



United Nations  
Educational, Scientific and  
Cultural Organization



**MOUNT  
ARROWSMITH**  
BIOSPHERE REGION

# Mount Arrowsmith Biosphere Region

---

2022 Annual Report

*The Mount Arrowsmith Biosphere Region (MABR) includes roughly 1200 square kilometres on eastern Vancouver Island, spanning from Nanoose Bay to Qualicum Bay, and from the highest peak of Mount Arrowsmith (1817 metres) down 300 metres into the Salish Sea. This extensive vertical elevation and the incredible biodiversity are what make the MABR unique among Canadian Biosphere Regions. The boundaries of the MABR are defined by five watersheds – Englishman River, Little Qualicum, French Creek, Nanoose Creek, and Bonnell Creek. The MABR encompasses many unique ecosystems ranging from high alpine and coastal forests to intertidal and marine habitats.*

*The MABR acknowledges and thanks the Qualicum, Snaw-naw-as, Snuneymuxw, K'ómox, Tseshaht, Hupacasath, and Ditidaht First Nations, on whose traditional lands the Mount Arrowsmith Biosphere Region is situated within.*

Cover photo courtesy of Arrowsmith Media



## ⋮ MABR Vision, Mission, and Mandate

The Mount Arrowsmith Biosphere Region (MABR) inspires a positive future on the east coast of Vancouver Island, British Columbia, Canada, by facilitating collaboration, coordinating participatory research, and supporting community initiatives that promote sustainability.

### Our Vision

---

MABR is a place where communities work together to inspire a positive future for people and nature.

### Our Mission

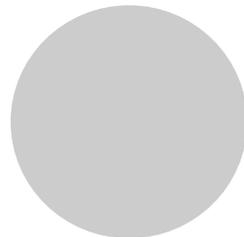
---

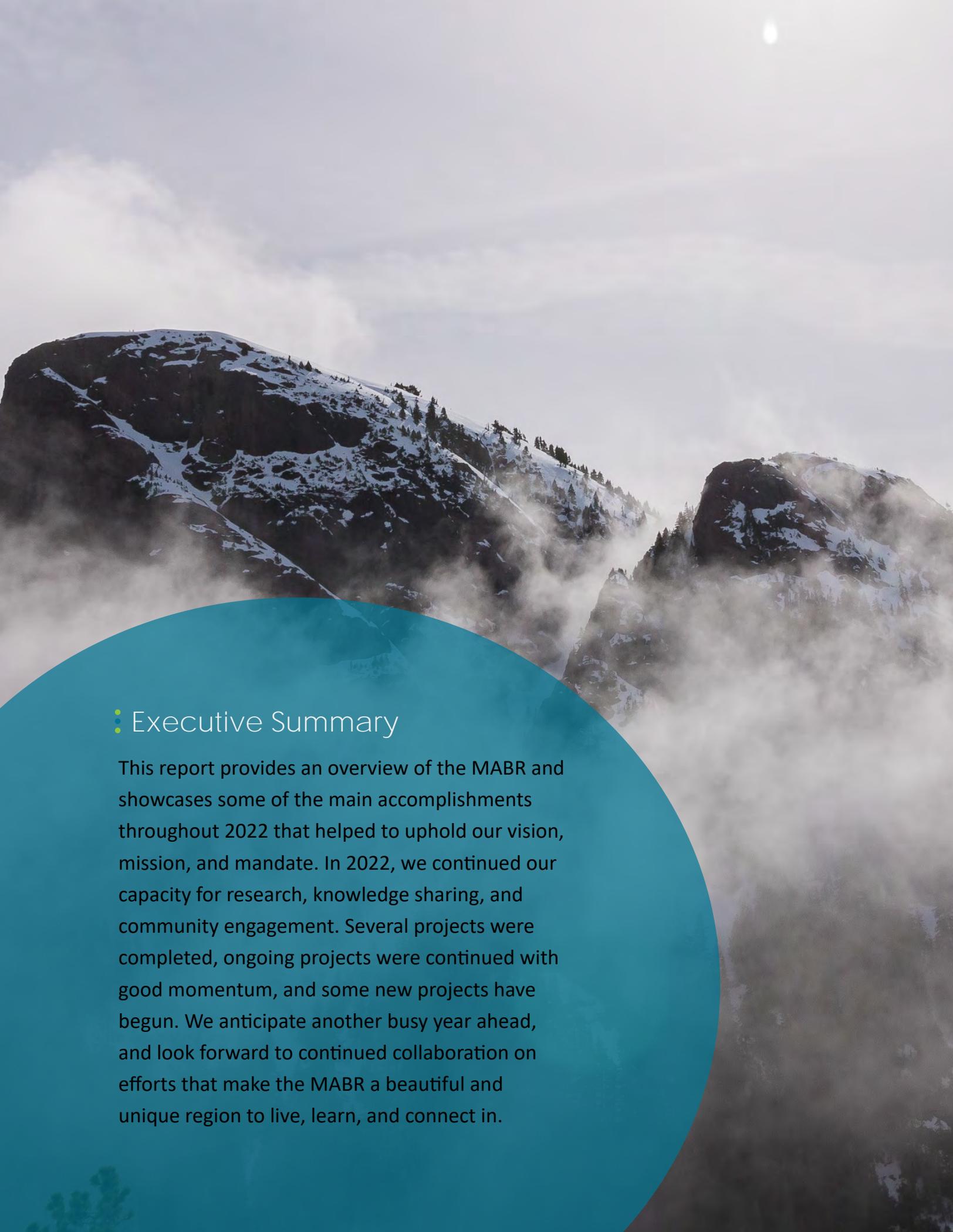
The MABR works with diverse communities and organizations to develop and implement policies, practices, and initiatives that promote environmental, economic, cultural, and social sustainability. Different worldviews and ways of knowing are shared to ensure that our mission has meaning for all.

