



MARINE PLAN PARTNERSHIP FOR  
THE NORTH PACIFIC COAST

**NORTH VANCOUVER  
ISLAND  
MARINE PLAN  
ANNUAL REPORT**

2019



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*Photo: Estuary at the head of Port Harvey (credit: Barb Dinning)*

## **MESSAGE FROM THE NVI MARINE PLAN IMPLEMENTATION TEAM**

On behalf of the Nanwakolas Council and the Province of British Columbia, the North Vancouver Island (NVI) Implementation Technical Team is pleased to present the 2018-2019 NVI Annual Report. This report describes implementation activities during the period from April 1, 2018 to March 31, 2019.

We are pleased to report significant progress in most topic areas identified in the plan and look forward to continuing momentum in the implementation of objectives and strategies of the plan. We hope you enjoy learning about what we have accomplished during Year 4 of implementation of the NVI Marine Plan.

Sincerely,

**John Bones** (Co-lead, Nanwakolas Council)

**Sally Cargill** (Co-lead, Province of B.C.)



*Photo: Petroglyph (credit: Barb Dinning)*

## **ACKNOWLEDGEMENTS**

We wish to express our sincere gratitude to all the individuals who participated in activities contributing towards the implementation of the North Vancouver Island Marine Plan in 2018-2019. Thanks go to the member First Nations of the N<sub>a</sub>nwa<sub>k</sub>olas Council: Mamalilikulla, Tlowitsis, Da'naxda'xw Awaetlatla, Wei Wai Kum, Kwiakah and K'omoks, and to the Province of B.C. The valued input and advice of members of the Marine Plan Advisory Committee (MPAC) is gratefully acknowledged. These representatives from various marine sectors and interests, as well as local governments, continue to provide expert advice, time, and enthusiasm to the development, review and completion of implementation projects. We would also like to thank the independent consultants, Marine Plan Partnership (MaPP) contractors and other collaborators in helping us to achieve recommended strategies outlined in the NVI Marine Plan.

We also wish to acknowledge the ongoing financial support of funders to the Great Bear Sea Fund at Tides Canada Foundation.



*Photo: Telegraph Cove (credit: Barb Dinning)*

## EXECUTIVE SUMMARY

This annual report outlines key achievements, progress and challenges related to implementation of the NVI Marine Plan in the April 1, 2018 to March 31, 2019 fiscal year. The NVI MaPP partner priorities during the fiscal year of implementation were cultural protection, EBM monitoring, economic development, conservation, and governance.

Implementation activities occurred in all five MaPP outcome areas: governance and collaboration; marine zoning; stewardship, monitoring and enforcement; sustainable economic development and healthy communities; and climate change and adaptive management. In particular, good progress has been made in cultural protection, EBM monitoring, economic development, and marine protection planning. The Guardian program has played a strong role in supporting the field work components of these projects, particularly EBM monitoring, archeological assessments and the aquaculture projects.

One of the key challenges faced in the reporting year was the quality and timing of product from some of the consultants contracted for implementation work. New and expanding projects with field work components require considerable, sometimes complex field work and data entry tend to rely on the Guardians, which increases demands on their time and capacity

and requires training and supervision. More collaborative work planning between project managers and Guardians that considers training, capacity, and scheduling needs will increase success of the projects and improve capacity for the Guardians. Slower than anticipated progress is also related to required MaPP engagement in collaborative processes and agreements with federal departments.

Looking ahead to 2019-2020, the focus for implementation will be to build on successful projects accomplished this year, including implementation of the Cultural and Heritage Action Plan and Pilot Project, continued archeological assessments, EBM monitoring, and completion of the shellfish aquaculture and marine plant aquaculture pilot projects. New projects include the marine governance assessment and training needs inventory, as well as supporting the local fisheries economy, climate change vulnerability assessment, and marsh resilience monitoring.

