programs, and by increasing access to quality education programs and skills training opportunities for First Nations community members.²²⁸

Tofino and Ucluelet are both classified as resort municipalities. The Resort Municipality Initiative (RMI) is a provincial program that helps small resort-oriented communities with funding. Since these municipalities typically have a small tax base due to their size, the demands of tourist activity can strain resources available to provide infrastructure and programming. RMI funding allows these communities to dedicate resources to improving tourism-based infrastructure and amenities that would otherwise be unachievable with their small tax bases. Funding for the program comes via a grant from the provincial government based on the amount a community generates through the Municipal and Regional District Tax Program.²²⁹

Although RMI funding does not support infrastructure such as sewer and water, and is directed to projects that enhance visitor experience, most projects also benefit local residents and do so without drawing on the municipal taxes. Examples of projects in Tofino include a mountain bike park and trail, improved infrastructure at local beaches (washrooms, showers), a seasonal shuttle bus, and various arts and culture initiatives.²³⁰ In Ucluelet, project funding has supported the Wild Pacific Trail and the Ucluelet Aquarium.

Short-term vacation rentals are popular in both Tofino and Ucluelet, although both communities have recently clarified bylaws to manage the number of short-term rentals and to reduce those operating illegally. In 2018 there were 301 rentals in the CSBR listed on the AirBnB platform, down from 350 in 2016. To partially alleviate how short-term rentals might be contributing to the lack of long-term affordable housing, a 2018 agreement between the province and AirBnB directs a tax collected on bookings directly to the communities.²³¹ The agreement allows for the funds to be used by municipalities for affordable housing initiatives, which is a priority for the region.²³²

²²⁶ Parks Canada. (2020). ʔapsčiiik ʔašii (pronounced ups-cheek ta-shee): The new multi-use pathway <https://www.pc.gc.ca/en/pn-np/bc/pacificrim/visit/visit5/visit8>

²²⁷ Parks Canada. (2020). Project Update: ʔapsčiiik ʔašii (ups-cheek ta-shee) <http://secure.campaigner.com/csb/Public/show/diou-2baewz--rv3fo-71euepz3>

²²⁸ Clayoquot Biosphere Trust. (2019). Strategic Business Plan.

²²⁹ District of Tofino. n.d. Resort Municipality Initiative. <http://www.tofino.ca/resort-municipality-initiative>

²³⁰ Ibid.

²³¹ Bailey, A. (2018). Tofino and Ucluelet cheer new AirBnB tax agreement. Westerly News. <https://www.westerlynews.ca/news/tofino-and-ucluelet-cheer-new-airbnb-tax-agreement/>

²³² District of Tofino. (2018). Online Accommodation Platforms to Charge Taxes. <http://tofino.ca/blog/view/online-accommodation-platforms-to-charge-taxes>.



The Tla-o-qui-aht First Nation employed members who had taken apprenticeship programs at Camosun and North Island Colleges to build member houses from shipping containers. Photo: CHEK News

A Closer Look Local Procurement

Within the Clayoquot Sound Biosphere, local procurement is being modeled as a tool for community well-being. The CBT's 2020 Strategic Business Plan specifies the creation of a local procurement policy²³³ for the upcoming construction of the Biosphere Centre to "help guide the build process and selection of potential contractors in order to utilize local labour, support capacity building, and implement sustainable building practices."²³⁴

In 2018, the District of Tofino (DOT) adopted a new "Purchasing and Disposition of Assets Policy" that includes language around strategic procurement that results in social, environmental, and community benefits.²³⁵²³⁶ As one example, rather than wrapping all portions of a downtown revitalization project into one contract, they split off one section (landscaping) which they knew could be fulfilled locally. This ended up being a cost savings to the community since travel and accommodation for outside workers, and the transportation of large equipment, did not have to be added to the bid price. As well, local contractors could be used for ongoing maintenance of the landscaping. To encourage local procurement, DOT staff supported some small businesses through the bid process.²³⁷

²³³ "Identify opportunities for advancing a development project as a model for appropriate and ethical development, including creating a procurement policy that can help guide the build process and selection of potential contractors in order to utilize local labour, support capacity building, and implement sustainable building practices."

²³⁴ Clayoquot Biosphere Trust. (2019). Strategic Business Plan. p. 13.

²³⁵ Coastal Communities Social Procurement Initiative. (2019). Unbundling for Local Benefit and Cost Savings.

²³⁶ District of Tofino. (2018). Tofino 2018 Annual Municipal Report. <https://tofino.civicweb.net/filepro/document/94844/2018%20Annual%20Report.pdf>

²³⁷ Coastal Communities Social Procurement Initiative. (2019). Unbundling for Local Benefit and Cost Savings.

In 2019, the DOT posted an RFQ (request for quote) that included questions related to community and social development objectives and community benefits. For example, it requested that bids include strategies and an operations plan for workforce accommodation; for an offshore and on-shore transportation strategy with emphasis on encouraging employment by Tla-o-qui-aht First Nations people who may live in a boat-access only community or who may not own a vehicle; and how they would include local apprentices, and a diversity of apprentices (e.g., Indigenous, female, and/or youth), in the project.



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

II.3 Integrate biosphere reserves into regional planning

5.5 How do you assess the effectiveness of actions or strategies applied? (Describe the methods, indicators.)

The CBT assesses the effectiveness of its actions and strategies applied using a range of methods including community and ecosystem healthy monitoring, national and international strategies, and regular program audits. See 5.10 for additional details.

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

5.7 Local business or other economic development initiatives. Are there specific “green” alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

[combined answer]

Innovative economic development initiatives in the CSBR that are responsive to changes and adaptation include:

- Grants distributed via the CBT’s advisory committees. Grants can support economic development in myriad ways including direct project funding, incubator funding for new initiatives, and skills development and training.
- West Coast NEST is a regional education tourism collaboration led by the CBT along with communities, organizations, businesses, and individuals from throughout the CSBR that was convened to expand local education opportunities, diversify the economy, and establish further employment opportunities. (For more, see page 101.)
- The creation of regional festivals that are grounded in the natural and cultural wealth of the CSBR and that are of benefit to residents and visitors. Examples include the Tofino Shorebird Festival, the Pacific Rim Whale Festival, the Carving on the Edge Festival, the Oyster Festival, the Clayoquot Salmon Festival, and more.
- Resource stewardship initiatives, such as the Tribal Park Allies, a program through which businesses collect an ecosystem services fee as a way of

supporting the Tla-o-qui-aht First Nations’ tribal park and guardian program.

- Local procurement: Local chambers of commerce encourage local shopping via “Try Local” campaigns, and special events and markets during the Christmas holidays. The District of Tofino and the CBT also have initiatives to encourage local procurement during capital projects. (For more details, see page 111.)
- Led by local non-profits, in particular the Surfrider Foundation, local businesses are making more sustainable choices. This includes avoiding plastics straws and cutlery, replacing polystyrene take-away containers with cardboard, using reusable shopping bags instead of plastic, installing containers for cigarette butts, and more. A [video by the Uculelet Co-op](#) grocery store highlights their “green” initiatives, which includes using rainwater instead of groundwater for their carwash, and using a waste digester to process organic waste into biofuel.^{238 239}
- In 2018, the Ucluelet Chamber of Commerce implemented a year-long business and employment retention and expansion program in an effort to keep local businesses and employment opportunities in good condition and to help businesses grow into the future. Detailed interviews were conducted with local employers to learn about challenges, growth opportunities, expansion or contraction plans, and operating risks. The chamber then hosted many programs and began new initiatives to tackle the issues.
- Junior Achievement BC-Ucluelet chapter offers entrepreneurship training and mentorship for high school schools. During the 16-week “company program,” students experience the excitement of planning and operating their own small business.

There are also a variety of infrastructure projects within the region that both support the health and well-being of CSBR residents and also address sustainability. They include:

- Three renewable energy projects (run-of-river hydro) completed by the Tla-o-qui-aht First Nations. These projects generate electricity that is sold back to BC Hydro under a long-term contract.²⁴⁰

²³⁸ Ucluelet Co-op. (2019). Annual General Meeting. <https://www.uclueletco-op.crs/sites/ucluelet/local/detail/annual-general-meeting-2019>

²³⁹ O’Malley, N. (2018). Ucluelet Co-op receives BC’s first food waste converter. <https://www.westerlynews.ca/news/ucluelet-co-op-receives-b-c-s-first-food-waste-converter/>

²⁴⁰ <http://canoecreek.ca/canoe-creek/>



Seaweed Fest participants learning about seaweed in Clayoquot Sound. Photo: West Coast NEST

- A run-of-river project completed by the Hesquiaht First Nation will support the community's electricity needs, making the current diesel generator redundant.
- A new wastewater treatment plant to ensure safe drinking water and upgraded sewage treatment in Ahousaht.²⁴¹
- Improved Internet access and cellular service for the CSBR, in particular for outlying communities, has provided better access to education, health services (e.g., e-Health), emergency services, and communication options.^{242 243}
- Partial funding has been secured for a new wastewater treatment plant for Tofino and construction will begin in the near future. Currently untreated wastewater is discharged into Clayoquot Sound, and in 2015 Tofino committed to meeting federal wastewater effluent guidelines and to develop the modern system that includes the new treatment plant, and improved wastewater collection system and outfall.²⁴⁴

²⁴¹ Plummer, E. (2018). Sewage treatment and tap water upgrades prepare Ahousaht for future growth. *Ha-shilth-sa*. <https://hashilthsa.com/news/2018-01-18/sewage-treatment-and-tap-water-upgrades-prepare-ahousaht-future-growth>

²⁴² Plummer, E. (2017). Community-wide high-speed Internet coming to Ahousaht. *Ha-shilth-sa*. <https://hashilthsa.com/news/2017-11-13/community-wide-high-speed-internet-coming-ahousaht>

²⁴³ Titian, D. (2019). Ahousaht celebrates cellular service with new tower. *Ha-shilth-sa*. <https://hashilthsa.com/news/2019-11-13/ahousaht-celebrates-cellular-service-new-tower>

²⁴⁴ District of Tofino. (2019). District Receives Wastewater Funding. <http://tofino.ca/blog/view/tofino-receives-wastewater-funding>



Ucluelet restaurant Heartwood Kitchen poses with their Ocean Friendly Business certificate after completing the program run by Surfrider Pacific Rim. Photo: Westerly News

A Closer Look Surfrider Foundation's Ocean Friendly Business Audit

In 2017, the Surfrider Foundation received funding through the CBT to pilot its Ocean Friendly Business (OFB) campaign. Through the program they were hoping to address plastic pollution, in particular single-use plastics, which were all too common in the region because of the tourism economy. “We were looking for more circularity,” explains Lilly Woodbury, who runs the OFB program. “We wanted more recycling, less single-use plastic, and this sort of thing.”

Every year since 2017, the program has worked with 15 businesses a year to help them achieve OFB certification. Lilly, or Surfrider volunteers who help with the program, start with an operational audit of all aspects of a business—offices, retail space, kitchen, bar, waste management—to “see what comes out of the woodwork,” says Lilly. The audit covers building and operations, waste, water, transportation, purchasing and products, climate actions, and social aspects of the business. The OFB team provides suggestions on how the business can green its operations, providing resources with tips on how to reduce waste, save energy, and make the business ocean friendly.

In 2019, the project expanded with the receipt of a System Change Grant from the Vancouver Foundation, which Surfrider will use to expand and scale up their efforts to create an Ocean Friendly Corridor between Tofino and Ucluelet, and to mentor four other coastal communities in becoming “ocean friendly.” Intakes start each September, and by Earth Day—April 22—most businesses have become compliant.



Lilly is especially proud of the ways in which the program has spurred change in the CSBR. “It’s fulfilling to take a business from point A to point B and see the change that can be made in eight months,” she says. “It’s uplifting for the business, for volunteers, and the communities. It’s also helped us shift regulations and start movements for change.” Recent bylaws^{245 246} in Tofino and Ucluelet banning plastic straws and single-use plastic bags²⁴⁷ are part of this shift. “Our theory of change is that you get community buy-in so that we can then move to regulatory change,” says Lilly. “And we’re seeing that.”

Statutory Framework of the World Congress of Biosphere Reserves

I.1 Integrate biosphere reserves into conservation planning

II.2 Secure the support and involvement of local people

II.3 Integrate biosphere reserves into regional planning

III.1 Improve knowledge of the interactions between humans and the biosphere

III.3 Improve education, public awareness, and involvement

III.4 Improve training for specialists and managers

²⁴⁵ District of Tofino. n.d. Single-use Item Regulations. <http://tofino.ca/plastics>

²⁴⁶ District of Tofino. West Coast Single-Use Plastic Regulations: What Businesses Need to Know. <https://tofino.civicweb.net/filepro/document/91596/TIP%20SHEET%20-%20Businesses.pdf>

²⁴⁷ The ban on plastic bags was implemented in Tofino, but has been temporarily rescinded due to COVID-19.

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage.

Since its inception, the CBT has recognized and honoured the cultural values of the Indigenous population of this region and this philosophy continues to strengthen, as demonstrated in 2.3.6, 2.3.7, and elsewhere in this document. As noted in its 2020 Strategic Business Plan, the CBT is guided by several frameworks that align with UNESCO mandates and this includes the Truth and Reconciliation Commission of Canada's Calls to Action, which recognizes the historical and ongoing injustices perpetuated against Indigenous peoples and the legacy of colonialism still in place today, and helps chart a path that creates joint visions of reconciliation.

Over the past decade, other organizations and levels of government, alongside the CBT, have taken important steps toward recognizing various cultural values in the region. Some examples of recent initiatives and actions include:

- Traditional land acknowledgement at most events and formal meetings (e.g., at municipal council meetings) and in formal documents (e.g., CBT and District of Tofino annual reports).
- Direct and meaningful consultation with First Nations working groups and/or Elders working groups on projects such as the Kw'isitis Visitor Centre, ʔapsčiiik t̓ šii (multi-use path through Pacific Rim National Park Reserve), *Hišinqwiit* (a regional gathering), and more.
- In 2016, the CBT hosted a workshop focused on working effectively with Indigenous peoples in an effort to cultivate culturally inclusive projects, workplaces, and communities.
- Joint planning process by the District of Tofino and the Tla-o-qui-aht First Nations for the use and management of *načiqs* (Monks family home and surrounding lands at Grice Point) and a commitment to "develop this public space together, in the spirit of reconciliation."²⁴⁸
- In 2018, Ahousaht and the District of Tofino signed a protocol agreement which provides a framework for the establishment of a stronger government-to-government relationship. The agreement seeks to continue to build a cooperative

relationship in the spirit of reconciliation, and move forward key areas of mutual interest including health, infrastructure, shared services, emergency planning, economic development, tourism, and other ventures.

- In 2018, a Čiinut (totem pole) was raised in Tofino in honour of the Tla-o-qui-aht ha'wiih (hereditary chiefs) and their spiritual and physical stewardship of their hahoutee (traditional territory). The pole carving team was led by Tla-o-qui-aht master carver Joe David who envisioned the Čiinut as a way to acknowledge this powerful relationship between the Ha'wiih and their territory and how stewardship of the past and present can carry on into the future. The ceremony was followed by a celebratory dinner hosted by the District of Tofino.
- In 2018, through the West Coast NEST initiative, the CBT supported Indigenous Tourism Training designed and led by Ahousaht businesses and educators. Training was provided to local First Nations community members interested in working in tourism.
- In 2019, the District of Tofino made a formal apology for a motion made in 1947 to "exclude Orientals" from the community. (Shortly after the attack on Pearl Harbor in 1941, Canadians of Japanese descent that were living throughout the CSBR were interned away from the coast by the federal government.) The motion to exclude their return was not passed, but a formal apology had never been made.
- PRNPR hosts a Haahuupa series in which First Nations people share their culture with visitors from across Canada and the world through arts, language, music, dance, etc.
- In 2019, the District of Tofino staff and council took part in an Indigenous histories workshop, covering key First Nations' history within BC and Canada, terminology, an overview of the BC treaty process and its successes and challenges, First Nations governance, and concepts specific to Tla-o-qui-aht history, language, and worldview.²⁴⁹
- In 2020, the Yuutuʔitʔatʔ Government raised their flag in the District of Ucluelet's council chambers in a gesture towards working together on common goals.
- Tofino's poet laureate, Joanna Streetly, featured stories by Tla-o-qui-aht Elder Ah-neets-nas (Tom Curley) and Japanese-Canadian resident Ellen Kimoto in a poetry project with local children.

²⁴⁸ District of Tofino. [2018]. Tofino 2018 Annual Municipal Report. <https://tofino.civicweb.net/filepro/document/94844/2018%20Annual%20Report.pdf>

²⁴⁹ District of Tofino. [2019]. Annual Municipal Report. <http://www.tofino.ca/files/2019AnnualReport-FINAL.pdf>



Cedar weaving workshop at the Hišinqwiit™ regional gathering. Photo: Melody Chartie

Through the project, students learned about the CSBR's local history, including residential schools and the Japanese internment during World War II.

- The CBT funds a variety of projects that support Nuu-chah-nulth culture. Examples include: traditional seagrass harvesting and weaving, design and fabrication of cultural dresses and shawls, a carving club that pairs Elders and youth with experienced carvers, and a workshop on how to traditionally prepare and process fish, including how to build a smokehouse.
- For the CBT's knowledge symposiums, Indigenous knowledge and ways of knowing are used as guiding frameworks for conversations and are central to discussions about land, water, air, and research in the CSBR.
- Through the West Coast NEST initiative, the CBT is working to establish and normalize a pay-for-service model that ensures equitable financial compensation for Indigenous knowledge holders and Elders. Historically, Indigenous community members have been infrequently or inequitably compensated for their contribution when sharing knowledge to education programs and events.