### Our Mandate

---

The MABR's mandate is to promote the conservation of biological and cultural diversity, support the development of sustainable communities and livelihoods, and facilitate collaboration, reconciliation, and knowledge sharing in the MABR.



A scenic view of snow-capped mountains with a teal circular overlay containing text. The background shows a mountain range with snow-covered peaks and evergreen trees, partially obscured by mist or low clouds. The sky is overcast with soft light. A large teal circle is positioned in the lower-left quadrant, containing the text.

## • Executive Summary

This report provides an overview of the MABR and showcases some of the main accomplishments throughout 2022 that helped to uphold our vision, mission, and mandate. In 2022, we continued our capacity for research, knowledge sharing, and community engagement. Several projects were completed, ongoing projects were continued with good momentum, and some new projects have begun. We anticipate another busy year ahead, and look forward to continued collaboration on efforts that make the MABR a beautiful and unique region to live, learn, and connect in.

## Table of Contents

MABR Governance .....	1
Roundtable Governance.....	1
2022 Roundtable Members.....	1
The Mount Arrowsmith Biosphere Region.....	2
About MABRRI .....	2
Strategic Plan .....	2
2022 MABRRI Research Team.....	2
MABR and the Sustainable Development Goals.....	3
2022 Accomplishments.....	4
Conservation.....	4
Forage Fish Spawning Habitat Monitoring.....	4
Determining the Impacts of Harvesting on Clam Beds in the Nanoose Bay Recreational Shellfish Reserve .....	5
Other Effective Area-Based Conservation Measures in MABR.....	6
Research and Education .....	7
MABR Youth Program.....	7
MABR Annual BioBlitz .....	8
International Journal of UNESCO Biosphere Reserves.....	8
Marine Debris Surveying in the MABR.....	9
Sustainable Development .....	9
SDG Youth Community Grant Program .....	9
Amazing Places.....	10
Climate Action.....	10
Global Observational Research Initiative in Alpine Environments (GLORIA) .....	10
Coastal Plant Phenology Research and Monitoring Project.....	11

Reconciliation ..... 12

    The Indigenous Protected and Conserved Areas (IPCA) Planning Advanced  
    Certificate ..... 12

    Traditional Plant Workshop ..... 12

International Partnerships..... 13

Acknowledging All Collaborators ..... 13

# ⋮ MABR Governance

## Roundtable Governance

The MABR Roundtable meets quarterly and functions as the governing body of the MABR, providing direction to the MABR and the Mount Arrowsmith Biosphere Region Research Institute (MABRRI). The Roundtable aids MABRRI staff by identifying priority action areas and research to be pursued in the short, medium, and long-term. Through diverse representation, the MABR Roundtable itself is a model for how people with different interests and mandates can work together in a respectful, collaborative, and effective way. Members have collectively developed a Culture of Engagement that ensures that everyone feels comfortable, engaged, and eager to return.

The first MABR Roundtable gathering in 2022 was hosted online using the platform Zoom © to allow for social distancing and the safety of all members. In-person meetings resumed for all other gatherings in 2022.

## 2022 Roundtable Members

Steve Adams, Mosaic Forest Management, Resource Technologist

Kim Burden, Parksville & District Chamber of Commerce, E.D.