## Progress Towards Implementation of Strategies Identified in Year 4 Work Plan





## IMPLEMENTATION PROGRESS DETAILS

The initial focus for the NVI Technical Team was to address plan objectives and strategies that lay the foundation for achieving key partner priorities. Plan implementation priorities were identified based on issue significance, sequencing and dependencies, and alignment with other sub-regional and/or regional work. The partner priorities for the 2018-2019 fiscal year were cultural protection, EBM monitoring, economic development, conservation, and governance. Key achievements during the fiscal year of implementation are described below in accordance with MaPP strategic outcomes and relevant plan strategies. Although all the strategies within this report are organized within the five key outcome areas, some strategies could align with more than one outcome area.

The Strategy Status definitions are as follows:

Complete/functioning	Of the <u>discrete</u> activities intended to be undertaken for this strategy, all are completed. Of the <u>continuous</u> activities intended to be undertaken for this strategy, all are fully operational and ongoing.
On track	All <u>discrete</u> activities intended to be undertaken for this strategy in the relevant budget year (i.e., Year 2, Year 3 or Year 4) are completed. All <u>continuous</u> activities intended to be undertaken for this strategy in the relevant budget year are fully operational.
In development / some activities initiated	Of the activities intended to be undertaken for this strategy, some have been initiated or are in development, but not all are yet complete/ functioning.
Not started / not applicable to certain sub-regions	No activities for this strategy have been initiated or planned for the time period or geography (region/sub-region).
At risk / significantly behind schedule	Activities for this strategy are not progressing as planned, are behind schedule, or are projected to be behind schedule based on foreseeable risks.



*Photo: Recreational boater (credit: Barb Dinning)*

### **Outcome 1: Governance and Collaboration – Strengthening the model of collaborative oceans governance.**

Highlights of achievements for the 2018-2019 fiscal year are as follows:

- An NVI communications strategy was developed that identifies and outlines core communications needs and opportunities, as well as identifying potential tools (e.g., videos, brochures, signage), audiences and high-level messaging.
- A filmmaker was hired by the NVI team to capture footage of the NVI sub-region and produce three short films focused on communicating the work of MaPP and role of the Guardians. The primary target audience will be visitors to the region, but the film(s) are being developed to serve multiple purposes, including at presentations and community outreach by the nations.

- The Marine Plan Advisory Committee was convened for a two-day mid-year meeting in October 2018 to provide an update on new, ongoing and recently completed projects as well as review and provide feedback on the draft PMZ management plans. A two-day year-end meeting is planned for May 2019.
- A September 2018 field trip took place with members of the NVI MaPP team, Guardians, senior staff from the Province, and representatives from partner organizations including the Hakai Institute and the Tides Canada Foundation. Participants were introduced to the core MaPP projects in the field and discussed opportunities for future collaboration and partnerships.
- The Guardian programs continue to have a key role in MaPP implementation activities. The Guardians have been actively undertaking various field work duties, including: EBM indicator monitoring; cultural and heritage resource inventory work and archaeological surveys and verification tasks; and providing logistical and monitoring support for the aquaculture pilot project. Guardian field work took place between June and October 2018. Data processing and analysis was conducted in the fall and winter months. Guardians were trained in data input and processing with support from the EBM co-ordinator and archaeologists. The Guardians continue to engage with partners including provincial Compliance and Enforcement staff to explore areas where there is alignment between provincial regulations, the implementation of MaPP strategies and objectives, and issues of concern to the Nations. In addition, the Guardians have provided support to other MaPP projects including the communications/video project and the MaPP field trip held in October 2018.

A full list of strategies related to this MaPP outcome is in Table 1.