Other initiatives in the region seek to inform and educate residents and visitors on the cultural heritage of the region. For example, historical societies in both Ucluelet and Tofino offer exhibits that expand beyond “settler narratives,” and the West Coast NEST has seen an increase in visitors wanting to learn about the region's various cultures from Indigenous knowledge keepers through stories and songs, as well as hands-on experiences such as cedar weaving. Both Leadership Vancouver Island (see page 122) and the Ambassador Program—a four-part program for seasonal staff, newcomers, and business owners to better understand the region's history, culture, and ecosystems—offer cultural awareness programming. The 2016 *Vital Signs* report noted that after completing the Leadership Vancouver Island program, alumni reported that over 85% feel more empathy and understanding for other cultures and over 77% talk to more people in their community and surrounding communities.”²⁵⁰

²⁵⁰ Clayoquot Biosphere Trust. (2016). *Vital Signs*. p. 6



Hišinqwiił regional gathering. Photos: Melody Charlie

A Closer Look Hišinqwiił Regional Gathering

2017 marked the 150th anniversary of Canada's confederation. Across the country there were many celebratory events, but the anniversary was not cause for celebration for many of the country's Indigenous people who were subject to many injustices as the country was colonized. In recognition of this reality, the CBT used the federal government's Canada 150 funding to hold a regional gathering, *Hišinqwiił* ("to gather together indoors") in Pacific Rim National Park Reserve (PRNPR), that brought together people from all communities in the CSBR to join in a spirit of healing and reconciliation to recognize their unique strengths, shared history, and cultural diversity. In her address to the gathering, Rebecca Hurwitz, the CBT's executive director, noted that as a UNESCO designated site, the Clayoquot Sound Biosphere provides a link between healing and reconciliation and the UNESCO mandate to build peace in the minds of men and women.

The event was coordinated through a partnership between the CBT, the Yuutuł?i?ath Government, and PRNPR. The core planning team of Indigenous and non-Indigenous people included members from each organization, interested community members, and alumni from Leadership Vancouver Island (see page 122), and the planning process focused largely on understanding Nuuchahnulth language and celebration protocols. Even the date of the gathering, coinciding with a new moon, held significance to the planning group.

“We have mixed feelings ... about Canada’s 150th birthday and what that means to us. The last 150 years hasn’t necessarily been an easy time for us,” said Tyson Touchie from Yuutuʔitʔath in an opening address, speaking on behalf of the *Ha’wiith* (hereditary chiefs) and accompanied by the *Tyee ha’wilth*, hereditary chief Wilson Jack. “But at the same time, if you look at the good in things we’re still here and we still celebrate the good things in life.”

The event was a great success with hundreds of people from the region gathering to share food, including salmon cooked traditionally on an open fire, and to learn about Indigenous experiences and cultures.

As part of their commitment to moving forward with reconciliation with Indigenous people using concrete initiatives that encourage respect and understanding,²⁵¹ the Canadian Commission for UNESCO supported the production of a reflection paper and a short video about the event in the hopes that these tools will further reconciliation between Indigenous and non-Indigenous peoples in Canadian biosphere reserves.



Statutory Framework of the World Congress of Biosphere Reserves

I.1 Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves

II.1 Secure the support and involvement of local people

III.3 Improve education, public awareness and involvement

²⁵¹ Canadian Commission for UNESCO. (2019) Reconciliation in Action: Building Meaningful Relationships in Canada’s Biosphere Reserves. <https://en.ccunesco.ca/blog/2019/9/reconciliation-in-action-building-meaningful-relationships-in-canada-biosphere-reserves>

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

The CBT's partnerships provide many opportunities to assist with facilities and services that support CSBR communities. For example, the Coastal Family Resource Coalition (CFRC), a multidisciplinary network of health and social service providers that addresses the needs of children, youth, families, and communities within the region, is coordinated and administered by the CBT and guided by the CFRC executive committee. The CFRC's overall goal is to advocate for, and advance, health promotion efforts in the region. Similarly, Eat West Coast is a regional food security initiative of the CBT. This program aims to help local communities and organizations develop effective, community-based responses to food-access challenges, and increase the understanding of healthy, affordable food choices. Priorities include strengthening food access networks and addressing food issues for children, emergency food planning for natural disasters.

Through its comprehensive granting program, the CBT provides the funds that helps other non-profits in the CSBR develop and deliver community support services identified as priorities. For example, recently funded projects include a grief and loss support program for youth, a diabetes and community wellness project, an assessment on the relocation of the regional food bank, and a study on a regional transportation strategy.

The CBT is currently in the process of achieving a Biosphere Centre, a permanent home for the delivery of CSBR programs and projects. The CBT envisions the centre as a place of sharing and learning in and for the CSBR and the design includes meeting rooms and a community kitchen. The vision is to create a welcoming place and a community space where residents, visitors, and knowledge holders feel equally comfortable, and where scientists and storytellers can share their valuable information and teachings.

The CBT is responsive to community requests for skills training. As such, they have delivered, and/or partnered to deliver training within the region. Examples include:

- a multi-day tourism training program in Ahousaht at the Aauuknuk Lodge, coordinated by West Coast NEST, that prepared participants to become ambassadors and learn employment skills for Indigenous tourism,
- a five-day critical incident stress management program coordinated by the West Coast NEST and delivered by the Justice Institute of British Columbia in partnership with Hesquiaht First Nation, Ahousaht, and Tla-o-qui-aht First Nations,
- two sessions of First Responder training with funding from the Nuu-chah-nulth Education and Training Program and coordination by the CBT, and
- a West Coast NEST survey of local employers that offer adventure tourism to ascertain skills they would like their employees to have; the NEST then worked with the local high school to develop an outdoor education program, which, alongside academic courses, builds outdoor recreation and wilderness safety skills.



LVI Alumni Roberta Tom. Photo: CBT

A Closer Look Leadership Vancouver Island

Leadership Vancouver Island (LVI) is a community focused, grassroots leadership development program.²⁵² The west coast chapter, coordinated and administered by the CBT, focuses on the CSBR and its communities in order to grow local leaders, provide local educational opportunities, and develop cross-community and cross-cultural connections. Coordination of the program aligns with the CBT's mission to provide logistical support for education and local training initiatives, and to help facilitate the exchange of local knowledge.

The LVI program addresses leadership development through the concept of "inside-out" leadership learning. This development occurs at three levels: leading self, leading others, and leading community. Participants in the LVI program engage in community leadership development through several dynamic and group learning opportunities during the program year. The course is recognized by Vancouver Island University and students qualify for six university credits based on their personal learning plan.

The CBT encourages participation from throughout the region and instruction ("leadership days") are rotated between communities in the CSBR. The curriculum, community project, and the focus on developing a better understanding of all communities in the region, makes the west coast chapter of LVI an exciting opportunity for west coast residents, combining education with action.

²⁵² Clayoquot Biosphere Trust. (2019). Strategic Business Plan.

The CBT provides administration and coordination support for LVI in fulfillment of its mission; specifically, to provide logistical support for education and local training initiatives, and to help facilitate the exchange of local knowledge.

Roberta Tom, a Tla-o-qui-aht First Nations community leader, entrepreneur, and member of the LVI class of 2016, describes her experience in the program:

“Between work and family commitments, life can get busy. Having the course offered here at home made it easy to say yes to the next step in my leadership journey. But beyond convenience, it was meaningful to do this personal and community development work in our territory, learning from the place we call home and feeling comfortable here. LVI helped me reflect on teachings from my mother and family growing up Tla-o-qui-aht. It helped remind me of what I already know, gave me tools to stand up and let my voice be heard. It helped me be proud of who I am. The course was a stepping stone that led to my acceptance into the Aboriginal Management Program at the Sauder School of Business at the University of British Columbia.”



Statutory Framework of the World Congress of Biosphere Reserves

III.3 Improve education, public awareness, and involvement

III.4 Improve training for specialists and managers

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

The CBT employs several indicator strategies to assess the effectiveness of its programs, granting, and of other initiatives within the CSBR.

Vital Signs

Since 2012, the CBT has prepared a *Vital Signs* report. This initiative collates and analyzes data for a variety of indicators that measure the vitality of the CSBR, identifies significant trends, and supports actions on issues that are critical to the health of the region's ecosystems and communities. The report is critical not only to the CBT's work and targeted use of its endowment funds, but is also used by other agencies and communities to help guide their own initiatives. (For more details on *Vital Signs*, see page 125 and Appendix V.)

Living Wage

Every two years, the CBT collects data to determine the cost of living in the CSBR. The living wage is the hourly pay that each parent must earn to cover the basic expenses of an average family of four. It considers the local costs for housing, food, transportation, child care, health care, recreation and is the "bare bones" a family needs for an adequate quality of life.

In 2015, the CBT published the first living wage calculation to draw attention to local affordability issues faced by families and to inspire action by local employers and all levels of government. A living wage is not only influenced by employers, but also by economic and social policies that increase affordability for families (such as childcare subsidies and public transit). The CBT updates the living wage every two years and presents the results to community stakeholders, inviting conversations about how factors impacting affordability and quality of life can be positively influenced across the region. (For more on the Living Wage, see Appendix VI.)

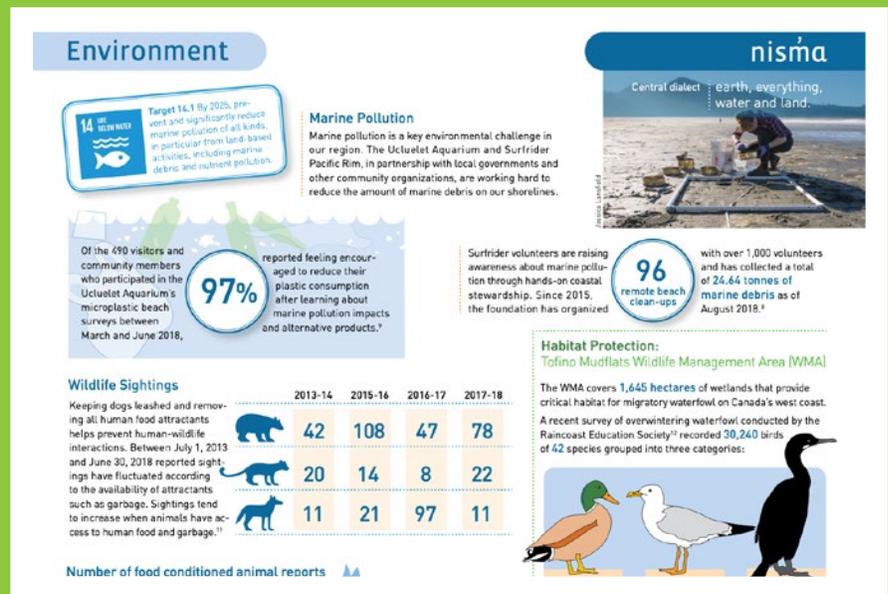
National and International Frameworks

As part of its strategic planning, the CBT aligns its work with several frameworks that have specific goals and outcomes. These include: the United Nations Sustainable Development Goals, the Statutory Framework of the World Congress of Biosphere Reserves, the Lima Action Plan, and the Truth and Reconciliation Commission of Canada's Calls to Action. Alignment with these goals are part of the most recent Strategic Business Plan (2020).

Program Audits

Regular program audits (every three years) by a credentialed third party, assesses to what degree the CBT has met its objective in supporting local projects related to increasing local capacity, knowledge, participation, and innovation through research, education, and training initiatives for the sustainability of the CSBR. The audit focuses on the four program objectives of the Canada Fund and six key program outcomes of the CBT and assigns a level of achievement: strong achievement, moderately strong achievement, moderate achievement, or limited achievement.

A Closer Look Vital Signs



An example page from the CBT's 2018 *Vital Signs* report. Photo: CBT

Every two years, the CBT publishes a report on the state of many different indicators of the health of our communities and ecosystems. First published in 2012, the *Vital Signs* report has become a go-to source for local information and stories. It brings together data from CBT projects (such as Living Wage), initiatives of other non-profit and academic groups, scientific research, as well as data from the Vancouver Island Health Authority, the RCMP, the BC Ministry of Education, Parks Canada, and Statistics Canada and other sources, to get a broad view of the changes happening in our region. The most recent report (2018) included data on: the environment, climate change impacts, employment, income inequality, housing, transportation and safety, health and wellness, youth, education, belonging and leadership, arts and culture, and Nuu-chah-nulth language.

The report is publicly available, and the CBT makes an effort to share the report's key findings with local First Nations, municipal governments, and organizations with an aim to inspire meaningful data-driven conversations and encourage specific action in priority areas. The CBT also uses the *Vital Signs* report to track regional progress towards the United Nation's Sustainable Development Goals. Specifically, local initiatives that address poverty, fight inequality, improve education, support biodiversity, initiate partnerships, and identify climate change solutions.

Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

II.3 Integrate biosphere reserves into regional planning

III.1 Improve knowledge of the interactions between humans and the biosphere

II.2 Improve monitoring activities

III.3 Improve education, public awareness and involvement





The CBT hosts numerous community gatherings to build regional relationships and community capacity. Photo: Melody Charlie

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

Development efforts in the CSBR have benefited in the last decade by strengthened communications and cooperation between the region's eight communities. This includes, for example, protocol agreements between Tofino and Ahousaht, and Tofino's Declaration of Reconciliation with the Tla-o-qui-aht First Nations.²⁵³ Tofino and Ucluelet are working collectively more and more over the past decade, mostly recently on COVID-19 response, as well as on a housing assessment.

The Truth and Reconciliation Commission of Canada's Calls to Action have helped prioritize activities and projects of the CBT and other organizations and governments in the CSBR as they work toward addressing historical and current inequality with the region's Indigenous peoples. First Nations current government-to-government negotiations over land use and access to resources in Clayoquot Sound will also provide clear directions for the future. This builds off the Maa-nulth Agreement, which, in 2010, set out the rights and benefits respecting land and resources, and self-government over land, resource, and citizens, to five First Nations, including the Toquaht First Nation (now Toquaht Nation) and the Ucluelet First Nation

(now Yuułu?ił?ath).²⁵⁴ This modern-day treaty provided certainty for the nations and provided the basis from which to develop businesses and enter into agreements, while also prioritizing ongoing negotiations.

The CBT has played a significant role in encouraging residents and communities to "think like a region." As such, the organization supports and administers several regional initiatives outlined in this document, such as Eat West Coast, West Coast NEST, the Coastal Family Resource Coalition, and Leadership Vancouver Island. The "Coming Together" forum of the CFRC is an excellent example of how a regional gathering can result in clearly articulated priorities and results that can be used to lobby government for change. More recently, the West Coast NEST convened several workshops around the SDGs which provides a coherent planning framework for organizations and local governments throughout the region.

The publication of *Vital Signs* every two years provides a regular means of tracking a variety of metrics related to development within the biosphere region. *Vital Signs* is a useful tool for the CBT and other organizations in the CSBR, providing direction on how to focus programs, initiatives, events, and research that address regional challenges. The living wage calculation is also an example of a project in which broad participation and shared data supports a common goal. These tools provided information—

²⁵³ Martin, N. (2016). District of Tofino, Tla-o-qui-aht craft Declaration of Reconciliation draft for Monks' Point at načiqs. *Ha-shilth-sa*. <https://hashilthsa.com/news/2016-03-30/district-tofino-tla-o-qui-aht-craft-declaration-reconciliation-draft-monks-point-na%25C4%258D>

²⁵⁴ Government of Canada: Indian and Northern Affairs. (2010). Maa-nulth Final Agreement: General Overview. <https://www.aadnc-aandc.gc.ca/eng/1100100022623/1100100022643>

for example, showing the high mobility of residents in the CSBR—that supported a recent regional housing needs assessment on which the District of Tofino and the District of Ucluelet partnered.

The CBT also hosts regional conversations about issues that matter such as the recent Vital Conversation on COVID-19 and regenerative tourism. The CBT's Vital Grants program, which has been operating since 2017, offers larger grants (up to \$20,000) to address regional priorities and complex challenges that influence sustainability in the CSBR. The grants encourage meaningful collaboration between organizations, communities, and cultures and must have a minimum of two project partners.

At its board level, the CBT acknowledges that bringing together diverse perspectives whether within or between communities is vital to success. It recognizes that everyone must be at the table in order to move forward. As such, there have been instances where the CBT has postponed decisions in order to ensure involvement of all parties.

Despite significant efforts to encourage regional thinking, there are still challenges. As noted elsewhere in this document, a heavy reliance on tourism has exposed vulnerabilities that communities and organizations continue to address. As well, several regional initiatives have had difficulty achieving success. This includes a regional transportation strategy, as well as a regional multiplex facility that could address the dearth of recreational activities for people of all ages, but particularly for youth. In both cases, there was lack of consensus on the financial models for these projects, despite there being a clearly demonstrated need in the region. Similarly, there are ongoing discussions around affordable housing, a long-identified need in the region, with division over whether it is a responsibility of the market, of employers, or of government.

In conducting the periodic review, CBT staff has increasingly recognized the value of a regional decision-making body such as the Central Region Board (CRB), which operated from 1994 to 2009 (and was the body that produced the nomination document for this biosphere). The mission of the CRB²⁵⁵ was to address lands and resources in Clayoquot Sound, prior to the conclusion of a treaty [with First Nations] that:

- provides opportunities for First Nations consistent with aboriginal resource uses and heritage, and considers options for treaty settlement;
- conserves resources in Clayoquot Sound and promotes resource use that supports sustainability, economic diversification and ecological integrity; and that
- encourages dialogue within and between communities and reconciles diverse interests.