Chris Burger, MABR Liaison for the City of Parksville

Marnie Eggen, Islands Trust

Mandy Hobkirk, MABR Coordinator

Cheryl Jones, Snaw-naw-as First Nation, Councillor

Geraldine Manson, Snuneymuxw First Nation, Elder in Residence at Vancouver Island University

Ceri Peacey, MABR Roundtable Community Representative

Michael Recalma, Qualicum First Nation, Chief

Graham Sakaki, MABRRI, Regional Research Institute Manager

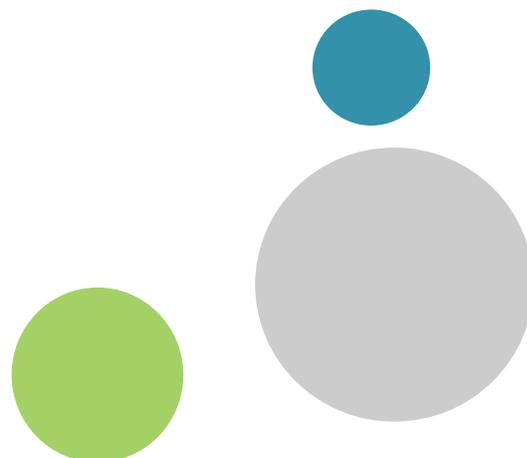
Blain Sepos, Parksville Qualicum Beach Tourism, E.D.

Pam Shaw, MABRRI, Research Director

Jannah Stavroff, Community Representative

Lehann Wallace, Regional District of Nanaimo, Electoral Area G Director

Teunis Westbroek, Town of Qualicum Beach, Councillor



# 🌿 The Mount Arrowsmith Biosphere Region Research Institute

## About MABRRI

MABRRI is an academic entity at Vancouver Island University (VIU) that supports and conducts natural and social science research in the MABR and surrounding areas. MABRRI was established at VIU in 2014 when the MABR transitioned from a charitable not-for-profit model to a regional Roundtable partnership model spearheaded by VIU and the City of Parksville. The research institute conducts, supports, and facilitates research that meets the sustainability goals of the MABR and upholds the mandate of the UNESCO MAB Programme.

MABRRI is the engine behind the MABR's research and educational programs. MABRRI's mission is to advance a program of inquiry that involves regional stakeholders in meaningful explorations of issues of local relevance. By harnessing the knowledge of the MABR community and the interdisciplinary strengths of students and faculty at VIU, MABRRI is a centre for collaborative research, innovation, and knowledge sharing that elevates the relationship between people and nature in the Biosphere Region.

MABRRI contributes to the success of the MABR through research and education, which is one of the four main functions of all UNESCO Biosphere Reserves. MABRRI envisions, funds, and coordinates research projects and educational programs or initiatives that advance sustainability.

## Strategic Plan

MABRRI's Strategic Plan for Research and Education aims to provide the foundation for the research institute to become a regional, national, and international leader in community-based, student-led research. The Plan outlines the next steps for MABRRI, which include objectives for conducting research in the MABR, research themes and priority areas for focus over the next three years, and our vision for collaborating with stakeholders in the region. A link to the strategic plan is available [here](#), or on the 'resources' page of MABRRI's website.



## 2022 MABRRI Research Team

MABRRI employed a total of 45 student researchers and recent graduates in 2022. Some of the projects they contributed to included Coastal Forest Plant Phenology and Monitoring, Forage Fish Spawning Habitat Monitoring, and Determining the Impacts of Harvesting on Clam Beds in the Nanoose Bay Recreational Shellfish Reserve. Additionally, MABRRI also employed 12 full-time staff and coordinators.

## ⋮ MABR and the Sustainable Development Goals

Adopted in 2015 by the United Nations (UN) as part of the 2030 Agenda for Sustainable Development, the 17 Sustainable Development Goals (SDGs) are a blueprint to achieve improved sustainability by 2030<sup>1</sup>. The SDGs hold significant importance as they call all world nations - regardless of their economic status - to action to achieve a more sustainable future for all, while leaving no one behind<sup>1</sup>. The SDGs incorporate a holistic approach to sustainable development, aiming to address a wide range of issues including: ending poverty and hunger, addressing climate change, reducing inequalities, and protecting and conserving biodiversity and ecosystems<sup>1</sup>.

Although the SDGs were developed for nations, their achievement requires collaboration and solutions from all levels, including the local level<sup>2</sup>. As a UNESCO Biosphere Reserve, the MABR plays a significant role in promoting and contributing to the SDGs locally. Biosphere Reserves are areas that model solutions for a sustainable future, celebrate cultural and biological diversity, and empower positive relationships between humans and nature<sup>3</sup>. The MABR involves partnerships between various community members, stakeholders, and organizations. Through these partnerships and its role as a UNESCO Biosphere Reserve, the MABR is in a position to make meaningful local contributions to the SDGs.