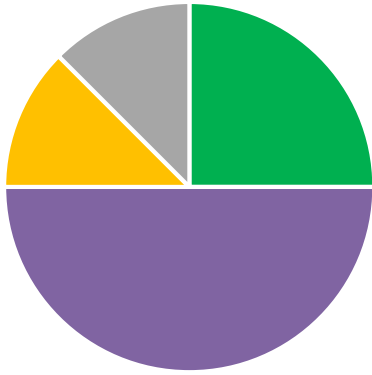
*Photo: NVI field trip, September 2018 (credit: Scott Harris)*

**Table 1.** List of collaboration and governance strategies in the approved 2018-2019 work plan.<sup>1</sup>

Strategy	Status of Strategy
<b>A.3.1.2</b> Initiate discussions between First Nations and the provincial government on tenuring loxiwe to the appropriate First Nation(s) to protect their cultural and economic use by First Nations.	Not started / not applicable to some sub-regions
<b>CHR.1.1.1</b> Encourage proponents to provide existing and new information regarding cultural and heritage resources to N̄nwaḱolas member First Nations and local communities.	In development / some activities initiated
<b>GCM.1.1.1</b> Review the adequacy of existing information and communication materials regarding marine governance and jurisdiction for various government agencies and First Nations.	On Track
<b>GCM.1.1.2</b> Develop and/or improve information access and education on marine governance and jurisdiction.	On Track
<b>RET.4.3.1</b> Collaboratively develop and make available education materials to improve public understanding of, and caring for, marine cultural, heritage and ecologic resources.	On Track
<b>RET.4.3.3</b> Provide, and increase awareness of, opportunities for stewardship involving education, restoration and monitoring.	On Track
Communications – annual reporting	Complete/ Functioning
Stakeholder Engagement Meetings	Complete/ Functioning

<sup>1</sup> “First Nations” in the context of the NVI Plan objectives and strategies means member First Nations of the N̄nwaḱolas Council who signed the Marine Plan in 2015. These were the Mamalilikulla, Tlowitsis, Da’naxda’xw Awaetlatla, Wei Wai Kum, Kwiakah, K’omoks and Gwa’sala-’Nakwaxda’xw First Nations. The Gwa’sala-’Nakwaxda’xw First Nation is no longer a member of N̄nwaḱolas Council and therefore such statements cannot be assumed to represent its current perspectives.

## Collaboration and Governance Strategies



- Complete/ functioning
- On track
- In development
- At risk/ sig behind
- Not started/ not applicable to certain sub-regions

Of the collaboration and governance strategies initiated in the 2018-2019 fiscal year, two are “completed/functioning,” four are “on track,” one is “in development,” and one is “not started.”

Discussions between the Province and Nānwaḱolas member First Nations regarding the tenuring of loxiwe are delayed pending internal discussion with Nānwaḱolas to evaluate economic vs. cultural trade-offs and alternative tools for management. The 2017-2018 annual report was completed, and stakeholder engagement meetings scheduled for the 2018-2019 fiscal year were all completed as planned. A scope of work for the Marine Governance Assessment was developed and shared with MPAC for feedback; as a result a request for proposal was issued, and a consulting team has been hired to undertake this project. The NVI communications strategy identifies opportunities and needs to develop education and outreach materials for local communities to increase awareness of and engagement in the protection and stewardship of cultural and ecological resources. Finally, the Cultural and Heritage Action Plan includes

items pertaining to data sharing, communications and the development of agreements between the Province and Nānwaḱolas.

## **Outcome 2: Marine Zoning - Achieving a healthy marine environment, robust economy and strong communities through zoning.**

Highlights of achievements for the 2018-2019 fiscal year are as follows:

- Draft management plans have been developed for all 10 protection management zones (PMZs) in the NVI sub-regional marine plan. MPAC has reviewed the plans and provided feedback at two workshops, and reviewed the final versions, which are now ready to undergo internal review by the MaPP partners. The draft management plans have identified a few issues that need to be discussed in the plan review and amendment process.
- The partners continue to engage in the Marine Protected Area (MPA) network development process. Nānwaʻkolas has been engaged in selection criteria development and in the identification of candidate sites for consideration in the MPA network. First Nations have been involved at a technical level in the review of potential new sites and potential changes to management provisions for existing sites. The staging of the MPA network process will be guided by a MPA Network Action Plan, which has not yet been developed.

A full list of strategies related to this MaPP outcome is in Table 2.