The CRB provided one table at which land-use in the region could be discussed. Today, however, many of these conversations are taking place in siloes. While there are good reasons to pursue private discussions and negotiations, it remains to be seen if this will positively or negatively influence the success of development efforts at the regional scale. While it is clear that decision-making is beyond the scope of the CBT's NGO model, the CBT has attempted to address the lack of regional information sharing with regard to proposed land use by utilizing board meetings as a forum for presentations and discussions. The CBT will also continue to orient its work toward sustainable development, biodiversity conservation, and reconciliation—all values of MAB. This periodic review process has shown that all participating communities continue to be committed to those values. In the future, a renewed version of the CRB could be explored as a model for sustainable development in the region.

²⁵⁵ Clayoquot Sound Central Region Board. <https://web.archive.org/web/20090328230822/http://www.centralregionboard.com/mission.html>

6. The Logistic Function

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

Most of the organizations and institutions conducting research and monitoring in the CSBR are locally based, have been in the region for 10 years or more, and have received some amount of funding from the CBT granting program. CBT grant eligibility criteria prioritizes local charitable organizations and their partnerships (see section 4.5). Since 2010, 12 local research organizations have led over 100 project partnerships, all of which received some amount of funding support from the CBT (see Table 9). When compared with the 32 charities registered within the west coast region, the CBT can say with confidence that its funding model helps to support the local non-profit research sector. For example, in 2017, 32 charities on the west coast had 72 part-time employees, 29 full-time employees, and contributed nearly \$4.4 million in annual expenditures to the west coast economy. Assuming these 12 research organizations are among the total number of charitable organizations, over \$1.5 million can be attributed to the annual knowledge economy through local research organizations.

Financial support is an important factor for generating organizational stability and long-term conservation research programs which can build and maintain the institutional knowledge within the Clayoquot Sound Biosphere. For example, the majority of these organizations employ local scientists who live within the region and therefore have the expertise to develop research questions and methodology relevant for key conservation and sustainable development issues within the region. That said, each of these organizations also have extensive partnerships and research collaborations, as illustrated in Table 9.

Table 9 Conservation Program Areas, Lead Organizations, and Research Partnerships 2010-2020

Conservation Program Area	Lead Organization	Partners
Migratory shorebird & waterfowl monitoring, nesting seabirds & at-sea bird population monitoring	Pacific Rim National Park Reserve*	Association of Wetland Stewards for Clayoquot & Barkley Sounds, Environment Canada and Climate Change: Canadian Wildlife Service, Raincoast Education Society
Marine debris & micro-plastics monitoring	Surfrider Foundation*	Surfrider - Pacific Chapter, Ucluelet Aquarium, Vancouver Aquarium
Marine spatial planning	West Coast Aquatic	T'swalk Partnership
Old growth forest monitoring & restoration	BC Ministry of Forests	Pacific Rim National Park Reserve, Central Westcoast Forest Society
	Pacific Rim National Park Reserve	Ditidaht First Nation, Environment Canada and Climate Change: Canadian Wildlife Service, Trent University

Conservation Program Area	Lead Organization	Partners
Marine habitat & water quality monitoring	Cedar Coast Field Station* 256 257 258 259	Fisheries and Oceans Canada (DFO) molecular genetics lab, Hakai Institute, Dalhousie University, Mayne Island Conservancy
	University of Washington-Tacoma* 260 261	Royal Roads University, Raincoast Education Society, Clayoquot Biosphere Trust
	Pacific Rim National Park Reserve* 262	Hakai Institute, University of British Columbia, Coastal BC Eelgrass Fishes Network, University of Victoria
	Raincoast Education Society*	Strawberry Isle Marine Research Society
Human-animal coexistence monitoring & research	Pacific Rim National Park Reserve* 263	University of BC-Okanagan, University of Saskatchewan, BC Parks, Ahousaht, Tla-o-qui-aht First Nations, Toquaht Nation, Yuutu?it?ath Government, Tsheshat First Nation, Huu-ay-aht First Nation, BC Conservation Officer service, WildSafe BC, District of Ucluelet, District of Tofino, ACRD, Clayoquot Biosphere Trust, Thornton Creek Enhancement Society

[256](#) Bartlett, M., Hunter D. (2018). Cedar Coast Field Station Report: Hot Springs Cove Juvenile Pacific Herring die off June 20, 2018. Available from: <http://www.cedarcoastfieldstation.org/archives/>

[257](#) Bartlett, M., Simmerling, J. & Hunter, D. (2018). Juvenile Salmon and Sea Lice Monitoring in Clayoquot Sound. Cedar Coast Field Station, October 2018, Tofino, BC.

[258](#) Bartlett, M. (2019). Juvenile Salmon and Sea Lice Monitoring in Clayoquot Sound, Cedar Coast Field Station, May 2019, Tofino, BC.

[259](#) Young, S. (2019). Pilot Study: Canopy Forming Kelp Monitoring in Clayoquot Sound, 2018, Cedar Coast Field Station, Tofino, BC.

[260](#) Greengrove, C., Masura, J., Keil, R. (2018). Physical Oceanographic Conditions in Clayoquot Sound, British Columbia Canada, Sept. 2013-2017. Poster Presentation at Salish Sea Conference, Victoria, BC.

[261](#) Barry, T., Calssen, L., Greengrove, C., Masura, J. (2018). Temporal and Spatial Variability of Phytoplankton Assemblages in Clayoquot Sound, BC., poster presentation at Salish Sea Conference, Victoria, BC.

[262](#) McGowan, A., Postlethwaite, V., Kohfeld, K., Yakimishyn, J., Robinson, C. (2017). Blue Carbon Storage Variability in eelgrass Meadows on the Pacific Coast of Canada, Commission for Environmental Cooperation.

[263](#) Drever MC, Beasley BA, Zharikov Y, Lemon MJ, Levesque PG, Boyd MD, Dorst A. (2016). Monitoring migrating shorebirds at the Tofino Mudflats in British Columbia, Canada: is disturbance a concern? *Waterbirds*. 39(2):125-35.

Conservation Program Area	Lead Organization	Partners
Salmon habitat restoration & population recovery	Central Westcoast Forest Society*	Tla-o-qui-aht First Nations, Ahousaht, Hesquiaht First Nation, Toquaht Nation, Simon Fraser University, University of Victoria, BC Institute of Technology, DFO, US Forest Service, Clayoquot Biosphere Trust, BGC Engineering Ltd., BC Ministry of Transportation, BC Ministry of Forests, Lands and Natural Resource Operations
	Tofino Salmon Enhancement Society*	Tla-o-qui-aht First Nations, Tofino Stream Keepers Society, Tofino Marina + Resort
	Cedar Coast Field Station*	Uu-a-thluk, Central Westcoast Forest Society
	Pacific Rim National Park Reserve	
	Thornton Creek Enhancement Society*	Central Westcoast Forest Society, Thompson Rivers University, Toquaht Nation, DFO, Robertson Creek Hatchery
	West Coast Aquatic*	DFO, Central Westcoast Society, Uu-a-thluk, Hesquiaht First Nation, Ahousaht, Tla-o-qui-aht First Nations, Cedar Coast Field Station, Cermaq, Clayoquot Action, BC Sport Fishing Charters, Clayoquot Biosphere Trust, Friends of Clayoquot Sound
Amphibian population & habitat conservation	Association of Wetland Stewards for Clayoquot & Barkley Sounds*	Habitat Conservation Trust Foundation, BC Ministry of Transportation and Infrastructure, Simon Fraser University, Parks Canada: Pacific Rim National Park Reserve, Environment Canada and Climate Change: Habitat Stewardship Program, Toquaht Nation, Central Westcoast Forest Society, Huu-ay-aht First Nation, Bamfield Marine Sciences Centre, BC Ministry of Forests, Lands, Natural Resources, and Rural Development

Conservation Program Area	Lead Organization	Partners
Marine mammal monitoring & research	Pacific Wildlife Foundation* ^{264 265}	Cedar Coast Field Station, ²⁶⁶ Remote Passages, Jamie's Whaling Station
	University of Victoria	
	Strawberry Isle Marine Research Society* ²⁶⁷	DFO, Ucluelet Aquarium, Parks Canada, Wild Pacific Trail, Raincoast Education Society, Central Westcoast Forest Society, Paddle West Kayaking, BC Cetacean Sightings Network, Marine Education Research Society, Pacific Rock Intertidal Monitoring Lab
	Clayoquot Biosphere Trust	Pacific Wildlife Foundation, University of Victoria, Ha'oom Society, DFO
	Vancouver Aquarium*	Ocean Wise, DFO, Parks Canada: Pacific Rim National Park Reserve, National Marine Mammal Lab (NOAA), Environment Canada and Climate Change: Canadian Wildlife Service, Cetus Research and Conservation Society

* Indicates the organization received CBT grant funding support for this conservation program between 2010-2020.

6.2 Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I). (For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex).

The main themes of research and monitoring undertaken within the last 10 years together with the lead research institutions and their partnerships are outlined in Table 9, section 6.1. As explained in other sections of the report, the CBT is not a biosphere management organization, but rather is a community foundation that supports the vision of the Clayoquot Sound Biosphere

²⁶⁴ Beland, S.L., McLeod, B.A., Martin, J. Martin, G.M., Darling, J.D. and Frasier, T.R. (2018). Species composition of First Nation whaling hunts in Clayoquot Sound region of Vancouver Island as estimated through genetic analyses. *Journal of Archaeological Science: Reports* 17: 235-241

²⁶⁵ Darling, J. & Byington, J. (2019). Grey Whale Catalogue and Database, Pacific Wildlife Foundation.

²⁶⁶ Tersigni, C. with assistance from J. Darling & J. Byington, (2019). Grey Whale Sightings and Identification Catalogue Clayoquot Sound, Cedar Coast Field Station, Tofino BC.

²⁶⁷ Miner, C.M. (2020). Sea Star monitoring using citizen science. Zoom presentation to the Strawberry Marine Research Society, Tofino, British Columbia - Multi-Agency Rocky Intertidal Network Monitoring Sites.

Region: to live sustainably in a healthy ecosystem, with a diversified economy and strong, vibrant and united cultures while embracing the Nuuchahnulth First Nations ‘living’ philosophies of *iisaak* (living respectfully), and *qwa’aak pin teechmis* (life in balance), and *hishuk is ts’awalk* (everything is one and interconnected). Working to achieve this vision, the CBT aims to facilitate the sharing and exchange of knowledge and experience both locally and globally.

Community Foundations aim to build community vitality and a strong sense-of-place in which everyone can participate. Consistent with principles of community sustainability and resilience, the role of the CBT is to develop local leadership, engage in dialogue, monitor local trends in the CSBR, and respond to change by bringing people together to make joint decisions on project funding priorities. For example, producing the *Vital Signs* report provides a unique opportunity to work together with local governments, community organizations, and local researchers to learn, gather data, question, reflect, and evaluate so that we can have impact on the important issues in the CSBR.

6.3 Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

As articulated throughout this document, the CBT is neither a governing body nor a decision-making authority with respect to land management, development, and use. Although traditional and local knowledge is embedded in the governance and the work of the CBT, this work is not specific to management practices.

First Nations participation—and thus inclusion of traditional and local knowledge—in land and resource management within the CSBR is significant, however. Communities have developed or are developing land visions, conduct research and monitoring, and have employees with positions specific to resource management. First Nations people bring their traditional and local knowledge of resources and land use to many tables, including government-to-government negotiations, roundtables such as the Clayoquot Salmon Roundtable (see page 34) or the Regional Coexistence Network (see below), and as board members or employees in organizations doing work related to land or resource use, research, or restoration (for example, Central Westcoast Forest Society, Uu-a-thluk, and West Coast Aquatic).



A wolf in Clayoquot Sound. Photo: Marcie Callewaert

A Closer Look Iisaak sin hay tiič mis: Regional Coexistence Network

This regional network brings together local community planners and stakeholders, including representatives from the CBT, Pacific Rim National Park Reserve, Nuu-chah-nulth communities, WildSafe BC, the tourism sector, and all levels of government, to share knowledge and collaborate on solutions. The name of the organization comes from the Nuu-chah-nulth teachings that in their worldview, the term “wildlife”—interpreted as beings separate from humans—is not recognized. *Iisaak sin hay tiič mis* means respect for all life thus providing a name that represents the participant’s shared views and values.

The organization formed because of concerns over the increase of negative interactions between large carnivores—black bears, wolves, and cougars—and people over the past two decades. The *Iisaak Sin Hay Tiičmis* network works collectively and across jurisdictions to reduce conflict and promote coexistence. Its terms of reference state that the group is

inclusive and based on Nuu-chah-nulth values and principles such as *hupii-ii-aat* (helpfulness), *hahuuti* (stewarding territories), and *iisaak* (respect). The regional network uses a regional risk management approach to identify and mitigate known hazards, promoting coexistence in the region. Its five priorities include: using a risk-based approach to assess the contributing factors of human-wildlife conflict; to educate with consistent messages the complexities that lead to human-wildlife conflict; to support municipalities, communities, and partners in developing policies that reduce conflict; to develop proactive measures that foster responsible behaviour by residents and visitors; and to support the conservation and enhancement of carnivore ecosystems.

A related project that engages members of the network, including the CBT, is exploring the creation of an Indigenous-led wildlife corridor that spans the length of the west coast of Vancouver Island.



Statutory Framework of the World Congress of Biosphere Reserves

I.2 Integrate biosphere reserves into conservation planning

II.1 Secure the support and involvement of local people

II.2 Ensure better harmonization and interaction among the different biosphere reserve zones

II.3 Integrate biosphere reserves into regional planning

III.2 Improve monitoring activities

III.3 Improve education, public awareness and involvement

6.4 Environmental/sustainability education. Which are the main educational institutions (“formal” – schools, colleges, universities, and “informal” services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve.

Educational institutions active in the CSBR include:

Public Schools

Heartwood Learning Community, Tofino
 Heartwood Learning Community, Ucluelet
 Hesquiaht Place of Learning, Hot Springs Cove
 Maaqtusiis Elementary School, Ahousaht
 Maaqtusiis Secondary School, Ahousaht
 Ucluelet Elementary School, Ucluelet
 Ucluelet Secondary School, Ucluelet
 Wickaninnish Community School, Tofino

Universities/Colleges Offering Course/Field Schools

North Island College – campus in Ucluelet and distributed throughout the mid- and north- Vancouver Island; academic and skills programming

Quest University – has offered several field courses in political ecology focused on Clayoquot Sound; nine upper level Quest students have conducted experiential learning blocks (each 3.5 weeks long) with the Association of Wetland Stewards for Clayoquot and Barkley Sounds and the Ucluelet Aquarium since 2015

Royal Roads University – collaborates with the CBT to offer a summer field course, The Biosphere and Sustainability (see page 137)

University of British Columbia – School of International Forestry runs an annual field school program in the CSBR and collaborates with the CBT to support student internships and to co-develop research projects

University of Victoria – partnered with Raincoast Education Society to offer a four-month field semester in 2018 and 2019 after offering a shorter geography field school in the spring of 2017

University of Washington – field studies credit course (oceanography) in Clayoquot Sound (see page 79)

Local Organizations Offering Programming

Association of Wetland Stewards for Clayoquot and Barkley Sounds – public presentations, workshops, educational materials, volunteer opportunities

Cedar Coast Field Station – K-12 and university programs, youth summer camps, adult education workshops

Central Westcoast Forest Society – interpretive walks, public presentations, educational resource materials, workshops, educational stewardship events

Clayoquot Action – presentations, resource materials

Friends of Clayoquot Sound – presentations, resource materials

Hooksum Outdoor School – outdoor, environmental, and cultural education and skills training at school in the traditional territory of the Hesquiaht First Nation

K’wisitis Visitor Centre – interpretive centre for Pacific Rim National Park Reserve

Pacific Rim Arts Society – workshops and youth outreach programs

Pacific Rim National Park Reserve – national park staff offer guided hikes, presentations, and educational programs

Raincoast Education Society – school programs, summer camps, public programs (hikes, talks), West Coast Ambassador Program, events including an annual Shorebird Festival and a Lantern Festival

Strawberry Island Marine Research Society – public presentations, education programs, including “Build-a-Whale”

Surfrider Pacific Rim – youth environmental stewardship program

Thornton Creek Enhancement Society – hatchery tours, educational events

Tla-o-qui-aht Tribal Parks – guided events, presentations



Raincoast Institute students studying the intertidal zone during a marine invertebrate course.
Photo: Raincoast Education Society

Tofino Botanical Gardens – exhibits, interpretive tours and signs

Tofino-Clayoquot Heritage Society – museum, guided walks, tours

Tofino Community Food Initiative – gardening and food security workshops and community projects

Tofino Salmon Enhancement Society – hatchery tours

Ucluelet and Area Historical Society – archive

Ucluelet Aquarium – public aquarium, educational programing

Wild Pacific Trail Society – hiking trails, interpretive hikes

As well, many private companies in the CSBR offer adventure tourism with educational components, such as wildlife watching, guided hikes, kayak tours, guided birding, and more.

As noted in this report, education is embedded in all of the all of the CBT's key priorities, in particular for youth (see 2.4.9) and through the West Coast NEST, a regional collaboration to develop an education economy (see page 101). The CBT funds many education initiatives each year—in 2019 alone it distributed \$71,980 for youth and education programs²⁶⁸ and gave six education awards. The CBT has also responded to the regional opportunities for youth by working with the high school to create curriculum that develops skills that will help them get local summer employment, and also educates students about the CSBR. Courses includes Sustainability Studies 11/12, Kayaking 11/12, and an outdoor education semester that provides opportunities for youth to develop leadership skills and obtain the training and certifications needed to gain local employment in adventure tourism.