Globally and within Canada, the vision and goals of Biosphere Reserves can make connections to the SDGs. Acting as models for a sustainable future, Biosphere Reserves connect to the 2030 Agenda as a whole, by representing all 17 SDGs. By working towards solutions for conservation of biological and cultural diversity and climate change, while also promoting economic and social development, Biosphere Reserves inherently connect to SDGs 8, 11, 13, 14, and 15. SDG 4 also connects to Biosphere Reserves as they aim to facilitate education for sustainable development.

As the MABR focuses on sustainability, each of the projects conducted by the MABR and MABRRI touch on the SDGs in some way. Throughout this report, icons of the SDGs that each project or initiative relate to will be found following their description.



<sup>1</sup>United Nations. (2020). *The 17 goals*. <https://sdgs.un.org/goals>

<sup>2</sup>United Nations. (2021). *Goal 17: Revitalize the global partnership for sustainable development*. <https://www.un.org/sustainabledevelopment/globalpartnerships/>

<sup>3</sup>UNESCO. (2019). *Biosphere reserves*. <https://en.unesco.org/biosphere>

## 2022 Accomplishments

Biosphere Reserves work to promote the conservation of biological and cultural diversity in addition to economic and social development. In each Biosphere Reserve, community partners work together to find innovative ways to achieve a balance between the needs of humans and nature.

UNESCO Biosphere Reserves have four strategic objectives:

1. Conserve biodiversity, restore and enhance ecosystem services, and foster the sustainable use of natural resources.
2. Contribute to building sustainable, healthy and equitable societies, economies and thriving human settlements in harmony with the biosphere.
3. Facilitate biodiversity and sustainability science, education for sustainable development and capacity building.
4. Support mitigation and adaptation to climate change and other aspects of global environmental change.

In Canada, we also strive towards a fifth objective; reconciliation with Indigenous Peoples.

The remainder of this report has been divided into the above objectives, providing a snapshot of the MABR's accomplishments in 2022.

## Conservation

### Forage Fish Spawning Habitat Monitoring

The Forage Fish Spawning Habitat Monitoring project began in 2017 when Phillip Dionne, a research scientist, from the Washington State Department of Fish and Wildlife travelled to Nanaimo to train the MABRRI team to sample for forage fish eggs, specifically Pacific sand lance and surf smelt. MABRRI began sampling in December 2017, focusing on the Parksville-Qualicum Beach Wildlife Management Area. In mid-2018, MABRRI began hosting training sessions for local community stewardship groups in order to build the capacity of the project. By involving citizen scientists, MABRRI has been able to expand the geographical range far beyond what they would be able to do on their own.

By the end of 2022, MABRRI had 10 dedicated citizen science groups (Gabriola Island Shorekeepers, Thetis Island Nature Conservancy, Mid-Vancouver Island Habitat Enhancement Society, Qualicum Beach Streamkeepers, Cowichan Estuary Restoration and Conservation Association, Cowichan Valley Naturalists Society, Cowichan Secondary School, Pender Islands Conservancy Association, Saturna Island Marine Research & Education Society, and Transitions Salt Spring Island) and 7



individual volunteers spanning from Nanoose Bay to Cowichan Bay. MABRRI hopes to continue to expand the citizen science component into the future. To date, MABRRI and the citizen scientists are now monitoring over 90 sites regularly along the Vancouver Island and Gulf Island coastlines. Sites span from Cowichan Bay, north to Deep Bay, including sites on Gabriola Island, Thetis Island, Pender Islands, Saturna Island, and Salt Spring Island. Overall, in 2022 MABRRI and their citizen scientists collected 478 samples; 21 samples containing forage fish eggs from 16 different beach stations, all Pacific sand lance.

The BC Forage Fish Monitoring Network (BCFFMN) has continued to expand and include more organizations with ties to forage fish research. Currently, members include Peninsula Stream Society in Victoria; Project Watershed in Courtenay/Comox; Parks Canada on the West Coast and southern Gulf Islands; the Sunshine Coast Friends of Forage Fish and Ruby Lake Lagoon Society and Pender Harbour Ocean Discovery Station from the Sunshine Coast; a Masters student from the University of British Columbia; Tsleil-Waututh Nation; the Department of Fisheries and Oceans at the Pacific Biological Station; Átl'ka7tsem/Howe Sound Biosphere Region; Cedar Coast Field Station from Vargas Island, Tofino; Birds on the Bay/Friends of Semiahoo Bay; Marine Stewardship Initiative; Redd Fish Restoration Society. We look forward to continuing our monitoring efforts, expanding our range, and collaborate with the BCFFMN on restoration events. To continue educating and informing the public on forage fish and research results, the network aims to host an annual gathering where attendees can learn about current research, join monitoring efforts, update on results throughout British Columbia, and be updated on future initiatives. MABRRI could not do this work without the continued support of our current and past sponsors at the Sitka Foundation, the Pacific Salmon Foundation, and World Wildlife Fund Canada. Data from all participating groups is uploaded to the Pacific Salmon Foundation's Strait of Georgia Data Centre.