*Photo: Kayakers at Compton Island (credit: Barb Dinning)*

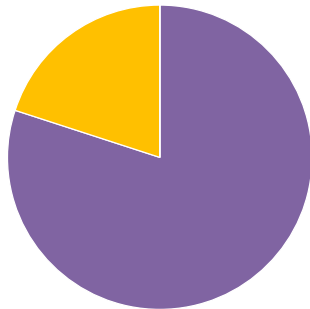
**Table 2.** List of marine zoning strategies in the approved year 2018-2019 work plan.<sup>1</sup>

Strategy	Status of Strategy
<p><b>CP.1.1.1</b> Through applicable processes identify and propose new conservation and protection areas for ecosystem and species representation and resilience, special or unique marine areas or features, and protection of First Nations cultural resources.</p>	<p>In development / some activities initiated</p>
<p><b>CP.1.1.3</b> Undertake protection management planning for Protection Management Zone areas approved as part of this Plan.</p>	<p>On track</p>
<p><b>CP.3.1.2</b> Encourage the Canada-British Columbia Marine Protected Areas Implementation Team to designate marine protected areas through the Network Strategy in a staged manner to minimize impacts on marine uses and activities.</p>	<p>On track</p>
<p><b>CP.4.2.1</b> Include First Nations in the Network Strategy review and selection of candidates put forward by First Nations, stakeholders, the public and the scientific community in their marine territories.</p>	<p>On track</p>
<p><b>CP.4.2.4</b> Include First Nations interests in the selection criteria for the Network Strategy candidate areas.</p>	<p>On track</p>



*Photo: Sea lions (credit: Barb Dinning)*

## Marine Zoning Strategies



■ On track ■ In development

Of the marine zoning strategies in the 2018-2019 fiscal year, four are “on track” and one is “in development.” A Section 16 Land Act reserve has been established in the Salmon River Estuary, and the NVI MaPP team will continue to work with the Province and member First Nations to support discussions around a potential Wildlife Management Area, or other designation. The partners continue to engage in the MPA network planning process. N̄nwaḱolas has been engaged in selection criteria development and in the identification of candidate sites for consideration in the MPA network. First Nations have been involved at a technical level in the review of new potential sites and changes to management provisions for existing sites. The staging of the MPA network process will be guided by a MPA Network Action Plan, which has not yet been developed. MPAC has reviewed the plans and

provided feedback at two workshops, and reviewed the final versions, which are now ready to undergo internal review by the MaPP partners. Draft management plans have been developed for each PMZ with input from and review by MPAC. The draft plans have been finalized, reviewed by the MPAC, and are ready to undergo internal review by the MaPP partners. The process for internal review, approval and endorsement by the MaPP partners has yet to be determined.



*Photo: Turnour Island (credit: Barb Dinning)*



### **Outcome 3: Stewardship, Monitoring and Enforcement** – *Enhancing stewardship of ecological and cultural values, and archaeological sites and areas through monitoring and enforcement.*

Highlights of achievements for the 2018-2019 fiscal year are as follows:

- The Cultural and Heritage Action Plan has been completed and a candidate area for a pilot project has been identified. Discussions continue between the First Nations partner and the Province around implementation of the action plan and pilot project, including the establishment of agreements and joint training.
- The NVI team has retained the services of archaeologists from Inlailawatash Limited Partnership to continue work with the Guardians to undertake site verification and update the archaeological inventory. Training took place in June and field work took place over the summer and fall. In fall and winter, archaeologists from Inlailawatash worked with the Guardians to process the data and update the archaeological inventory. So far, many new sites have been identified.
- The NVI MaPP team hired an EBM Co-ordinator to work with the NVI MaPP team, regional projects co-ordinator, provincial marine biologist and Guardian program to develop and implement an EBM monitoring strategy for kelp and eelgrass across the NVI sub-region. Field work took place over the summer, comprised of boat, kayak, and scuba surveys, and data input and analysis took place in the fall and winter. Data collected included presence/absence, spatial coverage and biomass. Five oceanographic data loggers have been installed across the sub-region to track sea surface salinity and sea surface temperature. This will inform monitoring efforts across the region in 2019-2020. Data collected is being used by the Province to inform marine aquatic plant harvest quotas.
- A consultant was hired to produce a model of kelp abundance and distribution through the NVI sub-region. The model was used to help identify candidate sites for monitoring and may also be used to compare actual kelp abundance with potential kelp abundance for analytical purposes.
- Building on the Priority Polluted Areas Assessment by ESSA Technologies, draft site restoration plans were developed for Campbell River and Salmon River estuaries, and a proposal was developed for the Coastal Restoration Fund to support restoration work in both estuaries.