²⁶⁸ Clayoquot Biosphere Trust. (2019). Annual Report.



Royal Roads Students on Flores Island with Dr. Laura Loucks. Photo: Tyson Atleo

A Closer Look Royal Roads University: The Biosphere and Sustainability

Since 2015, the CBT—with support from Nuuchahnulth Elders and knowledge holders, local non-profits, and community leaders—has partnered with Royal Road's University to deliver a summer field course in the university's Master of Arts in Environmental Education and Communication program. The interdisciplinary course, The Biosphere and Sustainability, is based on the principles of experiential learning, community resilience, and learning from local knowledge holders. The course follows the seven principles for education tourism in Clayoquot Sound, as defined by the CBT and the West Coast NEST:

- **attract co-learners:** we welcome others to learn with us
- **community reciprocity:** we share benefits within the region
- **local knowledge holders are experts:** we reimburse people for sharing their knowledge
- **learning networks of practice:** together, we are creating a culture of learning and collaborative problem solving
- **stewardship-in-place:** every community has an outdoor classroom and a place to learn from the land
- **hands-on learning:** we learn best by applied learning and practice
- **cultural safety and sharing:** we create safe spaces for learning and healing across cultural boundaries

With a strong emphasis on place-based learning, the week-long course is delivered in multiple locations in the CSBR, including načiqs (Monks Point in Tofino), Lone Cone Hostel on Wah-nah-jus Hilth-hoo-is (Meares Island), and the Cedar Coast Field Station near Kelsemaht on Vargas Island. Students learn firsthand from local people and their experiences of change, recovery, and transformation.

Dr. Laura Loucks, the CBT's research director, teaches the course with several guest lecturers that have included Ahousaht member Dr. Marlene Atleo from the University of Manitoba, Tla-o-qui-aht First Nations chief Moses Martin, and many local knowledge holders, including Tla-o-qui-aht master carver Joe Martin, Terry Dorward, manager of the Tla-o-qui-aht Tribal Parks, and local environmental educators and scientists.

In recognition of learning within the traditional territories of the Tla-o-qui-aht First Nations, Hesquiaht First Nation, and Ahousaht, and within the Clayoquot Sound Biosphere, the course draws heavily on resilience thinking, sustainability science, community science, and the social-ecological system relationships that foster community resilience on the west coast. The ability to respond to social and environmental change is of key importance for understanding the biosphere and sustainability, and throughout the week, students learn first-hand from local people and their experiences of change, recovery, and transformation. For example, the understanding of *haḥuutli*, the land and its resources owned by a chief, has been re-emerging over the last 30 years as a predominant worldview on the west coast.

Building on the themes of respect and diversity, multiple learning approaches are introduced in the course to experience, perceive, and explain ecosystem structural elements and ecological processes. For example, the practice of "two-eyed seeing" developed by Mi'kmaq Elder Albert Marshall^{269 270} is introduced to explore how Indigenous and scientific ways of knowing are complementary. Students develop a set of basic field observation skills with which to explore perceptual and landscape ecology.

The hands-on way of learning in community by living together, sharing, building trust among each other, and learning from the lands, from each other, from our invited guests, and from ourselves was super! The course was a great mix of hard academic work with challenging concepts, deep emotional work, slowing down times, and physically activating work, worked really well. The assignments were effective and felt reasonable and a good fit for the course. The structure of the course was very well planned out and had a great progression. The resources are very fitting for the course. Locally focused work is very powerful. What a treasured learning experience!

- student feedback, 2019

²⁶⁹ Bartlett, C., Marshall, M., Marshall, A. (2012). Two-eyed seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*, 2, 331-340.

²⁷⁰ McKeon, M. (2012). Two-eyed Seeing into Environmental Education: Revealing its 'Natural' Readiness to Indigenize. *Canadian Journal of Environmental Education*, 17, 131-147.



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

III.1 Improve knowledge of the interactions between humans and the biosphere

III.3 Improve education, public awareness, and involvement

6.5 How do you assess the effectiveness of actions or strategies applied? (Describe the methods, indicators.)

Each *Vital Signs* report produced by the CBT tracks education and learning indicators such as graduation success, student enrolment, and student performance in tools such as the early- and middle years-development instruments²⁷¹ that track physical health and well-being, language and cognitive development, social competence, emotional maturity, and communication skills and general knowledge. Using the results from *Vital Signs*, the CBT's Education and Youth advisory committee can better align their annual granting.

Similarly, the CBT's Research and Environment advisory committee does the same for research and monitoring, tracking such things as incidence of food-conditioned animals, water quality, marine pollution, and habitat restoration, and also using the *Vital Signs* to align regional goals with granting.

Programs and initiatives are also assessed against frameworks such as the United Nations Sustainable Development Goals, the Statutory Framework of the World Congress of Biosphere Reserves, and the Truth and Reconciliation Commission of Canada's Calls to Action, all of which include education, research, and training metrics.

The CBT's regular program audits evaluate objectives related to research, education, and training, for example, "ensure fund management and development are targeted towards increasing the funding available for local research, education and training," and "ensure the economy of the region is diversified through research, education and training."

6.5.1 Describe the biosphere reserve's main internal and external communication mechanisms/systems

Please refer to 2.3.3 for a detailed account of the CBT's external communications plan.

Internal communication strategies include:

- monthly staff meetings and project-specific meetings as required,
- annual strategic/business planning meetings,

- group messaging software (Slack) to reduce email congestion and to communicate project-specific conversations and relay information,
- email, Zoom, and a shared document server allows for easy digital and virtual collaborations while also using Google calendar to coordinate schedules, plan meetings, etc., and
- social media – staff encouraged to capture and share when they are participating in events but coordinate posting with Communications Coordinator.²⁷²

6.5.2 Is there a biosphere reserve website? If so, provide the link.

Yes. www.clayoquotbiosphere.org

6.5.3 Is there an electronic newsletter? How often is it published? (provide the link, if applicable).

Yes. Monthly, or as required for special circumstances.

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

facebook.com/clayoquotbiosphere

twitter.com/claybiotrust

instagram.com/clayoquotbiospheretrust

6.5.5 Are there any other internal communication systems? If so, describe them.

Internal communications are described in 6.5.1.

As well, the staff communicate project updates via quarterly reporting on the annual strategic/business plan and budget.

6.6 Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

6.6.1 Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

Welcoming delegations and researchers:

- Hosted staff and volunteers from other biosphere reserves including the Cascade Head Biosphere Reserve in Oregon, USA; representatives of the prospective Wando Islands Biosphere Reserve, South Korea; and members of the prospective Howe Sound Biosphere Region in BC, Canada.

²⁷¹ Human Early Learning Partnership. UBC. What is the Early Development Instrument? <http://earlylearning.ubc.ca/edi/>

²⁷² Clayoquot Biosphere Trust. [2019]. Communications Plan, p. 14-15



CBT staff and partners pose with SDG signs during the tree planting day as part of the TREE Project. Photo: CBT

- Welcomed, oriented, and supported researchers from other biosphere reserves including Korea, Germany, the Netherlands, USA, and across Canada.
- Hosted a site visit for the Canadian Commission for UNESCO following their annual general meeting in Victoria, BC in 2013, during which participants had an opportunity to discover the natural and cultural beauty of the Clayoquot Sound Biosphere, while learning about and experiencing a range of scientific, educational, and cultural initiatives.
- Co-hosted 70 international researchers at the 2015 Community Conservation Research Network (CCRN) conference in Tofino, together with Nuuchahnulth Tribal Council and Dr. Tony Charles, director of the CCRN.
- Hosted a site visit for members of the Canadian Biosphere Reserves Association (CBRA) and the Indigenous Circle for Canadian Biosphere Reserves in 2018.
- Since 2014, the CBT research director has participated in the CCRN, and has co-authored several book chapters with international researchers on community-based conservation and management practices for sustainable livelihoods. [273](#) [274](#) [275](#) [276](#)

Regional/National contributions:

- The CBT is an active member of the CBRA. The CBT's executive director has been a member of the CBRA executive committee since 2016, currently

fulfilling the chair role since 2018. As chair, she has participated in events such as the Canadian Committee for the International Union for the Conservation of Nature annual general meeting as well as briefings with various federal departments and groups.

- CBT staff are always keen to share their experience, learning, and resources with other Canadian biosphere reserves and have led or contributed to capacity building webinars on topics such as youth engagement, ecosystems services, and communications. The CBT has facilitated the sharing of knowledge between Canadian biosphere reserves, networking amphibian researchers across sites, and sharing information about the development of the Vital Signs program, for example. The executive director has also been participating in a small relationship-building group that is creating ethical space with CBRA's Indigenous Circle (see page 145) and increasing awareness of Indigenous perspectives in all CBRA activities.
- CBT staff and volunteers also participated in CBRA AGMs held across the country from Mount Arrowsmith Biosphere Reserve (2018) to the "Co-building Sustainability & Reconciliation" event in Manicouagan-Uapishka Biosphere Reserve in 2017, and attended special events such as the Climate Change Adaptation Forum and the celebration of the Tsá Tué Biosphere Reserve designation in 2017.

[273](#) Loucks, L., (2021). *Clayoquot Sound, Canada: Community engagement in a UNESCO Biosphere*, in Charles, A. (ed.) *Communities, conservation and livelihoods*, International Union for Conservation of Nature and Natural Resources, Gland, Switzerland: IUCN. 135p.

[274](#) Seixas, C.S., Loucks, L. and Mendis-Millar, S. (2021). *Livelihood outcomes of community conservation*, in Charles, A. (ed.) *Communities, conservation and livelihoods*, International Union for Conservation of Nature and Natural Resources, Gland, Switzerland: IUCN. 135p.

[275](#) Armitage, D., Dias, A.C.E., Muhl, E., Makino, M., Lem, T., Loucks, L. and Sugimoto, A. (2021). *Governance and community conservation*, in Charles, A. (ed.) *Communities, conservation and livelihoods*, International Union for Conservation of Nature and Natural Resources, Gland, Switzerland: IUCN. 135p.

[276](#) Loucks, L., Armitage, D., Berkes, F., and Charles, A. (2017) *Emergence of Community Science as a Transformative Process in Port Mouton Bay, Canada*, Part I, Section 3, in D. Armitage, A. Charles and F. Berkes, eds. *Governing the Coastal Commons*, Routledge, New York, 272p.

- Participated in CBRA national projects such as the Pathway to Canada Target 1 project funded by Environment and Climate Change Canada. During this project, CBRA experimented with a tiered, learning approach to encourage biosphere reserve-to-biosphere reserve knowledge transfer to develop a national network of expertise. The CBT will continue to be active in national projects using this tiered approach.
- CBT also participated in the national TREE Project in 2018, achieving the goal to plant 100,000 trees in participating Canadian biospheres to offset the carbon emissions caused by the G7 Summit that same year in Quebec. This project raised awareness of the importance of biosphere reserves and the various social, economic, and environmental roles that trees play, including carbon sequestration, a significant function in the fight against global changes.
- Participated in the planning and hosting of 2017 and 2018 Day on the Hill events in Ottawa, Ontario to raise awareness of the UNESCO Biosphere Reserve program amongst Canadian members of parliament.
- CBT has also been an active member of the Canadian Commission for UNESCO (CCU), participating in their annual general meetings and committees such as the Canada MAB Committee (2017–2018) and Youth Advisory Group (2016–current).
- Participated in Reconciliation in Action: Building Meaningful Relationships in Canada's Biosphere Reserves series by creating a [video](#) and [paper](#) to share CBT experience and learning from the 2017 regional gathering.
- The CBT research director participated in the CCU Ecosystem Services Working Group and contributed a case study to the Assessing Ecosystem Services in UNESCO Biosphere Reserves concept paper published in 2019.
- Co-chair Tammy Dorward and Ahousaht Elder Arlene Paul contributed to the formation of CBRA's Indigenous Circle and participated in two national meetings (Ottawa, 2018 and Parksville-Qualicum, 2018). (See page 145.) Arlene also shared Nuu-chah-nulth language and cultural teachings as part of the 2019 Year of Indigenous Languages planning event hosted by the CCU in Ottawa (June 2018).
- Responded to all CBRA information requests such as surveys and annual reports.



CBT staff and board members at CBRA Day on The Hill with Members of Parliament and other dignitaries. Photo: CBT

International contributions:

- Attended EuroMAB 2019 in Dublin, Ireland, and contributed to the plenary “Proud to Share” session highlighting the local contributions toward SDGs.
- In 2019, the CBT's office and communications coordinator participated in the 2nd MAB Youth Forum where 176 young leaders from 86 countries met at Changbaishan Biosphere Reserve, China. The young people living and working in UNESCO biosphere reserves around the world came together to share knowledge and experience, have critical conversations, and make concrete contributions to the post-2020 Global Biodiversity Framework.
- Active member of the World Network of Coastal and Island Network of Biosphere Reserves and continues to share capacity building practices and products such as the *Vital Signs* reports and application of the SDG framework in biosphere reserves.
- CBT co-chair attended the inaugural Australian Biosphere Reserve Congress in 2019 and had the opportunity to share information and experiences with the newly forming Australian network.
- Contributed to the activities of the UNESCO Chair in Biocultural Diversity, Sustainability, Reconciliation, and Renewal and provides supervision and/or field research experience to students.
- Attended EuroMAB in Sarlat, France in 2017 and assisted with the delivery of “Indigenous Leadership and Engagement in Biosphere Reserves” workshop. The delegate also participated in the post-event to the Camargue Biosphere Reserve and Mont Ventoux Biosphere Reserve.



Setting up the Sydney Inlet Remote Listening Station for soundscape monitoring. Photo: CBT

- Participated in the 4th World MAB Congress in Lima, Peru in 2016 and hosted a workshop, Designing University Course Curriculum on Biosphere Reserve Management: A Network Learning Approach, that included Dr. Maureen Reed, University of Saskatchewan-Redberry Biosphere Reserve, Canada; Dr. Pam Shaw, Vancouver Island University/Mt. Arrowsmith Biosphere Region; Dr. Lissen Shultz, Stockholm Resilience Centre, Sweden; Dr. Leah Barclay, Director of Biosphere Soundscapes, Griffith University, Australia; Dr. Christophe Lepage, MAB, Montpellier France; and Dr. Lars Runnquist, Department of Conservation, Mariestad, Goteborgs Universitet, Sweden.
- Participated in 2015 EuroMAB in Estonia, co-hosted a workshop as part of the Indigenous Working Group, and participated in the post-event.
- A large delegation of CBT volunteers and staff participated in the 2013 EuroMAB at Frontenac Arch Biosphere in Ontario, Canada.
- Provided advice to the International Affairs Branch of Environment and Climate Change Canada regarding a prospective biosphere reserve in Rwanda with the objective to share information and best practices to support their development.
- Responded to all UNESCO and CUU information requests such as surveys and annual reports.



A Closer Look Collaboration with the Prospective Wando Islands Biosphere Reserve

Under the Lima Action Plan, the CBT is working to establish alliances at local, regional, international levels for biodiversity conservation and benefits to local people, taking into consideration the rights of Indigenous people as well as create opportunities for collaboration and partnerships with international programmes and relevant conventions. In 2019, the CBT hosted a delegation from Wando County, led by Dr. Kyoung-Mann Cho, a member of the Eco-Horizon Institute in Korea, during which time CBT staff and board members shared experiences, discussed collaboration opportunities, and introduced the Wando delegation to local leadership (such as the mayor of Tofino and Tla-o-qui-aht First Nations Tribal Parks officials).

The two parties authored a joint statement at the conclusion of the 2019 visit, to establish the understanding and aspirations for a partnership between the Clayoquot Biosphere Trust and Wando County with the goals to exchange information and experiences:

- between the residents, communities, and researchers of the Clayoquot Sound Biosphere Region and Wando County with a view to supporting the ongoing designation of the Clayoquot Sound Biosphere and the development of the prospective Wando Islands UNESCO Biosphere Reserve;
- related to governance, participatory processes, and community engagement that led to the formation of the CBT, as well as the ongoing governance system and practises;
- with a specific focus on education tourism, ecotourism, and sustainable development;
- related to socio-ecological research;
- related to arts and culture and soundscape research;
- developing alliances between residents, communities, and researchers and participating in international MAB networks.

Upon the designation of the Wando Islands UNESCO Biosphere Reserve, the parties will further consider formalizing their ongoing relationship through the UNESCO World Biosphere Twinning program.



Statutory Framework of the World Congress of Biosphere Reserves

I.1 Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves.

III.3 Improve education, public awareness and involvement

III.4 Improve training for specialists and managers

IV.2 Strengthen the World Network of Biosphere Reserves



PromoScience Expedition brings marine science and technology to remote communities. Photo: West Coast NEST

6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?

- contribute to achievement of Lima Action Plan, Statutory Framework of the World Network of Biosphere Reserves, UN Declaration on the Rights of Indigenous Peoples;
- knowledge exchange and best practises, raising awareness of the UNESCO biosphere program in Canada and beyond;
- national projects allow for broader impact across Canada, through the sharing of knowledge and experience, reduced duplication and maximizing resources; and
- share the CBT's co-management and reconciliation journey within Canada and beyond.