**The Forage Fish  
project supports  
SDGs:**



## Determining the Impacts of Harvesting on Clam Beds in the Nanoose Bay Recreational Shellfish Reserve

In collaboration with the Nanoose Economic Development Corporation (NEDC), this project aims to determine whether recreational and commercial clam harvesting pressures could be impacting clam habitat in the public use area at the Nanoose Bay Recreational Shellfish Reserve. This study aims to provide a comprehensive outlook of the current harvesting practices in the study area and provide recommendations to improve the sustainability of harvesting practices.

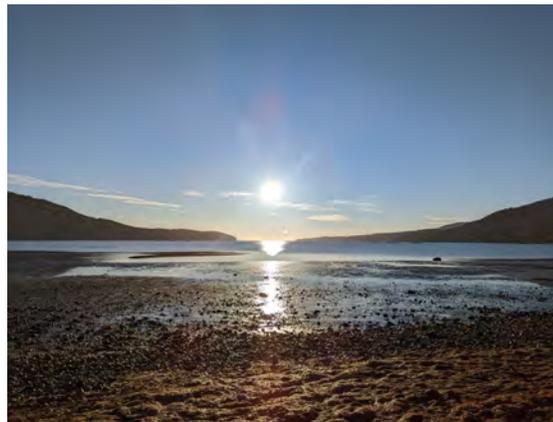
Phase one of the project began in 2020 with a literature review and field observations during the clam harvesting season to identify the extent of harvesting activity, as well as characteristics and patterns of harvesting in the study area. Field observations were conducted at the study area over multiple visits during low tide events to record the number of clams removed from the site by harvesters. Interviews were then conducted to provide insight into historical patterns and the significance of clam harvesting to supplement the study.

In 2021, researchers began phase two of the study, which included additional data collection to address the limitations discovered in phase one. Clam abundance surveys were completed in April and August to gain a baseline understanding of clam species and abundance throughout the harvest area and how these populations changed during the harvest period. Field observations of clam harvesting took place from April to August, 2021.

In May and September of 2022, another round of clam abundance surveys were completed. These surveys were conducted to further increase the dataset so we can understand the clam species and abundance in the area, as well as monitor population changes that may occur during the harvest season.

Moving forward, MABRRI will continue conducting abundance surveys pre- and post-peak harvesting season, as a larger dataset can help infer changes to population over time and between different harvest seasons.

**The Impacts of  
Harvesting on Clam Beds  
project supports SDGs:**



## Qualifying UNESCO Buffer Zones as Other Effective Area-Based Conservation Measures within the MABR

The MABR is grateful to be one of the 19 biosphere reserves across Canada to receive funding from Environment and Climate Change Canada for efforts towards enhancing conservation of biodiversity. Working with the Canadian Biosphere Reserve Association, our project is focusing on activities that aim to enable some of the buffer and transition zones within the MABR to meet the international guidance and standards to qualify them as Other Effective Area-based Conservation Measures (OECMs). An OECM is defined by the Convention on Biological Diversity as:

*“A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values.”*

The designation of OECMs in Canadian biosphere reserves aims to support Canada’s goal of conserving 30% of land and water by 2030. Within the MABR, we are collaborating with local government, environmental NGOs, First Nations, and landowners to protect areas of high conservation value and are at risk of species and habitat loss. The main goals of this project include:

1. Buffer and transition zone inventory assessment to determine if appropriate or expanded zones could support biodiversity and conservation;
2. Identify potential areas for OECM designation; and
3. Species and risk inventory assessments and restoration activities.

Throughout 2022, activities have included GIS analyses to identify suitable sites for OECM designation, partnership building with local organizations, and literature reviews. Additionally, one of the first major successes was contributing funding to a collaborative effort for land acquisition of 23-acres at the French Creek Estuary. With support from the Age of Union Foundation, BC Parks Foundation, and the Regional District of Nanaimo, and the tireless work of local organizations such as the Save Estuary Land Society, the French Creek Estuary will be managed as a nature preserve to protect this diverse ecosystem.