A full list of strategies related to this MaPP outcome is in Table 3.



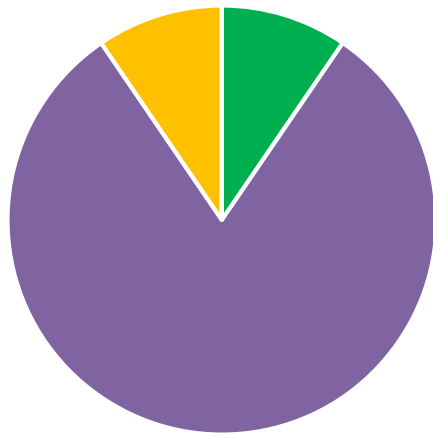
Photo: Canadian Coast Guard patrol boat (credit: Barb Dinning)

**Table 3.** List of stewardship, monitoring and enforcement strategies in the approved 2018-2019 work plan.<sup>1</sup>

Strategy	Status of Strategy
<p><b>P.2.1.2</b> Work with relevant government agencies to confirm the locations of abandoned and derelict vessels, and establish a working group with local government, First Nations and relevant government agencies to identify the owners and potential funding sources, and to develop a risk-based action plan for phased vessel removal.</p>	On track
<p><b>P.3.1.1</b> Assess spill preparedness and response management capacity from appropriate government agencies, industry and community perspectives.</p>	On track
<p><b>P.3.1.3</b> Work with appropriate government agencies, industry and local communities to establish locally specific Geographic Response Plans and response centres, including training, preparation and equipment for effective response to both local and regional marine spills.</p>	On track
<p><b>P.3.1.4</b> Establish a working group that includes appropriate government agencies and First Nations to address marine spill challenges, including financing, industry response times and capacity, spill management techniques, cleanup levels and standards, improved training and preparedness and response mapping systems.</p>	On track
<p><b>P.4.1.1</b> Investigate the identified high-risk pollution areas in Queen Charlotte and Johnstone Straits for priority restoration sites, including estuaries and Plan Protection Management Zone areas.</p>	On track
<p><b>P.4.1.2</b> Identify opportunities and funding for local and First Nations community participation in the restoration of priority sites, including sites with degraded habitat from past tenured activities.</p>	On track