6.6.3 How do we intend to contribute to the World Network and Regional and Thematic Networks?

- continue to build collaborations through the Clayoquot Soundscapes research initiative with partners: Fisheries and Oceans Canada, University of

- Victoria Department of Geography, Ha'oom Fisheries Society for Nuu-chah-nulth rights-based fisheries, Dr. Jim Darling and Pacific Wildlife Foundation, and Royal Roads University NSERC Promoscience. Future partnerships could include Dr. Leah Barclay and the Biosphere Soundscapes initiative through the World Network of Biosphere Reserves Partnership
- continue participation with EuroMAB and the World Network of Island and Coastal Biosphere Reserves, sharing social-ecosystem monitoring frameworks and strategies and tools for applying SDG framework to biosphere reserves, sharing acoustic ecology research findings and soundscape curriculum;
- continue to be an active member of CBRA and participate in national projects and events;
- regarding the Biosphere Centre, learning from the working group on the role of visitor centres in UNESCO designated sites. CBT hopes to participate in future workshops and to have the Biosphere Centre recognized within the network. (The CBT has benefited from the reports from the previous two sessions.); and
- continued participation in EuroMAB.



Ahousaht elder Arlene Paul and CBT co-chair Tammy Dorward (Tla-o-qui-ah!) at the CBRA AGM and Indigenous Language Symposium. Photo: CBT

A Closer Look Indigenous Circle for Canadian Biosphere Reserves Association (CBRA)

In February 2018, Indigenous peoples in whose territory UNESCO biosphere reserves are designated gathered in Ottawa from across Canada. They came to meet one another, share knowledge, and discuss what role they could play in the future of Canada's biosphere reserves. Tammy Dorward, then co-chair of the CBT, was part of that Indigenous Circle. Although the meeting was only meant to be for one day, the group was enthusiastic about continuing and crafted the document: Making a Promise, which, in part, said: "Our shared objective ... is to ensure that the 'voices' of the water, the land, the air, and all things guide the principles of CBRA endeavours. Based upon the principle of respect, equity, and empowerment, Indigenous peoples must be valued and have direct participation as partners in the processes, programming, and governance of the organization, and the resource required to ensure full participation, which [as noted in the Lima Action Plan] includes planning, implementation, monitoring, and evaluation."²⁷⁷

In June of the same year, a CBT delegation consisting of co-chairs Tammy Dorward and Cathy Thicke, executive director Rebecca Hurwitz, and Arlene Paul, an Elder and language teacher from Ahousaht, again travelled to

²⁷⁷ Canadian Biosphere Reserve Association. (2018). Making a Promise. <https://static1.squarespace.com/static/5735fdc137013b8eeb217d63/t/5a973769652deac4dd5fc28b/1519859561606/CBRA+Indigenous+Statement+100.pdf>

Ottawa for the CBRA AGM and an Indigenous Language Symposium. Arlene hosted a table to share her teachings with members of the Canadian Commission for UNESCO and other attendees from CBRA, and she and Tammy shared the challenges and successes regarding Indigenous language revitalization work going on the CSBR. Arlene, who is one of the few people in her community fluent in her Indigenous language, described the scope of her language work, which includes teaching language at her community's elementary school. She says that when she meets with Indigenous people from other biospheres they often talk about food since it's so integral to the relationship with the land. "We use food to teach," says Arlene, who also made sure to bring food—*upskwee* (salmon jerky)—from her home, to share with others. Arlene is on a regional language committee and is also an advisor to the Indigenous Circle for CBRA. She says that it's important that the group identifies as being a circle: "In a circle there is no beginning; we learn from one another." Due to COVID-19, the group met virtually in 2020, but continues their work to encourage Indigenous participation in CBRA and Canadian biosphere reserves.



Statutory Framework of the World Congress of Biosphere Reserves

I.1 Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves

II.1 Secure the support of local people

III.1 Improve knowledge of the interactions between humans and the biosphere

III.3 Improve education, public awareness and involvement

6.7 What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective.

The CSBR has benefited greatly from the Canada Fund, the endowment from the federal government that is administered by the CBT. The fund, and subsequent endowments, has provided core funding to the organization giving it stability and the means to maintain a professional staff and administer a robust granting program as described throughout this document. Through the granting program, the fund also helps create stability in other organizations and programs throughout the region, including those targeting research and education as noted in 6.1, 6.2, and 6.4.

Becoming a community foundation in 2012 further bolstered the organization's internal capacity. Through the support and skills development afforded through the community foundation network, the CBT strengthened its capacity as a grant-making organization and now works with donors to create a diversity of endowment funds, all with the goal of leveraging these invested funds for the region's communities and ecosystems.

Partnerships have been an important part of the success of CBT programs. By strengthening its administrative capacity, the CBT has been able to support regional initiatives such as West Coast NEST and the Coastal Family Resource Coalition, examples of projects that are tackling many of the region's challenges. The CBT is an important partner and active participant at many tables throughout the region. As a convener organization, the CBT plays an important role in facilitating the sharing and exchange of knowledge and experience with the vision of CSBR with a healthy ecosystem, a diversified economy, and strong, vibrant and united cultures. Recent examples include convening Vital Conversations on pressing regional issues.

The CBT's *Vital Signs* document, a biennial report that monitors a suite of indicators, guides the CBT's work, and that of other organizations within the CSBR. *Vital Signs* aligns identified challenges with programs that make a difference and producing the report provides a unique opportunity for the CBT to work with local governments, community organizations, and local researchers to learn, gather data, question, reflect, and evaluate. (For more on *Vital Signs*, see page 125.)

6.8 Other comments/observations from a biosphere reserve perspective.

In 2012, the CBT added a research coordinator to its staff. (The position is now research director.) This was an important step in furthering the logistic function of the CBT. A full-time research director helped anchor the research and monitoring program of the CBT, which includes: producing the biennial *Vital Signs* report; building research alliances for biodiversity conservation; coordinating social and ecological research, and education projects that contribute to the United Nations 17 Sustainable Development Goals; funding research projects led by charities, local governments, and First Nations; and maintaining an observatory for monitoring climate change within the CSBR.

The program also provides a consistent contact for various levels of government and for academia. The CBT has an MOU with Royal Roads University to support their cooperation on research and education programs within the CSBR, specifically on the following areas:

- joint education and research activities and projects,
- work together to foster long-term inclusive relationships with local partners and knowledge holders as they pertain to environmental education,
- convene special short-term academic programs in the Clayoquot Sound UNESCO Biosphere Region (e.g. summer field school),
- provide academic and community support for on-going field school activities,
- participate in seminars and academic/ planning meetings,
- exchange of academic materials, sharing of knowledge and other information, and
- respect and uphold local research and education protocols in alignment with RRU ethics and CBT community research code of conduct.

7. Governance, Biosphere Reserve Management and Coordination

7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?

The CBT employs a variety of resources to coordinate the Clayoquot Sound Biosphere. They include:

Board structure: Strategic and targeted representation at the board level gives a strong framework to the Clayoquot Sound Biosphere. Rather than a “stakeholder” approach, representation at the board level, as outlined in the CBT’s bylaws, ensures that all communities, and thus all levels of local government (Indigenous, municipal, regional), are represented. As well, the board includes non-voting advisors from provincial and federal government agencies (Environment and Climate Change Canada, Parks Canada, Fisheries and Oceans Canada, and the Government of British Columbia). (See 7.2 for more details.)

Regular evaluation: The CBT uses a series of tools to guide its work and ensure that it fulfills its role as a UNESCO biosphere reserve as specified in the Canada Fund Agreement, signed with the Government of Canada at the CSBR’s inception on May 5, 2000. This agreement identifies four objectives that come out of the government’s desire to support community-designed program to achieve sustainable development, specifically to: (1) enable local communities and First Nations in the Clayoquot Sound area to plan, manage, and complete projects aimed at protecting, conserving, enhancing, and restoring habitats, sites and ecosystems; (2) encourage those of Clayoquot Sound area to become actively involved in environmental and sustainable development projects that will result in tangible, measurable environmental benefits; (3) enable those of the Clayoquot Sound area to respond to specific environmental and economic needs and emerging issues at the regional or ecosystem levels; and (4) leverage non-federal government, voluntary in-kind and other financial support for training, education and research projects; and enhance Environment Canada’s departmental or federal presence in the Biosphere.²⁷⁸

The CBT regularly evaluates its programs and activities against its overall objective of increasing local capacity, knowledge, participation, and innovation through

research, education, and training initiatives for the sustainability of the CSBR.²⁷⁹ Evaluations over the last decade include:

- program audits in 2015 and 2018, which result in actionable recommendations to guide the CBT’s work,
- developed a Theory of Change to describe the organization’s work and to identify the differences it seeks to make with community partners (see page 26 for more details), and
- an annual review and evaluation of the prior year’s outcomes before planning for the following year.

Strategic Business Plans: The CBT develops annual business plans to evaluate and guide its work. (Note that a requirement of the Canada Fund Agreement requires the CBT to complete three-year “business plans.” They are equivalent to strategic plans and are considered as such.) In 2020, the CBT approached this annual exercise as an opportunity to continue to refine its alignment with local, national, and international mandates of a UNESCO biosphere reserve and a community foundation resulting in a Strategic Business Plan.²⁸⁰ The organization used a seven-step process to complete the plan as well as an operating budget and staff work plans. As board members are invited to bring forward community priorities and needs, the process provides avenues for meaningful participation and input. The CBT’s advisory committees, which are composed of people from throughout the region, also have opportunities to provide comment and the plan is made available on the CBT’s website, as are all of the organization’s planning documents.

The resulting actionable initiatives and programs were organized around the five actions identified in the Theory of Change:

- facilitating and coordinating healthy community and ecosystem initiatives,
- empowering youth,
- co-leading sustainability research, education and training,
- achieving the biosphere centre, and
- stewarding granting and governance processes.

²⁷⁸ Clayoquot Biosphere Trust. (2018). Program Audit. p. 3.

²⁷⁹ Ibid. p. 1

²⁸⁰ Clayoquot Biosphere Trust. (2020). Strategic Plan, p. 3.

Alignment with broader mandates: As a member organization of both the World Network of Biosphere Reserves (WNBR) and the Community Foundations of Canada (CFC), the CBT uses several frameworks adopted by these networks to align their work with these mandates. These frameworks include: the United Nations' Sustainable Development Goals, the Truth and Reconciliation Commission of Canada's Calls to Action, the Statutory Framework of the World Congress of Biosphere Reserves (Seville Strategy), and the Lima Action Plan. The latter two frameworks are specific to the WNBR, while the former two are used by both the CFC and the WNBR.²⁸¹

7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

The governance framework aligns with Item 135 of the draft Technical Guidelines for Biosphere Reserves.²⁸² The CBT governance structure includes:

- (a) a "management team" — a professional staff performing full-time, paid work in concrete activities for the Clayoquot Sound Biosphere. Their work is guided by a strategic/business plan and a budget.
- (b) a "management committee" — a board of directors that, as outlined in the CBT's bylaws, ensures that all communities, and thus all levels of local government (Indigenous, municipal, regional), are represented. This body has decision-making power and closely coordinates with the staff/management team.
- (c) several "advisory boards" — the CBT has several avenues for consultation, including a number of advisory committees comprised of community members who provide input on the CBT's strategic direction.

The CBT uses several strategies to ensure continued good governance. They include:

Regular bylaw review and revision: The CBT's board structure model provides a solid framework for good governance. As noted in 7.1, all levels of government are represented on the board.

In January 2012, the CBT completed a review and revision of its bylaws. These new bylaws introduced several changes that strengthened the governance structure.

They included:

- clarification as to how participating communities select board appointees and alternate directors through open and publicly accountable procedures,
- clarification that a member can only be appointed by a community for a maximum of two terms (8 years),
- clarification of the role of board advisors (formerly referred to as ex-officio members) from Canada and British Columbia, and
- defining the role of the project auditor who will audit the Canada Fund and the projects funded through the Canada Fund.

The bylaws were further revised in 2017 to comply with changes to British Columbia's Society's Act.

Stewarding Good Governance: All annual strategic/business plans include a section on governance, which outlines the various processes that steward governance in the Clayoquot Sound Biosphere. These include:

- Board of Directors – as noted in 7.1, the CBT's regional governance model invites participation of all communities, as well as the Province of British Columbia and the Government of Canada.
- Reconciliation in Action – the CBT is a signatory to the Declaration of Action from Canada's philanthropic community. The declaration is a means of moving forward towards a shared goal of reconciliation with the country's Indigenous communities and it provides a framework for weaving together the CBT's actions and initiatives in the areas of healing and reconciliation, which are vital to community health and achieving the CBT's vision. The Pessamit Call for Reconciliation, made by the Canadian Biosphere Reserves Association (CBRA) in June 2017, further reinforces the commitment of the CBT to the efforts and potential of reconciliation consistent with the UN Declaration of Rights of Indigenous Peoples, the Lima Action Plan, and the broad UNESCO mandate for peace-building.
- National and International Networks of Biosphere Reserves – the CBT plays an important role in national and international networks of biosphere reserves and contributes to work at all scales consistent with the Statutory Framework of the World Network and the Lima Action Plan. The CBT

²⁸¹ Ibid p. 5.

²⁸² UNESCO. (2020). Presentation of the Technical Guidelines for Biosphere Reserves. https://en.unesco.org/sites/default/files/sc-20-conf-232-10_technical_guidelines_en.pdf

actively participates in CBRA as a member of the board of directors and the executive committee. The CBT participated in the Pathways to Target 1 project led by CBRA and funded by Environment and Climate Change Canada in order to assess how Canadian biosphere reserves could contribute to Aichi Target 11. (For more details, see 6.6.)

- Community Foundations of Canada - Membership in Community Foundations of Canada (CFC) provides a number of specific benefits related to granting and coordination of the Vital Signs program, as well as philanthropy and leadership initiatives. The CBT participates in training and networking opportunities offered by CFC, and seeks opportunities for CBT Board of Directors to engage in training.²⁸³

While the aforementioned actions relate specifically to the work of the CBT in relation to the CSBR, the many jurisdictions within the CSBR result in a mosaic of approved plans, policies, and processes that create an overall management framework.

The main local jurisdictions in the biosphere region are: Alberni-Clayoquot Regional District, Electoral Area C (Long Beach), District of Ucluelet, District of Tofino, and the five Central Region First Nations that belong to the Nuu-chah-nulth Tribal Council: Ahousaht, Hesquiaht, Tla-o-qui-aht, Toquaht, and Yuułu?itʔatʔ (Ucluelet).²⁸⁴ (The Nuu-chah-nulth Tribal Council has a range of programs and services for member communities in family and child welfare, community health and nursing, education and training, social and economic development, fisheries and aquatic management, and, employment services, including use of information technologies.)

Provincial government responsibilities include natural resources; public (Crown) lands; property and civil rights; municipalities (cities, towns, rural districts); and, generally, all matters of a local or private nature. Provincial government agencies with authority within the Clayoquot Sound Biosphere include, but are not limited to: the Ministry of Agriculture and Lands; the Ministry of Energy, Mines and Petroleum Resources; the Ministry of Environment and Climate Change Strategy; the Ministry of Forests, Lands, and Natural Resource Operations and Rural Development; and the Ministry of Municipal Affairs and Housing.

Federal government responsibilities include international affairs and inter-provincial trade; Aboriginal treaty obligations; navigation and shipping; species at risk legislation; fisheries; criminal law; and “peace order and good government.”²⁸⁵ Federal agencies with authority within the Clayoquot Sound Biosphere include, but are not limited to: the Ministry of Natural Resources, the Ministry of Environment and Climate Change, Parks Canada Agency, and the Ministry of Fisheries, Oceans, and the Canadian Coast Guard.

7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

Organizational philosophy and oversight: As an organization, the CBT is guided by the principles of the Indigenous people of the CSBR as is stated in the organization’s vision: to live sustainably in a healthy ecosystem, with a diversified economy, and strong, vibrant, and united cultures, while embracing the Nuu-chah-nulth First Nations living philosophies of *iisaak* (living respectfully), *qwa’ aak qin tiič mis* (life in the balance), and *hišukniš čawaak* (everything is one and interconnected). Strong participation by First Nations at the board, advisory committee, and community level—and regular evaluation of the CBT’s work—ensures this philosophy is upheld.

All of the organization’s guiding documents—strategic/business plans, program audits, etc.—evaluate the ways in which the organization strives to support Indigenous and local rights and cultural initiatives. The 2018 program audit, for example, specifically assessed the CBT’s objective to enable local communities and First Nations to plan, manage, and complete, projects aimed at protecting, conserving, enhancing, and restoring habitats, sites, and ecosystems.²⁸⁶ And the 2020 Strategic Business Plan identifies several initiatives/programs to strengthen these parts of the CBT’s work, for instance specifying the hiring of an Elder-in-residence to guide CBT staff and board in following protocols aligned with Nuu-chah-nulth values; continuing to share findings of the remote listening stations in Sydney Inlet with the Ahousaht community (see below);

²⁸³ Clayoquot Biosphere Trust. (2019). Business Plan. pp. 33-34.

²⁸⁴ Nuu-chah-nulth Tribal Council. (2021). About NTC. <https://nuuchahnulth.org/about-ntc>

²⁸⁵ Ibid.

²⁸⁶ Clayoquot Biosphere Trust. (2018). Program Audit. p. 3, 10-11.

and by specifically aligning work with the goals of the Truth and Reconciliation Commission of Canada's Calls to Action.