**The OECM project supports SDGs:**



## Research and Education

### MABR Youth Program

The MABR Youth Program was developed in order to introduce the UNESCO-designated MABR to youth in the region. Although there are a few ecological education youth programs in the MABR, none of them specifically discuss the MABR or Biosphere Reserves. The Youth Program offers four unique workshops to schools in the region cost-free. Three workshops are tailored to elementary students and focus on coastal ecosystems, terrestrial ecosystems, and sustainable development. The fourth workshop is tailored to high school students and focuses on the United Nations' Sustainable Development Goals (SDGs). Each workshop consists of an in-class presentation accompanied by interactive learning activities. In the coastal and terrestrial workshops, students also go on field trips to partake in experiential learning opportunities. Each of the workshops highlight the MABR and sustainability within the region.

Due to COVID-19 and associated health regulations, the amount of MABR Youth Program workshops hosted in 2022 was lower than previous years prior to the pandemic. In total, the team hosted 3 in-classroom workshops; however, the program is already booked for several workshops in early 2023. Our team is eager to continue to facilitate youth program workshops into 2023, and are hopeful we can reach more students in the upcoming year.

**The MABR Youth Program supports SDGs:**



## MABR Annual BioBlitz

From April 8th through 10th, 2022 the MABR hosted its second Biosphere-Wide Blitz. This was the second year of the modified Annual MABR BioBlitz, which was restructured in 2021 to allow for social distancing and to obtain a broader view of the biodiversity in our region. This rapid biological survey of flora and fauna utilized the iNaturalist app, with observations collected within the MABR's boundaries across the three days.

This year there was a substantial increase in participant involvement and over 300 more recorded observations than the 2021 BioBlitz. These observations greatly contribute to a growing understanding of the biodiversity of our region. A grand total of 1,107 observations were recorded, including 401 distinct species. The [2022 MABR BioBlitz Summary Report](#) includes details of all the flora and fauna species recorded as part of this year's event.

**The MABR  
Annual BioBlitz  
supports SDGs:**



*Bumble Bee -  
image by: jey42*



*Chocolate Cone Cup - image by:  
stevenhayward*



*Pacific Bleeding Heart - image by: guylmonty*

## International Journal of UNESCO Biosphere Reserves

The International Journal of UNESCO Biosphere Reserves is, in perpetuity, a digital, open access, subscription-free publication, making this a cost-effective publication, reducing the ecological footprint of the journal and allowing for full-colour/full-spectrum production across a range of digital formats. This journal is part of a wave of new journals that are abandoning the confines of paper publications and embracing a digital future that includes video, audio, full-colour mapping, and interactive formats that are not limited by the challenges of publication costs and hard copy dissemination. This format also allows for a much shorter delay between submission and publication.

The journal is fully interdisciplinary and instead of focusing on a specific field of study, it is a resource for sharing information across disciplines and into practice, promoting the cross-pollination of ideas and creating new research connections. It can therefore be regarded as a contribution to the implementation of the Lima Action Plan for the MAB Programme and its World Network of Biosphere Reserves (WNBR) (2016-2025). This calls for not only applied research in Biosphere Reserves, but also for an active and open interdisciplinary network of scientists and knowledge holders working in and with Biosphere Reserves, with a joint research and knowledge exchange agenda. The journal was launched in 2017 and included six volumes by the end of 2022.

**The International Journal of  
UNESCO Biosphere  
Reserves supports SDGs:**



## Marine Debris Surveying in the MABR

Since July 2021, MABRRI has conducted a citizen science initiative to monitor beaches for marine debris in the MABR. This survey approach follows the National Oceanic and Atmospheric Administration's (NOAA) methods for marine debris surveys, as part of their Marine Debris Monitoring and Assessment Project. By utilizing NOAA's survey methods, MABRRI provides data to an international database that amalgamates data collection from local beaches into a larger context.

Thanks to the help of our volunteers, MABRRI is able to aid in filling a gap in the NOAA database for Vancouver Island's east coast. These surveys will continue to be conducted four times per year, on a seasonal basis. This project currently includes two sites in the MABR (French Creek and Qualicum Beach), however the implementation of new sites, along with a micro-plastics survey component at these sites are being considered for the Biosphere Region.

**Marine Debris  
Surveying project  
supports SDGs:**



## 🌱 Sustainable Development

### SDG Youth Community Grant Program

The MABR, in partnership with MABRRI, the Parksville & District Chamber of Commerce, and School District 69, launched the SDG Youth Community Grant Program in the fall of 2021. The program is a competitive award program aimed at funding youth-led sustainability projects in the MABR to launch local initiatives that contribute to one or more of the SDGs. The SDG Youth Community Grant Program intends to provide students with the opportunity to develop and execute an initiative in their own community, contributing to the SDGs at a local scale and implementing positive change.