Strategy	Status of Strategy
<b>P.4.1.3</b> Identify and confirm funding sources for local participation in restoration/adaptation programs for species and habitat.	On track
<b>CHR.1.1.2</b> Undertake additional cultural and archaeological surveys and ongoing research for culture and heritage resources	Complete / Functioning
<b>CHR.3.1.2</b> Develop a joint action plan based on the vulnerability assessment of human impacts (Strategy 3.1.1) that includes a description of legislative tools and how they apply, restrictions on access and/or visitation guidelines, an efficient process for managing development where cultural or heritage resources may be or are being impacted, and appropriate communications tools.	Complete / Functioning
<b>CHR.4.1.1</b> Establish a provincial government/ N̄nwaḱolas member First Nations agreement to address such topics as surveillance and enforcement of cultural resources in Guardian Watchmen programs.	On track
<b>CHR.4.1.2</b> Support the development of N̄nwaḱolas member First Nations guidelines for sharing information about cultural resources and the intended use of this information.	On track
<b>CHR.4.1.3</b> Develop a provincial government / N̄nwaḱolas member First Nations pilot project on the conservation and protection of cultural resources.	On track
<b>FEAV.3.1.1.</b> Support First Nations monitoring of marine activities as they relate to continued First Nations fishing activities.	On track
<b>FEAV.4.1.3</b> Encourage compliance through existing and new monitoring programs, information and education (e.g. guardian watchmen, electronic monitoring).	On track
<b>RCE.1.1.2</b> Co-ordinate training for marine surveillance and enforcement with relevant agencies and organisations.	On track
<b>RCE.1.1.3</b> Promote and/or renew existing, and investigate potential new, local educational opportunities (e.g., lighthouse keepers, StraitWatch) regarding culture and heritage resources and ecological disturbances, including wildlife and pollution incidents	In development / some activities initiated
<b>RCE.2.1.2</b> Increase the use of Guardian Watchmen programs to assist with monitoring and facilitating compliance with tenure provisions, marine plans and existing regulations. This could include, but is not limited to, ecological conditions, conservancies and protected areas, marine oil spill response, cultural and heritage resources, and related early warning systems.	On track
<b>RET.1.1.2</b> Work with organizations, institutions, industry and governments to develop robust and objective baseline research and monitoring programs.	On Track
<b>RET.3.2.1</b> Develop or expand education and awareness programs regarding prevention, regulatory compliance, restoration and recovery (e.g., StraitWatch, Observe Record and Report, marine mammal incident reporting).	In development / some activities initiated

### Stewardship, Monitoring and Enforcement Strategies



- Complete/ functioning
- On track
- In development

Of the stewardship, monitoring and enforcement strategies undertaken in 2018-2019 fiscal year two are “complete/functioning,” 17 are “on track,” and two are “in development.”

Archaeological site verification and inventory updates planned for 2018-2019 were completed and many new sites were identified, further work is planned for 2019-2020. The Culture and Heritage Action Plan has been completed. A candidate area for a pilot project has been identified. Ongoing discussions are taking place about implementation of the action plan and pilot project.

An EBM monitoring co-ordinator was hired to develop and implement a monitoring strategy for kelp and eelgrass across the NVI sub-region. Field work took place over the summer and data input and analysis in the fall and winter. Five data loggers to monitor sea surface temperature and sea surface salinity were deployed in March 2019; additional loggers will be deployed after the current system has

been tested. A work plan and budget has been developed to continue and advance monitoring in 2019-2020. Current EBM monitoring activities are limited to ecological and oceanographic indicators, the NVI MaPP team is currently exploring additional data sets and sources that may be used to monitor a broader array of indicators including governance and human well-being.

The Guardian programs have been actively undertaking various field work activities. The Guardians worked with an archaeologist to up-date the archaeological inventory and with the EBM co-ordinator to collect data on kelp, eel grass, temperature and salinity. Guardian field work took place between June and October 2018, data processing and analysis was conducted in the fall and winter months. The Guardians continue to engage with partners including provincial Compliance and Enforcement staff to explore areas where there is alignment between provincial regulations, the implementation of MaPP strategies and objectives, and issues of concern to the Nations. First Nations and B.C. partners are working to actively implement joint compliance monitoring; there have been ongoing meetings and joint patrols between B.C. Compliance Enforcement and Guardian programs.





*Photo: Guardian and consultant plan archaeological site surveys (credit: Scott Harris)*

Geographic Response Planning and Marine Incident Response planning work is being done with the Federal Government as part of Ocean Protection Plan agreement with First Nations; the Province is included in discussions. MaPP contract work has been used to inform detailed discussions around the identification of areas of concern (AOCs) in each community. In March 2018, the federal government announced legislation and funding to address issues with derelict vessels - the Partners are evaluating the implications and future role of MaPP in resolving these issues. The First Nation partner is working on this issue as part of the recently signed Reconciliation Framework Agreement for Ocean Protection Plan initiatives.