Research Code of Conduct: The CSBR has no difficulty in attracting interest from researchers wanting to undertake studies within and around its boundaries. In an effort to encourage mutually beneficial research collaborations between local communities and researchers in ways that maximize benefits, share burdens fairly, minimize risks, support local participation, and make research results more locally meaningful, the CBT developed a Standard of Conduct for Research in 2003 (Appendix XII), which was updated in 2005. The guidelines benefit research by adding credibility and validity to research findings, facilitating participation, enhancing local cooperation between outside researchers and community members, and making the research process more efficient and meaningful for all involved.²⁸⁷

This document is still in use and the CBT provides it to researchers working within the CSBR. As well, the organization continues to strengthen its own work in this regard. For example, the Sydney Remote Listening Station operates within the traditional territory of the Ahousaht. The CBT ensures that the Ahousaht leadership is provided with a list of researchers working out of the station and periodically makes presentations on the project's findings to the community. As well, the CBT co-hosted a workshop with Asma Antoine, Indigenous student liaison for Royal Roads University, regarding the revision of Indigenous research ethics and protocols. She suggests that research projects receive community approval before they receive university approval, a process that is normally reversed. Antoine is currently pursuing the topic for her doctoral thesis and her research results will help inform any future revisions for the CBT Standard Code of Conduct for Research.

Alignment with the UN's Sustainable Development

Goals: Through its evaluation frameworks, the CBT strives to align its work with the SDGs. As an example, in the 2020 Strategic Business Plan, the CBT's project West Coast NEST (see page 101) identifies SDG 8 (decent work and economic growth) as a goal, specifically noting that

historically many Nuu-chah-nulth knowledge holders have not been compensated when participating in the delivery of education programs. To this end, the West Coast NEST remunerates all local knowledge holders in accordance with one of the seven education tourism principles developed in 2015, which states "local knowledge holders are experts: we reimburse people for sharing their knowledge."

Alignments with the Calls to Action of the Truth and Reconciliation Commission of Canada and the United Nations Declaration on the Rights of Indigenous Peoples

As noted throughout this document, the CBT strives for meaningful engagement with Indigenous people within and outside the CSBR. In the 2020 Strategic Business Plan, for example, the goals for the Leadership Vancouver Island (see page 122) program specify two of the TRC's calls to action: 57 (provide education to public servants on the history of First Nations people), and 63 (building student capacity for intercultural understanding, empathy, and mutual respect).²⁸⁸ The Pessamit Call for Reconciliation, made by the CBRA in June 2017, further reinforces the commitment of the CBT to the efforts and potential of reconciliation consistent with the UN Declaration of Rights of Indigenous Peoples (UNDRIP), the Lima Action Plan, and the broad UNESCO mandate for peace-building. (In British Columbia, the provincial government passed legislation in 2019—the Declaration on the Rights of Indigenous Peoples Act—to implement UNDRIP as a framework for reconciliation.²⁸⁹)

7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

First Nations Access to Land and Resources

Various government policies since colonization have systematically reduced the access of First Nations people to the resources that sustained their communities for millennia. First Nations continue to petition provincial and federal governments to assert their rights to land and resources. Several recent developments of particular note are outlined here.

²⁸⁷ Clayoquot Alliance for Research, Education and Training. (2005). Standard of Conduct for Research in Northern Barkley and Clayoquot Sound Communities. https://clayoquotbiosphere.org/files/file/5e4c615d55afb/CLARET_StdConV1.1_05.pdf

²⁸⁸ Clayoquot Biosphere Trust. (2019). 2020 Strategic Business Plan.

²⁸⁹ BC Government. (2019). BC Declaration on the Rights of Indigenous Peoples Act. <https://www2.gov.bc.ca/gov/content/governments/indigenous-people/new-relationship/united-nations-declaration-on-the-rights-of-indigenous-peoples>

In 2009, the Nuuchahnulth, including First Nations in the CSBR, argued in court asserting their rights “to fish and sell fish by their preferred means and in their preferred locations, because fishing provided an economic base for their communities before contact with Europeans.”²⁹⁰ The BC Supreme Court (BCSC) issued its judgement and the Nuuchahnulth nations established their rights to harvest fish from their territories and sell it in the commercial marketplace.²⁹¹

While it is acknowledged that much work is still required, Fisheries and Oceans Canada and the five First Nations in the BCSC judgement are currently implementing sustainable, rights-based fisheries and are working together to advance reconciliation in the area of collaborative governance, increased fishing access, and a community-based fishery.

The three First Nations within the CSBR, the Hesquiaht, Ahousaht, and Tla-o-qui-aht, are also developing, or have developed, their own visions for the lands, waters, and conservation areas in their territories and are pursuing government-to-government agreements to make these visions reality. The Ahousaht, for example, released their land use vision in 2017²⁹² “to promote the long-term stewardship of Ahousaht *Ha-Hahoulthlee* [traditional territory lands, waters, and resources²⁹³] and to provide lasting social and economic benefits for the Ahousaht *muschiim* [people²⁹⁴] and others,” with the intent to “protect Ahousaht cultural and heritage resources, maintain and enhance the Ahousaht way of life, protect and maintain biological diversity and natural environments, and provide community development opportunities for both economic and social well-being.” Other government-to-government agreements include co-management of provincial and federal parks.

The current pandemic has shown how local First Nations continue to assert and strengthen their rights over activities within their traditional territories. To protect their vulnerable citizens, First Nations in the CSBR prohibited and/or restricted access to their communities. The Ahousaht also excluded activities (fishing, whale watching, etc.) within their territories for a time,

and many provincial parks within the CSBR close to First Nations communities (for example, Hesquiaht Peninsula and Flores Island Marine Provincial Park) were closed completely. Several areas within Pacific Rim National Park Reserve were closed during the pandemic as a result of cooperative management decision making between First Nations governments and Parks Canada.

Although the CBT does not serve as a resource management body, as outlined in 7.7.2, it acknowledges and respects the rights of the First Nations of the CSBR and is engaged in many ways with First Nations communities as detailed throughout this document. Specific to the aforementioned situations, however, there are several ways in which the CBT works to further conversations around rights to land and resources. Some examples include:

- Clayoquot Salmon Roundtable: the roundtable is one mechanism of several through which DFO can address the conflict with First Nations over fishing rights. (For details, see page 34.)
- The CBT participates in the Tla-o-qui-aht First Nations’ Tribal Parks Allies taskforce and has funded research on payment for ecosystem services. This funding includes a \$20,000 Vital Grant—“Reconciliation in Action: increasing Tribal Parks Allies engagement through outreach and education.”
- The CBT created and continues to share the Standard of Conduct for Research, which provides guidance on working respectfully with First Nations communities. (See Appendix XII.) More recently, the CBT has been working to establish research protocols with the Ahousaht, particularly in light of the Sydney Inlet Acoustic Monitoring Project that takes place in Ahousaht territory.
- Support for education—at the staff, board, and community levels—around the effects of colonization and systemic racism including its impact on access to land and resources on the First Nations of the CSBR and elsewhere.

²⁹⁰ Foxcroft, D., Hall, D., Cowan, L. (2016). West Coast of Vancouver Island, Canada: The Nuuchahnulth Continue to Fight for Their Aboriginal Fishing Rights Even After These Rights Were Recognized in Ahousaht *et al* vs Canada. (2009). <https://www.communityconservation.net/wp-content/uploads/2016/12/Nuuchahnulth.pdf>

²⁹¹ Ibid.

²⁹² IISAAKSTAL: Ahousaht Ha-Hahoulthlee Land and Marine Use Designations. (2016). http://www.mhssahousaht.ca/sites/default/files/%20IISAAKSTAL%20Designations_Final.pdf

²⁹³ Maaqutusiis Hahoulthlee Stewardship Society. Ahousaht Stewardship – Economic Development – Business Development. <http://www.mhssahousaht.ca/mhss>

²⁹⁴ Ibid.

Reliance on Tourism

As detailed in 5.2, the CSBR's increasing reliance on tourism is straining the region on many levels. The CBT, and other regional bodies, however, are working towards solutions. These include:

- two "Vital Conversations" in the region, one on sustainable tourism, and another on COVID-19 and regenerative tourism,
- the creation of the West Coast NEST to help the region move towards a regenerative and more equitable model for tourism (see page 101),
- skills training on various fronts that give local people, including youth and Indigenous people, the skills to meaningfully participate in sustainable tourism, and
- the regular reporting of metrics related to tourism, and economic and social health through the biennial *Vital Signs* report (see page 125).

Addressing Human-Wildlife Conflict

For more than 15 years, the CBT and other partners in the CSBR, have been working on a variety of strategies to reduce conflicts between humans and wildlife, keeping both safe. The effort began in 2003 with support for the Wildcoast Project—eight research projects, including three masters theses—all on the topic of "learning to live with large carnivores" (black bear, cougars, and wolves). The ambitious project helped answer many questions about carnivore ecology in the CSBR and laid the groundwork for programs and projects that followed. CBT-funded projects include: a human-bear risk management plan for Thornton Creek Hatchery, funding for the WildSafe coordinator, the Connecting Students with Wildlife program, and the *lisaak sin hay tiič mis* Regional Coexistence Network (see page 133), which is also exploring the creation of an Indigenous-led wildlife corridor that spans the length of the west coast of Vancouver Island.

Organizational Evolution

As noted in the 2010 periodic review, in the CBT's early years there were "conflicting ideas within the region and sometimes within the CBT board of what the designation means and the role, purpose, activities, and priorities of the CBT. ... these conflicts sometimes invoked procedural wrangling and disputes over

personal or historical issues."²⁹⁵ Strengthened policies, a clearer vision for the organization and its role within the CSBR and as a UNESCO biosphere, and the continued growth of competency and capacity within the board and staff, have all contributed to a much smoother second decade of operation. This strengthening included a recognition that "we have our own best answers," and that providing meaningful ways for local people to be involved in the organization—through participation on the board or in advisory committees, attending events and workshops, applying for and receiving grants—results in an organization that attains for the region the objectives set out in the UNESCO biosphere designation. The CBT has been internationally recognized as an example of a local community managing large-scale assets by utilizing community philanthropy "to promote community self-determination, democratic decision-making, and more sustainable results from development projects."²⁹⁶

Becoming a community foundation in 2012 further strengthened the capacity of the CBT. Through the support and skills development afforded through the community foundation network, the CBT gained capacity as a grant-making organization and now works with donors to create a diversity of endowment funds, all with the goal of leveraging these invested funds for the region's communities and ecosystems. In particular, this association with the CFC helps the organization manage and leverage the Canada Fund, as of December 2020 worth approximately \$17,717,749, to further the goals of the Clayoquot Sound Biosphere. Membership in the CFC also provided support for the CBT to achieve one of its original goals, first articulated in the Clayoquot Sound Biosphere's nomination document, by publishing *Vital Signs*, a biennial report that monitors a suite of indicators that guide the CBT's work within the CSBR and which has become invaluable for targeting programs and planning throughout the region. (For more on *Vital Signs*, see page 125.)

7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

The role of local communities, including women, Indigenous people, and youth, in the Clayoquot Sound

²⁹⁵ Francis, G., S. Mendis-Millard, M. Reed. (2010). Clayoquot Sound Biosphere Reserve Periodic Review. p. 29

²⁹⁶ Fifield, M. (2017). "Thinking Big: Community Philanthropy and Management of Large-Scale Assets," *The Foundation Review*: Vol. 9: Iss. 3, Article 5. <https://doi.org/10.9707/1944-5660.1372>



Violet Clark, former Ahousaht representative on the CBT Board, pictured with Rebecca Hurwitz at a board meeting in Ahousaht. Photo: CBT

Biosphere are well covered in the answers to: 2.3.4, 2.4.3, 2.4.4, and 2.4.9. In general, however, local residents and communities have several options to ensure representation and consultation:

Meaningful Participation

As outlined throughout this document, there are several ways that the CBT encourages conversations and networking; where regional sustainability is discussed and solutions are jointly discovered. These include, but are not limited, to: regional networks such as the Coastal Family Resource Coalition, Eat West Coast, Clayoquot Salmon Roundtable, Leadership Vancouver Island, and *lisaak Sin Hay Tiic?mis* Regional Coexistence Network; recurring events such as Vital Conversations and knowledge symposia; as well as many one-time special events or gatherings such as the *Hišinqwiit* Regional Gathering, workshops offered through NEST or at events organized by non-profits and funded by the CBT, and targeted consultations such as a recent opportunity for input over the design and placement of the Biosphere Centre. The CBT also makes all of its reports and other documents, including board meeting minutes, publicly available on its website.

Board meetings also rotate between all of the communities in the region, giving people from throughout the CSBR access to the board and staff, and also an opportunity to attend the board meeting and provide input as to their community's priorities. This practice has been paused due to COVID-19, but the CBT expects to resume community meetings as soon as it is safe to do so.

Volunteering

Each year, the CBT engages approximately 60 volunteers on its advisory committees, as well as the Biosphere Research Award committee and Vital Grants committees, to review project funding applications and award grants for various initiatives. The CBT gives regular public acknowledgment of its volunteers, and also holds volunteer recognition events such as barbecues and teas. Board members are recognized for their years of service and receive small gifts. The CBT celebrates its volunteers through social media, its annual communications, and communications with partner communities.

Contributing Data and Knowledge

Organizations, various levels of government, and individuals (via surveys) contribute to the biennial *Vital Signs* report, which tracks a broad suite of indicators that monitor sustainability and SDG targets in the CSBR.

In regards to decision making, the CBT uses a consensus decision making process, encouraging all board members to participate in discussions leading up to a decision. The board has not been inclined to rush its decision making and has often deferred decisions until all board members can be present to participate in the discussion or until they have received additional information from staff or grant applicants. The CBT also utilizes a consent agenda format so that meeting times can be focused on discussion topics, rather than the review of past businesses or adoption of regular reports.



A community event organized by Tla-o-qui-aht youth Kayla Anne Frank for Indigenous People's Day with support from Neighbourhood Small Grants. Photo: Nicole Gerbrandt

A Closer Look Neighbourhood Small Grants

The CBT started its Neighbourhood Small Grants (NSG) program in 2015,²⁹⁷ based on the NSG program started by the Vancouver Foundation and in partnership with the Westcoast Community Resources Society. NSGs are based on a simple but powerful idea: when people feel a sense of connection and belonging to their neighbourhood, they are more likely to be engaged in activities that make it a better place to live. And when people are active in the life of their neighbourhood, our communities are strengthened from the ground up. These small grants of \$50 to \$500 help connect and engage residents, encouraging them to develop their own ideas for how their neighbourhood can be strengthened. Grants are given to projects that meet the following goals:

- connect and engage neighbourhood residents,
- build local community capacity to carry out NSG projects,
- share residents' skills and knowledge within the community,
- build sense of ownership and pride,
- respect and celebrate diversity, and
- create lasting impact.

²⁹⁷ Clayoquot Biosphere Trust. (2015). Impact Report.

Examples of past NSGs include a repurpose, repair, and reuse workshop, drum and regalia-making gatherings, and block parties to discuss and improve neighbourhood emergency preparedness. In 2019 alone, the NSG funded 54 projects for a total of \$16,000. Between 2015 and 2019, the program supported 139 projects totalling \$45,430.

NSGs funding rounds are often focused on particular areas, such as an environment theme to coincide with Earth Day and the anniversary of the Clayoquot Sound Biosphere, and a culture theme to align with National Indigenous Peoples Day and the United Nations Year of Indigenous Languages. They can also be responsive. In 2020, for example, NSGs responded to COVID-19 by funding projects that connect people socially, or share skills and knowledge, while still complying with the public health orders for social distancing.

Recently, the CBT was asked to help build capacity among other small community foundations on Vancouver Island. With support from the Vancouver Foundation, and in partnership with the Victoria Foundation, the CBT is training and supporting other communities to launch their own NSG programs which includes working with partners within the Mount Arrowsmith Biosphere Region.



Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people

III.3 Improve education, public awareness and involvement

7.6 Update on management and coordination structure:

7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.}]

Over the last decade, and since the Clayoquot Sound Biosphere's nomination, the key changes in the administrative authorities responsible for each zone in the Clayoquot Sound Biosphere designation are consistent with Canada's federal and provincial strategies to contribute to the 2010 Convention on Biological Diversity, known as The Pathway to Canada Target 1.

Canada Target 1 aims to conserve natural diversity through increasing the percentage of protected areas, Indigenous protected and conserved areas (IPCAs), and other effective area-based conservation measures (OECM), while also embracing a collaborative approach that recognizes the "integral role of Indigenous Peoples as leaders in conservation, and respects the rights, responsibilities and priorities of First Nations, Inuit and Metis Peoples."²⁹⁸

The following section (1) describes the incremental shift to co-management in the core protected areas, specifically the increase in shared decision-making authority between federal and provincial parks management agencies and First Nation governments. In section (2), a timeline of key events helps to illustrate the progression of government-to-government collaboration through management sharing agreements and new legislation. Section (3) provides a summary table of changes (Table 10) in administrative authority and legislation.

(1) Changes in Administration with Authority over Core Protected Areas in the Biosphere Reserve:

Pacific Rim National Park Reserve (PRNPR)

Over the last decade, PRNPR has prioritized

cooperative management with First Nations and facilitated a participatory national park management plan. As stated in the 2010 management plan: "Over the course of the past 15 years, Pacific Rim NPR has been building relationships with First Nations. First Nations relationships and involvement, including cooperative management, Treaty implementation, and consultation, are a key priority for managing Pacific Rim NPR."²⁹⁹ Following the ratified Maa-nulth Treaty agreement in 2011, Parks Canada has collaborated with First Nations to develop four co-operative management boards to engage in shared decision-making in cultural heritage preservation and to integrate Indigenous knowledge in national park management activities such as interpretation, training, and resource and environmental management.³⁰⁰

The shift to cooperative management reflects a national approach to Canada's reconciliation with Indigenous peoples through protected area governance in which Indigenous peoples play a leadership role in conservation. Nadine Spence, executive director of Parks Canada (BC/Yukon), describes this shift.