In 2021, a student group from Kwalikum Secondary School won the award to revitalize their school garden and address food insecurity. The funding enabled the student group to clean up the garden space, build garden beds, plant a pollinator garden, and grow fruits and vegetables. A video from last year's recipient can be found [here](#).

MABRRI and the MABR offered the SDG Youth Community Grant program again in 2022. It is anticipated that the program holds potential to impact the wider MABR community and foster continued SDG advancement.

*The SDG Youth Community  
Grant Program support all  
the SDGs.*



## Amazing Places

The Amazing Places Project is a Canadian UNESCO Biosphere Region initiative that originated in the Fundy Biosphere Region in New Brunswick in 2010. The purpose of the Amazing Places Project is to promote publicly accessible, natural spaces of special significance to encourage people to visit and strengthen their relationships with nature. The Amazing Places Project has expanded to five UNESCO Biosphere Regions in Canada, and was brought to British Columbia in 2017 through a collaboration between the MABR, Parksville Qualicum Beach Tourism Association, Destination British Columbia, and VIU.

The Amazing Places Project in the MABR consists of ten sites that were publicly nominated, and aims to connect residents and visitors to the local ecological wonders of our Biosphere. Engagement strategies over the years have consisted of social media promotion, interpretive signs within the locations, and a Geocaching GeoTour that was created to take participants through each site to search for caches, hidden with clues. Completion of the GeoTour can be celebrated with a collectable coin.

In 2022, the primary focus of Amazing Places engagement has been through social media. An emphasis was placed on sharing user-created content to encourage the online community to visit the spaces that were beautifully captured through the lenses of residents and visitors. The use of the hashtag #amazingplacesmabr was encouraged to track engagement, and this hashtag has been used over 1,000 times in total.

**The Amazing Places Project supports SDGs:**



## Climate Action

### Global Observational Research Initiative in Alpine Environments (GLORIA)

In the summer of 2016 MABRRI partnered with Kristina Swerhun, to continue long-term alpine monitoring on four summits of Mount Arrowsmith. The purpose of the Global Observation Research Initiative in Alpine Environments (GLORIA) research is to develop a long-term, world-wide database of standardized observations of alpine biodiversity, vegetation patterns, and mountain-top temperatures. Every five years, the MABRRI team conducts vegetation surveys and collects temperature data on the four summits to assess any visible changes. Information aims to capture the effects of climate change on these unique alpine ecosystems and contribute to local and international efforts to mitigate biodiversity and habitat losses.

In 2022, the MABRRI team was accompanied by community members and alpine botanists to complete the vegetation surveys on the two lower summit research sites on Mount Arrowsmith. The two upper summits were accessed a month later by helicopter to recce the research sites and replace data loggers. Each site has four loggers that record hourly temperature data. Among other climatic features, alpine vegetation is highly influenced by temperature and snow cover. These parameters are easy to measure with small temperature data loggers, which are buried 10cm below the surface. This allows for continuous temperature data that can be directly linked to the health of the alpine vegetation. All data collected from the vegetation surveys and temperature loggers were submitted to GLORIA's online database.

In 2023, the research team is seeking funding to conduct the vegetation surveys on the remaining two upper summit research sites.

**The GLORIA project supports SDGs:**



## Coastal Plant Phenology Research and Monitoring Project

In partnership with the Ministry of Forests, Milner Gardens & Woodland, and BC Parks, MABRRI is working to assess and monitor climate change impacts on local plant phenology – the timing of seasonally reoccurring events such as bud break, leaf size, flower development, and ripe fruit. By monitoring the growing seasons of different coastal plants, and by comparing these growing seasons to microclimate data, we can work to identify any potential changing trends in the growing seasons of Vancouver Island’s ecosystems.

We are monitoring phenological changes in native plant species at seven research sites: Milner Gardens & Woodland, Thetis Lake Regional Park, Koksilah River Provincial Park, Bowser Ecological Reserve, VIU Woodlot, North Cowichan, and on Mount Arrowsmith. It should be noted that the Mount Arrowsmith site has been on hold since 2019 due to lack of funding, accessibility, and restrictions associated with the COVID-19 pandemic (e.g., unable to social distance in a helicopter).

Each site includes a series of trail cameras and a microclimate station in order to link phenological records to local climate. The project team also collects in-person observations at Milner Gardens & Woodland, which occurred biweekly during the growing season and monthly during the fall and winter in 2022. Data collection will continue for a number of years in order to see how growing seasons may be shifting with changing climate patterns.