*Photo: Spill kit on the dock at Port Neville (credit: Barb Dinning)*

Building on the initial prioritization and high-level restoration plans developed by ESSA Technologies, a contract was issued to develop a list of priority restoration activities and detailed strategic restoration plans for Campbell River estuary and Salmon River estuary. The draft site restoration plans developed for Campbell River and Salmon River include a list of potential funding opportunities to support restoration work and identified opportunities for First Nations and community engagement. Draft funding proposals were prepared for submission by First Nations. A funding proposal was submitted to the Coastal Restoration Fund by Nānwaḱolas Council to support restoration efforts in both estuaries, and to the BC Hydro Fish and Wildlife Conservation Program by K'omoks First Nation to support efforts in the Salmon River estuary. Further work is needed to engage local government staff in reviewing and finalizing site plans, to ensure that they reflect and build on the historical work in each estuary.

Specific process steps, design criteria, and visitor guidelines have been developed by the First Nations partner in collaboration with the BC Marine Trails Society and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) for use in the development of a marine trails network in member traditional territories.

The NVI communications strategy outlines a number of opportunities and needs for education and outreach projects targeting local communities and stakeholders to support stewardship, monitoring and compliance efforts. A videographer was contracted to produce 3-5 short films (or equivalent) to be used by the Guardians for education and outreach to visitors and within their communities.

**Table 4.** List of sustainable economic development and healthy communities strategies in the approved 2018-2019 work plan.<sup>1</sup>

Strategy	Status of Strategy
<b>A.2.1.3</b> Work with relevant industries to identify marine species that offer viable, long-term, ecosystem-based aquaculture opportunities (including but not limited to Sablefish, kelp, sea cucumber, and urchin production).	Complete / Functioning
<b>A.3.1.1</b> Identify appropriate sites with high shellfish aquaculture capability for First Nations tenure opportunities. Priority areas are the North Shore/Boswell Inlet (SMZ 1), Port Neville (SMZ 25), Booker Lagoon (SMZ 11) and Kalogwis (SMZ 22) – see Chapter 5.	On track
<b>GCM.2.1.1</b> Increase opportunities for First Nations, local residents, local governments and stakeholders to provide input to marine management decisions.	On track
<b>GCM.2.1.2</b> Increase First Nations, local resident, local government and stakeholder participation in management and development plans, including planning priorities.	On track
<b>P.1.1.2</b> Assess the vulnerability of existing and potential marine uses and activities that are sensitive to pollution from marine and adjacent upland sources. Priorities are sewage outfall impacts on shellfish areas in Hardy Bay (SMZ 8), loxiwe in the Broughton (PMZ 7), and existing and new conservation and protection areas – see Chapter 5.	In development / some activities initiated
<b>RCE.2.1.1</b> Work with relevant government agencies to identify opportunities where Guardian Watchmen could participate in the surveillance of marine activities and the enforcement of marine regulations.	In development / some activities initiated
<b>RET.2.1.3</b> Encourage research institutions and industry to use First Nations in conducting research programs.	On track
<b>RET.3.1.1</b> Work with existing regional and local committees to identify and address gaps in training and establish programs to educate community youth about opportunities for marine sector employment training.	On track
<b>RET.3.1.2</b> Increase multi-sector cooperation to create a critical mass for training opportunities for mutual certifications.	On track
<b>RET.3.1.3</b> Evaluate current human resource needs and future sector growth as the basis for training programs.	On track
<b>RET.3.1.4</b> Encourage training and hiring of local residents for jobs in the marine economic sectors.	On track
<b>RT.1.1.1</b> Undertake a review of infrastructure, transportation, market entry and other barriers/challenges to participation in recreation and tourism opportunities.	On track
<b>RT. 2.1.2</b> Encourage collaboration between local and First Nations interests and existing organisations to consolidate various recreational and tourism products and experiences in the Plan Area.	On track

**RT.2.1.4** Facilitate First Nations and local government involvement in the planning and development of a marine trails network that includes sites that are accessible to marine public recreation users.