"I think Canada's ability to work with Indigenous people to put Indigenous Protected and Conserved Areas on the ground represents an important shift that we need to make in Canada writ large, in which Indigenous people play a leadership role in conservation.... We are moving towards a governance model that is reflective of having seats at the table for Indigenous peoples, and ensuring that the seats are seats of leadership ... we're really looking for a shift in the way we do conservation in Canada, so Indigenous People can have a leadership role, in order to support a more connected network of protected areas. The health and well-being of lands and waters is often directly linked to the health of Indigenous communities — that's why this work is important to all of us."³⁰¹

While the PRNPR 2010 Management Plan is seen mostly as a positive step towards sharing park national management responsibilities with local First Nations,

²⁹⁸ Pathway to Canada Target 1. <https://www.conservation2020canada.ca/the-pathway#Intro>.

²⁹⁹ Parks Canada. (2010). Pacific Rim National Park Reserve of Canada Management Plan, Library and Archives Canada, Cataloguing in Publication. 84 p. p. 21.

³⁰⁰ Orozco-Quintero, A., King, L. and Canessa, R. (2020). Interplay and Cooperation in Environmental Conservation: Building Capacity and Responsive Institutions Within and Beyond the Pacific Rim National Park Reserve, Canada. SAGE open journal 1-18.

³⁰¹ Suzuki, David Foundation. (2019). *Tribal Parks and Indigenous Protected and Conserved Areas: Lessons Learned from BC examples*. p.16.

the “reserve” status of the national park recognizes these lands as contested territory and, therefore, enables negotiations between First Nations and federal authorities as rights and title claims evolve.³⁰² One such negotiation included a protocol agreement with Tla-o-qui-aht leadership during the negotiation of an 85 ha expansion of the Tla-o-qui-aht community of Esowista into PRNPR. As a component of this agreement, PRNPR contributed to the development of the Tla-o-qui-aht Tribal Parks program in numerous ways, including contracts with the Tla-o-qui-aht Tribal Parks Guardians program, and financial support to develop a management plan for the Haa'uukimun Tribal Park.

Tla-o-qui-aht Tribal Parks

The Tla-o-qui-aht Tribal Parks initiative is an assertion of rights and title outside the treaty process, but consistent with the 2014 Canadian Supreme Court *Tsilhqot'in* decision, in which the court established the meaning of title to include the right to benefits associated with the land, the right to use the land, enjoy it, and profit from it. Tribal parks, as a pathway to self-governance, is unique in its cultural value-based approach to management based on Tla-o-qui-aht Indigenous knowledge and conservation principles.³⁰³ The management plan sets out four major goals based on watershed management: (1) a sustainable future for the region; (2) healthy abundant watershed ecosystems; (3) working with traditional teachings; and (4) economic growth through sustainable resource management. However, the boundaries of the tribal parks are aligned with Tla-o-qui-aht First Nations' traditional territorial watershed boundaries and include a mosaic of administrative authorities, including Crown land, BC provincial parks, forest tenures, private lands, and part of PRNPR. The Tla-o-qui-aht Tribal Park administrators envision multi-party negotiations with government to establish an IPCA based on the mutual desire for achieving Canada's commitment to the UN Convention of Biological Diversity Aichi Target 11 and reconciliation of the rights of title for Indigenous peoples.

The Central Region Board

When the Clayoquot Sound Biosphere was formed the region was supported by a joint government decision-making body, the Central Region Board (CRB), consisting of representatives appointed by

the five Central Region First Nation Chiefs (Hesquiaht, Ahousaht, Tla-o-qui-aht, Yuułu?it'ath, and Toquaht) and three community representatives appointed by the province. The CRB reviewed developments in the terrestrial and foreshore environments prior to the conclusion of treaty negotiations, guided by the recommendations from the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound.

The region also was supported by the Clayoquot Sound Technical Planning Committee (CSTPC), consisting of membership from the five Central Region First Nations and the Province of BC to coordinate an integrated land-use planning process for Clayoquot Sound. The CSTPC was charged with implementing the 1995 Scientific Panel recommendations. While both bodies were co-chaired by First Nations and the province, the CRB and the CSTPC were administered separately.³⁰⁴ The CRB was dissolved in 2009, and the CSTPC in 2010, leaving the region without a single table to discuss land and resource use. This absence is now an obstacle to regional information sharing and decision making.

BC Provincial Parks Agreements

Building on the recommendations of the Clayoquot Scientific Panel and the Clayoquot Watershed plans, the three central region First Nations are now pursuing government-to-government agreements with the province of BC, including co-management agreements with BC Parks. For example, in 2017 the Ahousaht First Nation signed a 10-year agreement with BC Parks to co-manage the Maquinna Provincial Park.

Concurrently, the three central region First Nations have been working with the non-profit organization, Nature United, to strengthen their community economies while developing a sustainable stewardship pathway forward. Improved forest management and the protection of old growth forests are integral components of their long-term land visions and cooperation is key. For example, First Nations in Clayoquot Sound have been actively working with the current forest tenure holder, Ma-Mook Natural Resources, which holds harvesting licenses that cover much of the CSBR, to explore their interest in selling the tenures for fair market value. If successful, the tenures would be

³⁰² Murray, G. and King, L. (2012). *First Nation Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve*, *Human Ecology* 40:385-395.

³⁰³ Murray, Grant and Leslie King. 2012. *First Nation Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve*, *Human Ecology* 40:385-395.

³⁰⁴ Retzer, B. (2021). pers. comm.

reconfigured to support the First Nations' land visions and Nature United will work with the First Nations and the British Columbia government to leverage federal funding already committed to advance local and sustainable economic development to achieve the following outcomes:

- “sustainable management of natural resources through creation of a suite of protected areas and First Nation forestry tenures,
- strengthened natural resource capacity of First Nations communities to lead stewardship of the land and water, and
- secured revenue streams to support First Nations stewardship by establishing a permanent stewardship endowment and creating a carbon offset project that safeguards some of the largest carbon stores on the planet.”³⁰⁵

The BC government has demonstrated a significant commitment to this initiative with the recent announcement of the two-year deferral of harvesting old growth forests in Clayoquot Sound. The partnership between the three First Nations and Nature United shows a promising opportunity to continue co-management negotiations with the BC government for long-term natural area protection and sustainable economic development in alignment with First Nation governance and land use visions.

(2) Timeline of key events contributing to changes in administrative authority over core protected areas and buffer zones within the Clayoquot Sound UNESCO Biosphere Reserve:

- 2008 – a ministerial order establishes land use objectives that recognize the importance of Clayoquot Sound Watershed Plans in guiding a sustainable ecosystem management approach as recommended by Clayoquot Scientific Panel.
- 2009 - Central Region Board dissolved after three Central Region First Nations (Hesquiaht, Ahousaht, Tla-o-qui-aht) vote against proposed treaty settlements with British Columbia.
- 2010 – Clayoquot Sound Technical Planning Committee dissolved because funding support was linked to treaty discussions with all five Central Region First Nations.

- 2010 - Pacific Rim National Park Reserve management plan prioritizes First Nation co-operation.
- 2011- The Maa-nulth First Nations Final Agreement, a treaty and land claims agreement, ratified between Canada, British Columbia, and Huu-ay-aht, Ka:'yu:'k't'h'/Che:k'tles7et'h', Toquaht, Uchucklesaht, and Yuutu?it?ath, First Nations under BC Treaty process.
- 2012 - the Tla-o-qui-aht Tribal Parks management plan drafted as an alternative to treaty, focusing on IPCAs as a mechanism for conservation and protection.
- 2013 - Wah-nah-jus-Hilth-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area) designated a Western Hemisphere Shorebird Reserve Network site of regional importance. Also registered as a globally significant and continentally significant Important Bird Area.
- 2014 - Supreme Court of Canada awards definitive rights to Tsilhqot'in First Nation to claim land and title over a wide area of its traditional territory. In the decision, the court established what title means, including the right to benefits associated with the land, the right to use the land, enjoy it, and profit from it.
- 2017 - Ahousaht announces the first phase of their long-term economic development plan and Land Use Vision for their traditional territory.
- 2017 - Ahous Business Corporation takes over management of Maquinna Provincial Park and signs a 10-year agreement with the Government of BC.
- 2019 – BC government legislated Bill 41, BC Declaration on the Rights of Indigenous Peoples Act.
- 2020 - BC government announces its plans to temporarily defer harvesting of old growth forests, including 260,000 ha within the CSBR, for two years. The deferral creates short-term certainty regarding land use within which First Nations can advance government-to-government agreements and pursue Indigenous protected and conserved area designations.³⁰⁶

³⁰⁵ Nature United. (2020). Securing the Future of Clayoquot Sound: Project Update, Briefing note for BC Government Cabinet Ministers.

³⁰⁶ BC Ministry of Forests, Lands, and Natural Resource Operations. (2020). Forest Act Bulletin: Ministerial Orders for Old Growth Designated Areas. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/timber-tenures/forest_act_bulletin_old_growth_ministers_order.pdf

Table 10 Summary of Changes in Administrative Authority and Legislation in Clayoquot Sound Biosphere Reserve Zones

Biosphere Reserve Zone	Administrative Authority	Legislation	New Legislation	Management Plan
Terrestrial & Marine Core Areas	Pacific Rim National Park Reserve	Canada National Parks Act (2000) ³⁰⁷	<u>Maa-nulth First Nations Final Agreement Act (2007)</u>	<u>June 2010-June 2011</u>
	Tla-o-qui-aht Tribal Parks			<u>Tla-o-qui-aht Tribal Parks Planning (2012)</u> <u>Land Relationship Map</u>
	BC Provincial Parks	Protected Areas of British Columbia Act (2000)	<u>Declaration on the Rights of Indigenous Peoples Act (2019)</u>	<u>Approved management plans (2003)</u>
	Maaqutsiis Hahoultlhee Stewardship Society			<u>Ahousaht Land Use Plan (2017)</u>
Buffer Areas	BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Wildlife Act (2002)		
	Wah-nah-jus-Hilth-hoo-is Mudflats (Tofino Mudflats Wildlife Management Area) Co-management bodies		Western Hemisphere Shorebird Reserve Network and Important Bird Area (2013)	<u>Tofino Mudflats Wildlife Management Area Plan</u> <u>Management Plan (2001)</u>
	Central Region Board (dissolved 2009)	Order Establishing Objectives for Clayoquot Sound (2008)		<u>Clayoquot Sound Watershed Plans (2008)</u>

³⁰⁷ Indigenous rights and rights established on the basis of negotiated treaties are protected under section 35 of the Constitution Act 1982. The Canada National Parks Act contains a clause that confirms Indigenous rights and treaty rights shall not be fettered by this legislation. The legislation provides the park reserve status where Indigenous rights are under negotiation. Within the reserve status, traditional Indigenous harvesting rights are protected while negotiations are under way leading to formal agreements on environmental impacts and community benefits such as employment opportunities and access to resources. (CNPA, s.10)

7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

There has been no change in the manager/coordinator of the biosphere reserve in the past decade. The Clayoquot Biosphere Trust was identified as the designated authority (the “central administrative body”) for the Clayoquot Sound UNESCO Biosphere Reserve nomination document³⁰⁸ and retains this role.

7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve? (if yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?.

Several changes have been made in the past decades to strengthen the coordination structure and function of the biosphere reserve. They include:

- The CBT becoming a community foundation in 2012, joining the Community Foundations of Canada. As the region’s community foundation, the CBT works with donors to create a diversity of endowment funds and strengthens its capacity as a grant-making organization, all with the goal of leveraging its invested funds for the region’s communities and ecosystems. In particular, this association with the CFC helps the organization manage and leverage the Canada Fund to further the goals of the biosphere reserve.
- Strengthening the granting criteria through strategic/business planning and by ensuring alignment with regional goals by having community members (through the CBT’s advisory committees) make granting decisions.
- Bylaw revision and good governance: as described in 7.2, the CBT has strengthened its governance through bylaw revisions, annual budgeting and strategic/business planning, alignment and guidance through national and international frameworks such as the United Nations Sustainable

Development Goals, and regular program audits.

- Biennial *Vital Signs* report that tracks and reports on a broad suite of indicators in alignment with the goals of UNESCO biosphere reserves.

7.6.4 How has the management/coordination been adapted to the local situation?

As noted in the nomination document for the Clayoquot Sound UNESCO Biosphere Reserve, the Clayoquot Sound Biosphere is managed/coordinated by a registered charity, the Clayoquot Biosphere Trust. This aligns with Item 130 in the Technical Guidelines for Biosphere Reserves with the governance structure being the “NGO model.”

As detailed elsewhere in this document, the CBT is fully adapted to the “local situation” as it involves all communities with the CSBR, and utilizes many strategies, programs, and tools (*Vital Signs*, advisory committees, comprehensive granting program, etc.) that responds to the needs and priorities of the CSBR in alignment with the goals of UNESCO MAB.

7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

The CBT uses a variety of tools to evaluate its management/coordination function:

- program audits every three years that focuses on the four program objectives of the Canada Fund and six key program outcomes of the CBT; to date, audits have been completed in 2015 and 2018, both of which demonstrated strong results;
- biennial board self-assessments completed since 2012 and most recently in 2020;
- a grants management system allows grantees, volunteers, and staff to streamline processes and increase rigor³⁰⁹ for accepting applications, awarding funds, and gathering evaluation data; and
- inclusion of metrics in various plans (e.g., the 2019 Communications Plan) provides clear ways in which to measure achievement.

³⁰⁸ Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. pp. 6-7.
4.7c “The Clayoquot Biosphere Trust will provide logistics support and coordination functions relating to the activities of a number of different research, education and training organizations. It will be the central administration body for the Reserve, but it will not serve as a resource management body itself.” <https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf><https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf>

³⁰⁹ Clayoquot Biosphere Trust. (2019). Business Plan.

7.7 Update on the management/cooperation plan/policy:

7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

As when the Clayoquot Sound Biosphere Reserve was established in 2000, there is no single comprehensive management/cooperation plan/policy that strategically guides management of the biosphere reserve, so there has been no change in this regard.

Rather than a single plan, a mosaic of approved plans, policies, and processes forms the basis for management within the biosphere reserve, with the Clayoquot Sound UNESCO Biosphere Reserve Charter serving as an encompassing policy statement.³¹⁰ (See Appendix VII.) The collective management at multiple scales reflects the diversity of jurisdictions, values, and administrative boundaries. Management plans include those for protected areas (provincial and federal³¹¹ parks), communities (First Nations treaties and land use visions; municipal Official Community Plans and powers as set out in British Columbia's Community Charter and Local Government Act³¹²), provincial natural resource authorizations (e.g., TFL forest stewardship plans, Land Act tenure management plans, and regional land use.

[Combined answer for 7.7.2 to 7.7.5]

7.7.2 - 7.7.5 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

As noted in the nomination document for the Clayoquot Sound UNESCO biosphere reserve, the CBT is the central administrative authority for the biosphere reserve but it does not serve as a resource management body. Rather, a number of specific authorities and mechanisms implement plan or policy components within their sanctioned spheres of responsibility.³¹³ As such, the response to these questions (7.7.2 to 7.7.5) refers to the management of the CBT. This aligns with Item 130 in the draft Technical Guidelines for Biosphere Reserves, which defines an NGO model of management in which an NGO (in this case, the CBT), acts as a "platform that brings together interests and communities" and as a body that "tends to be project-oriented."³¹⁴

As outlined in 7.1, the CBT is guided by the Canada Fund Agreement to ensure it fulfills its role as a UNESCO biosphere reserve. This ongoing contribution agreement provides the framework for the management and use of endowed fund, which are regularly reported back to Environment and Climate Change Canada (ECCC) and the federal government, maintaining an ongoing relationship. A representative from ECCC is an active non-voting member of the CBT board.

³¹⁰ Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. pp. 6-7. <https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf><https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf>

³¹¹ Parks Canada. Pacific Rim National Park Reserve Management Plan. (2010). <https://www.pc.gc.ca/en/pn-np/bc/pacificrim/plan>

³¹² Government of BC. Local Government Legislative Framework. <https://www2.gov.bc.ca/gov/content/governments/local-governments/facts-framework/legislative-framework>. https://www.bclaws.ca/civix/document/id/complete/statreg/03026_00 https://www.bclaws.ca/civix/document/id/lc/statreg/r15001_00 "Municipalities are responsible and accountable to their citizens and the province. Their powers and responsibilities are set out in the Community Charter and Local Government Act. Council as Governing Body: "The governing body of a municipality is its council, with each member responsible for considering the well-being and interests of the municipality and community, and for contributing to the development and evaluation of municipal policies, programs and services."

³¹³ Clayoquot Sound Biosphere Reserve Nomination Committee. (1999). Biosphere Nomination Report, Central Region Board. <https://clayoquotbiosphere.org/files/file/5f721aae90b67/CSUBRNominationCompressed.pdf>

³¹⁴ UNESCO. (2020). Presentation of the Technical Guidelines for Biosphere Reserves. https://en.unesco.org/sites/default/files/sc-20-conf-232-10_technical_guidelines_en.pdf

The Canada Fund Agreement identifies four objectives that support community-designed program to achieve sustainable development, specifically to: (1) enable local communities and First Nations in the Clayoquot Sound area to plan, manage and complete projects aimed at protecting, conserving, enhancing and restoring habitats, sites and ecosystems; (2) encourage those of Clayoquot Sound area to become actively involved in environmental and sustainable development projects that will result in tangible, measurable environmental benefits; (3) enable those of the Clayoquot Sound area to respond to specific environmental and economic needs and emerging issues at the regional or ecosystem levels; and (4) leverage non-federal government, voluntary in-kind and other financial support for training, education and research projects; and enhance Environment Canada's departmental or federal presence in the Biosphere.³¹⁵

Annual business plans ensure these objectives are being met, evaluate and guide the CBT's work, and ensure alignment with local, national, and international mandates of a UNESCO biosphere reserve. This aligns with Item 175 in the draft Technical Guidelines for Biosphere Reserves, which specifies that "a 'Business Plan' is an alternative approach to a 'Management Plan.'"