During the 2022 academic school year, MABRRI hired one student to conduct the data analysis phase of the project. Students are hired to quality check the microclimate data and interpret and analyze field camera photos to determine the species’ phenophase development and any other observable concerns.

*The Plant Phenology project supports SDGs:*



## Reconciliation

### The Indigenous Protected and Conserved Areas (IPCA) Planning Advanced Certificate

In partnership with the IISAAK OLAM Foundation, in 2022, Vancouver Island University launched the design of Canada's first post-secondary program specializing in planning for IPCAs.

The advanced IPCA Planning Certificate will train the next generation of professional planners and build capacity to support the establishment, management, and governance of IPCAs in British Columbia and across Canada. The certificate includes six distinct and interconnected courses. Course delivery is designed to serve individuals who may be employed full-time and who are seeking ways to advance their learning in areas relating to reconciliation, conservation, and planning.

The certificate addresses the need for a comprehensive and holistic program relating to the protection and conservation of the lands and waters across Canada. In addition, it contributes to the development of a network of IPCA certified professionals who will play a critical role in Canada's achievement of the "30% by 2030" goal.

**The IPCA Planning Certificate supports SDGs:**



### Traditional Plant Workshop

The Traditional Plant Workshop is in collaboration with Snuneymuxw First Nation, MABRRI, Mosaic Forest Management, the Town of Qualicum Beach, and NutritionLink Services Society. The Traditional Plant Workshop was a one-day event that was held on March 15, 2022 at the Qualicum Beach Community Hall. The purpose of the workshop was to disseminate knowledge about local traditional plants, increase awareness of local food security, revitalize traditional food systems, and take steps towards reconciliation.

The entire event brought together over 50 participants, including First Nation community members, Elders, VIU faculty and students, and the general public. The afternoon was jam packed, including presentations from four knowledge holders: Geraldine Manson, Dr. Nancy Turner, Kim Recalma, and Les Malbon. Participants learned about traditional plant names, techniques and tools for harvesting, as well as the cultural, nutritional, and medicinal properties of native plants and how they are prepared. Knowledge was shared through lessons, stories, prayer, and hands-on activities. By the end of the day, the participants had tried multiple types of local teas, tasted soapberry ice cream, and were able to take home their own samples of a Devil's club salve.

**The Traditional Plant Workshop supports SDGs:**



## International Partnerships

Also in 2022, MABRRI's Research Director, Dr. Pam Shaw, and MABRRI's Research and Community Engagement Coordinator, Jessica Pyett, attended the EuroMAB Conference. The EuroMAB Network is made up of 36 countries and 302 Biosphere Reserves and includes all European and North-American member states which participate in UNESCO's Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves. The conference is a platform for knowledge sharing, as well as a tool for supporting sustainable development practices among Biosphere coordinators, scientists, and MAB committees.

The 2022 EuroMAB Conference took place in Austria from September 12th to 16th. The theme of the 2022 conference focused on connecting cultures and cross border cooperation between societies and generations. Pam and Jessica attended the plenary presentations and a series of workshops that addressed different issues related to the theme. One of the workshops was hosted by Pam titled, "Status of Mountain BRs", which was organized as an excursion connected to a regional example of implementation. Pam's workshop addressed challenges and successes related to partnerships and regional research, and included presentations from coordinators from different mountain Biosphere Reserves in the USA and throughout Europe. Overall, the EuroMAB Conference was an amazing opportunity to connect with other Biosphere Reserves, as well as promote biodiversity conservation and sustainable development around the world.



## Acknowledging All Collaborators

The MABR and MABRRI were fortunate to receive support from many individuals and organizations in the region this year. Support came in many forms, from networking and idea sharing, to providing funding and student learning opportunities. We would like to take this opportunity to thank these individuals and community groups for their ideas, inspiration, and dedication to helping the MABR achieve its full potential. Upholding the vision, mission, and mandate of the MABR could not be done without the ongoing support and enthusiasm from community individuals, groups, and partners. Our accomplishments are centered around collaborative efforts, and we are grateful to all who helped make this year a success. We look forward to another great year ahead, full of learning together and working on initiatives that matter most to communities of the MABR!

Follow us for regular updates  
on events and initiatives in our  
Biosphere Region:



[mabr.ca](http://mabr.ca)



[@MountArrowsmithBR](https://www.facebook.com/MountArrowsmithBR)



[@MountArrowBR](https://twitter.com/MountArrowBR)



[@mtarrowsmithbr](https://www.instagram.com/mtarrowsmithbr)



Newsletter