The CBT uses a business plan and other strategic documents, such as a communications plan, to guide and evaluate its work, as per Item 177 in the draft Technical Guidelines for Biosphere Reserves ("...such strategy documents ... include clear direction and strategy for all stakeholders."). The business plan reiterates the vision and mission of the organization, reaffirms its mandate as part of the World Network of Biosphere Reserves, clearly defines its approach to strategic/business planning, and establishes core priorities with clear actions and programs to fulfill these actions. (See Appendix XIII for the 2020 Strategic Business Plan.)

Core priorities and essential functions are organized around the five actions as identified in the Theory of Change:

- facilitating and coordinating healthy community and ecosystem initiatives,
- empowering youth,
- co-leading sustainability research, education and training,
- achieving the biosphere centre, and

- stewarding granting and governance processes.

These core priorities are described below with indications as to how they align with the United Nations Sustainable Development Goals and the Statutory Framework of the World Congress of Biosphere Reserve:



Healthy Community and Ecosystem Initiatives

This core priority focuses on all aspects of the CSBR that make people and communities healthy and is grounded in research on the social determinants of health, on belonging, and on the connection between people and their environment. Humans are part of ecosystems, as is inherent in *hisúknis'cáwaak*. Healthy ecosystems require healthy people and communities; one cannot care for the environment if they cannot care for themselves. The CBT delivers and/or support a suite of programs that go towards meeting this goal. In addition to providing a range of grants for research and projects, specific projects include: Neighbourhood Small Grants (see page 155), Eat West Coast (see page 107), Leadership Vancouver Island (see page 122), and Coastal Family Resource Coalition.

Statutory Framework of the World Congress of Biosphere Reserves

- II.1 Secure the support and involvement of local people.
- II.3 Integrate biosphere reserves into regional planning.
- III.2 Improve monitoring activities.
- III.3 Improve education, public awareness, and involvement.
- III.4 Improve training for specialists and managers.

³¹⁵ Clayoquot Biosphere Trust. (2018). Program Audit. p. 3.



Empowering Youth

This priority aims to support healthy youth development by creating opportunities for youth to gain the necessary skills and capacity to positively impact their lives, the lives of others, and to contribute to community change and sustainability. Education is recognized as a social determinant of health and is a key component of youth empowerment.

The CBT coordinates a range of initiatives that support youth, including: education awards to graduating high school students; field trip funding to schools in the CSBR for experiential learning opportunities; youth-led grants for community projects spearheaded by local youth, co-leading the development of healthy child, youth, and family initiatives with the Coastal Family Resource Coalition; and sponsoring local youth to participate in the Students on Ice Foundation's annual Arctic expedition. The CBT supports youth leadership and decision-making by inviting youth to participate on the CBT Board of Directors and advisory granting committees. The CBT has hired and mentored local Indigenous youth as an opportunity for capacity building and skills training in all aspects of our organization, including administration, community engagement, and communications.

Statutory Framework of the World Congress of Biosphere Reserves

- II.1 Secure the support and involvement of local people.
- II.3 Integrate biosphere reserves into regional planning.
- III.1 Improve knowledge of the interactions between humans and the biosphere.
- III.3 Improve education, public awareness and involvement.



Sustainability Research, Education, and Training

Consistent with the Lima Action Plan for UNESCO's MAB Programme (2016-25), the CBT Research and Education program focuses on building partnerships, facilitating research, and delivering locally based education for sustainable communities. Projects aim to gather information, organize and generate knowledge, provide analytical support and research funding necessary for building healthy communities and ecosystems with the CSBR.

Statutory Framework of the World Congress of Biosphere Reserves

- II.1 Secure the support and involvement of local people.
- II.3 Integrate biosphere reserves into regional planning.
- III.1 Improve knowledge of the interactions between humans and the biosphere.
- III.2 Improve monitoring activities.
- III.3 Improve education, public awareness, and involvement.
- III.4 Improve training for specialists and managers.



Achieving the Biosphere Centre

This permanent home for the CBT will be a place of sharing and learning in and for the CSBR. Consistent with UNESCO themes of education, science, and culture, the biosphere centre will be a physical space for convening the region to achieve our shared vision of living sustainably in a healthy ecosystem, with a diversified economy, and strong, vibrant, and united cultures. The West Coast NEST will play an important role in the biosphere centre. The NEST connects both local and visiting learners with local experts, instructors, and knowledge holders. (See page 101 for more details.)

Statutory Framework of the World Congress of Biosphere Reserves

II.1 Secure the support and involvement of local people.

III.3 Improve education, public awareness, and involvement.

IV.1 Integrate the functions of biosphere reserves.

7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

In 2018, the CBT developed a theory of change to describe its work and to identify differences it seeks to make with community partners. This strategic renewal provided an opportunity to refine the CBT's alignment with the local, national, and international mandates of a UNESCO biosphere. (See page 26.)

As the CBT continues to work toward advancing the goals of UNESCO biospheres worldwide, and, at the same time, responds to community priorities in a way consistent with the roles of community foundation, the Theory of Change provides a simple and living picture of how the CBT bridges these two functions. Given that the CBT will continue to evolve and grow, the Theory of Change is viewed by the CBT as a living expression of the organization with three main purposes:

1. inform internal and community-focused communication about what the CBT is, what it does, and how it does its work in collaboration with community partners and stakeholders;
2. give shape to program and initiative-specific evaluations and assessments in a way that brings coherency and alignment among diverse evaluation and assessment activities over time; and,
3. guide strategic and program planning activities so existing and new initiatives are working to contribute to the forms of change that CBT is expressly aspiring to manifest in the CSBR.

7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve? (Please provide detailed information if there are any changes since the nomination form/last periodic review report).

As the Clayoquot Sound Biosphere does not have legally binding authority over what happens within its boundaries under the governments of British Columbia and Canada, this question largely does not apply. However, see 2.4.1 for examples of how the biosphere reserve is addressed in local, regional, and national development plans.

8. Criteria and Progress Made

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

(1) “Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions”. (The term “major biogeographic region” is not strictly defined but it would be useful to refer to the Udvardy classification system http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html).

There is no major change in either the mosaic of ecological systems or gradation of human interventions. Habitat types within the Clayoquot Sound Biosphere include: estuaries and tidal marshes, intertidal zone, shorelines (rocky and sandy), marine/subtidal, forests (temperate rainforest, second-growth forest, shrub-dominated heath/bog), open ocean, riparian zone, rivers and streams, lakes and wetlands, rural developed areas, and cultivated (aquaculture).

(2) “Be of significance for biological diversity conservation.”

The Clayoquot Sound Biosphere has a high significance for biological diversity conservation. As noted in this review, the core protected terrestrial area has grown from 34% of the biosphere in 2000 to 62% of the biosphere as of 2020 with the addition of 68,736 ha of land. The CSBR continues to have the largest area of old growth rainforest remaining on Vancouver Island.

The CSBR also includes habitat of national and international significance, such as the Wah-nah-jus Hilth-hoo-is Mudflats (Tofino Mudflats Wildlife Management area), a designated Western Hemisphere Shorebird Reserve Network site of regional importance and a globally and continentally significant Important Bird Area; and Swan Lake, just outside of the southern boundary of Pacific Rim National Park Reserve is recognized as one of the most productive breeding sites in all of Canada for northern red-legged frogs, a species listed as “special concern” under the federal *Species at Risk Act*.

There are over 450 ha of mapped estuaries in the CSBR, 1461 ha of giant kelp (*Macrocystis pyrifera*) forests, and 3658 ha of eelgrass (*Zostera marina*) beds, which are highly productive ecosystems that help sustain overwintering waterfowl and migratory shorebirds and that provide habitat for over 80% of commercially important shellfish and fish species, including five species of Pacific salmon.³¹⁶ The intertidal and near-shore coastal ecosystems of the CSBR are among the most productive in the world, supporting complex food webs through biogeochemical cycling with influences from both terrestrial and marine elements. Important marine mammals supported by these nearshore habitats include humpback whales (*Megaptera novaeangliae*), grey whales (*Eschrichtius robustus*), killer whales (*Orcinus orca*), and sea otters (*Enhydra lutris*).

In addition, the CSBR hosts five Important Bird Areas and important nesting sites for the threatened marbled murrelet (*Brachyramphus marmoratus*), a globally and provincially important population. Other at-risk bird species in the CSBR include Cassin’s auklet (*Ptychoramphus aleuticus*), tufted puffin (*Fratercula cirrhata*), and common murre (*Uria aalge*).

The CSBR also supports a relatively healthy population of large carnivores, including wolves and cougars, which attests to its diversity and significance. As well, recent years have seen the return of previously extirpated animals such as the sea otter.

(3) “Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.” (Including examples or learning experiences from putting sustainable development into practice.)

There are a number of opportunities and initiatives within the CSBR that explore and demonstrate approaches to sustainable development. Examples are given throughout this document, but include:

- **West Coast NEST:** a regional collaboration convened to expand local education opportunities and diversify the region’s economy by supporting the development of an education tourism sector and building awareness of Agenda 2030 and the UN SDGs.

³¹⁶ Nature Conservancy of Canada, (2018). Project Plan for Clayoquot Sound Natural Area, unpublished document.

- **Tribal Parks:** as a pathway to self-governance, Tla-o-qui-aht Tribal Parks take a cultural value-based approach to management based on Tla-o-qui-aht Indigenous knowledge and conservation principles.
- **Rehabilitation** of forest and riparian habitats.
- **Advocacy** for protecting habitats, as demonstrated by the exemplary work of the Central Westcoast Forest Society and the Association of Wetland Stewards for Clayoquot and Barkley Sounds.
- **Vital Conversations** – community conversations on relevant topics, including sustainable tourism and COVID-19 and regenerative tourism
- ***lisaak sin hay tiič mis: Regional Coexistence Network:*** a network that brings together local community planners and stakeholders, including representatives from the tourism sector, municipalities, and Nuu-chah-nulth communities, to create plans that help humans and wildlife coexist in the CSBR.
- **Clayoquot Salmon Roundtable:** a platform for building partnerships between First Nations, governments, and stakeholders in a co-management process in order to develop and implement the best possible plan for the recovery and sustainable management of wild salmon.
- **Vital Signs and Living Wage documents:** collates and analyzes a suite of indicators that measure the vitality of the CSBR, identifying significant trends and support action on issues critical to the region's health.

4) "Have an appropriate size to serve the three functions of biosphere reserves."

Yes, there has been no overall change to the size of the biosphere, although some land has changed its zonation status.

5) Appropriate zonation to serve the three functions.

Yes, as at the creation of the Clayoquot Sound Biosphere, the zonation and associated functions are appropriate. There has, however, been some changes to the area within the terrestrial zones, primarily due to the completion of watershed management plans.

As outlined in 2.2.2, 2.4.5, and 4.1, they include an increase in the terrestrial core protected zone (from 90,412 ha in 2000 to 159,148 ha in 2020), an increase in the terrestrial buffer zone (from 58,736 ha in 2000 to 68,044 ha in 2020), and a decrease in the terrestrial transition zone (from 116,557 ha in 2000 to 31,227 ha in 2020).

The marine component of the biosphere includes 20,579 ha of core protected area, 6,980 ha of marine buffer zone, and a 63,386 ha transition area. The core and transition areas have had modest increases since 2000, and the buffer increased by 5,300 ha due to the addition of Rockfish Conservation Areas.

6) "Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve."

The Clayoquot Biosphere Trust is the non-profit organization established specifically with the creation of the Clayoquot Sound Biosphere, to carry out the functions of a biosphere reserve and manage the Canada Fund contributed by the Government of Canada. As described in this document, the CBT has many avenues for engagement with the public, and with local organizations, governments, and businesses. It is governed by a volunteer board of directors and approximately 60 volunteers sit on its advisory committees. The CBT engages through its programs, grants, collaborations and partnerships, locally, regionally, nationally, and internationally.

7) Mechanisms for implementation:

a) Mechanisms to manage human use and activities

Yes, human activities are managed and regulated by local, regional, provincial, or national bodies, depending on zone and activities. The governance framework of the CBT aligns with Item 135 of the draft Technical Guidelines for Biosphere Reserves³¹⁷ and includes:

³¹⁷ UNESCO. (2020). Presentation of the Technical Guidelines for Biosphere Reserves. https://en.unesco.org/sites/default/files/sc-20-conf-232-10_technical_guidelines_en.pdf

i) a “management team” — a professional staff performing full-time, paid work in concrete activities for the Clayoquot Sound Biosphere. Their work is guided by a strategic/business plan and a budget.

ii) a “management committee” — a board of directors that, as outlined in the CBT’s bylaws, ensures that all communities, and thus all levels of local government (Indigenous, municipal, regional), are represented. This body has decision-making power and closely coordinates with the staff/management team.

iii) several “advisory boards” — the CBT has several avenues for consultation, including a number of advisory committees comprised of community members who provide input on the CBT’s strategic direction.

b) Management policy or plan

Yes, the CBT creates annual strategic/business plans and other strategic documents to guide its work.

Annual business plans ensure these objectives are being met, evaluate and guide the CBT’s work, and ensure alignment with local, national, and international mandates of a UNESCO biosphere reserve. This aligns with Item 175 in the draft Technical Guidelines for Biosphere Reserves, which specifies that “a ‘Business Plan’ is an alternative approach to a ‘Management Plan.’”

The CBT is also guided by the Canada Fund Agreement to ensure it fulfills its role as a UNESCO biosphere reserve. The agreement identifies four objectives that support community-designed program to achieve sustainable development, specifically to: (1) enable local communities and First Nations in the Clayoquot Sound area to plan, manage and complete projects aimed at protecting, conserving, enhancing and restoring habitats, sites and ecosystems; (2) encourage those of the Clayoquot Sound area to become actively involved in environmental and sustainable development projects that will result in tangible, measurable environmental benefits; (3) enable those of the Clayoquot Sound area to respond to specific environmental and economic needs and emerging issues at the regional or ecosystem levels; and (4) leverage non-federal government, voluntary in-kind and other financial support for training, education and research projects; and enhance Environment Canada’s departmental or federal presence in the Biosphere.³¹⁸

The CBT uses a business plan and other strategic documents, such as a communications plan, to guide and evaluate its work, as per Item 177 in the draft Technical Guidelines for Biosphere Reserves (“...such strategy documents ... include clear direction and strategy for all stakeholders.”). The business plan reiterates the vision and mission of the organization, reaffirms its mandate as part of the World Network of Biosphere Reserves, clearly defines its approach to strategic/business planning, and establishes core priorities with clear actions and programs to fulfill these actions.

Core priorities and essential functions are organized around the five actions as identified in the Theory of Change:

- facilitating and coordinating healthy community and ecosystem initiatives,
- empowering youth,
- co-leading sustainability research, education and training,
- achieving the biosphere centre, and
- stewarding granting and governance processes.

c) Authority or mechanism to implement this policy or plan

Yes, the CBT was established as the central administrative authority at nomination and this remains the case.

d) Programmes for research, monitoring, education and training

Yes, as detailed in this document, the CBT conducts its own research, monitoring, education, and training, and also supports these activities in other organizations, both logistically and financially.

³¹⁸ Clayoquot Biosphere Trust. (2018). Program Audit. p. 3.

Does the biosphere reserve have cooperative activities with other biosphere reserves (exchanges of information and staff, joint programmes, etc.)?

At the national level:

Yes. Please refer to 6.6.1 for details, however the CBT is very active nationally in a variety of ways, including, but not limited to: sitting on the executive committee of the Canadian Biosphere Reserve Association (CBRA), including filling the executive director role since 2018; participating in the Community Conservation Research Network; sitting on the CBRA Indigenous Circle; participating in the Pathway to Target 1 project with other Canadian biospheres; and actively participating in the Canadian Commission for UNESCO initiatives.

At the regional level:

Yes. Partnering with the Mount Arrowsmith Biosphere Region on projects such as a meeting of the CBRA Indigenous Circle; sharing information with prospective biosphere reserves; sharing information on *Vital Signs*, Neighbourhood Small Grants, and other programs with other biosphere reserves.

Through twinning and/or transboundary biosphere reserves:

See below. Upon the designation of the Wando Islands UNESCO Biosphere Reserve, the parties will further consider formalizing their ongoing relationship through the UNESCO World Biosphere Twinning program.

Within the World Network:

In 2019, the CBT hosted a delegation from Wando County, Korea, led by Dr. Kyoung-Mann Cho, a member of the Eco-Horizon Institute, during which time CBT staff and board members shared experiences, discuss collaboration opportunities, and introduced the Wando delegation to local leadership. The two parties authored a joint statement to establish the understanding and aspirations for a partnership with the goals to exchange information and experiences.

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat.

Through the periodic review process, the CBT realized that the provincial government maps, which are need to calculation the size of core, buffer, and transitions zones with the Clayoquot Sound biosphere, are out of date. This is currently being rectified.

Describe the main objectives of the biosphere reserve integrating the three functions and the sustainable development objectives for the coming years.

As demonstrated throughout this document, the CBT employs a regular schedule of assessment and evaluation to ensure alignment with the functions of a biosphere reserve and the UN sustainable development goals.



The Clayoquot Biosphere Trust is grateful for the support and collaboration of its partners and for their continued commitment to working together towards biodiversity conservation, sustainable development, and reconciliation.

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