On track



*Photo: Port Neville general store (credit: Barb Dinning)*



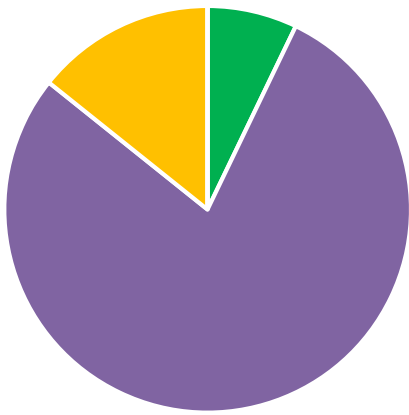
Of the sustainable economic development, healthy communities strategies undertaken in 2018-2019 one is “complete/functioning,” 11 are “on track,” and two are “in development.”

A feasibility study for shellfish (scallop) aquaculture in the North Vancouver Island sub-region has been completed. The feasibility study uses growth data collected from the TSAP project, along with economic modelling, and an assessment of operational needs to identify and evaluate the overall feasibility of a commercial shellfish aquaculture operation. The Tlowitsis Shellfish Aquaculture Pilot Project (TSAP) is progressing on schedule. The scallops have achieved a good seasonal growth rate in June 2018 and by September 2018 the first cohort had reached market size. There was considerable organic fouling over the spring and summer. TSAP is planned to continue to September 2019 to ensure all scallops reach market size. The Tlowitsis Marine Plant Pilot project (TMPP) was initiated in October 2018 as an extension to the shellfish aquaculture using the existing shellfish aquaculture infrastructure at Port Neville to explore the feasibility of sugar kelp aquaculture. Seed ropes have been installed at the site and kelp growth will be monitored and sampled every month from March to July 2019.



*Photo: Sugar kelp (credit: Don Tillapaugh)*

### Sustainable Economic Development, Healthy Communities



- Complete/ functioning
- On track
- In development

The assessment of vulnerability of existing and potential marine uses and activities to pollution had been put on hold pending a regional level analysis, however that project did not progress due to a lack of available data. The Polluted Areas Restoration study did identify some of the priority sites and identified some sites for further examination that will inform this work moving forward. The NVI team reviewed and prioritized the recommendations that were identified in the Y3 Recreation and Tourism study and sought additional feedback from experts in the rec and tourism sector. As a result of these discussions, the team is exploring potential collaboration on training workshops with Destination BC and the Indigenous Tourism Association of BC to be held in 2019-2020. Specific process steps, design criteria, and visitor guidelines have been developed by the First Nations partner in collaboration with the BC Marine Trails Society and FLNRORD for use in the development of a marine trails network in member traditional territories. Further work is planned in 2019-2020 to identify potential sites for inclusion in and exclusion from the trail. A scope of work for a

training needs assessment was shared with MPAC for feedback, an request for proposal was issued, and a consulting team has been hired to undertake this work.



*Photo: Estuary at the head of Port Harvey (credit: Barb Dinning)*

### **Outcome 5: Climate Change and Adaptive Management** – *Undertaking studies and plans to better address the effects of climate change in the MaPP region.*

The 2018-2019 work plan included funding for a Climate Change Vulnerability Assessment for the NVI sub-region. Climate change studies are ongoing at a regional level, and further work in the sub-region has been scoped based on the gaps, needs and issues identified through the regional work.

A vulnerability assessment for the NVI region has yet to be undertaken; however, a more detailed outline for a specific climate change vulnerability assessment has been developed in the 2019-2020 work plan and several projects have included climate change related components that will inform a future vulnerability study. The measurement of oceanographic conditions is underway through the EBM monitoring program and shellfish aquaculture pilot project. Discussions with staff at West Coast Conservation Lands Management Program are underway to install salt marsh data loggers in two key estuaries to monitor changes in elevation and sea level to determine estuary resilience to climate change. This will help to identify resilient estuaries where restoration efforts may be focused. The aquaculture feasibility study and archaeological site verification and inventory work also identify climate change impacts for further examination.

A full list of strategies related to this MaPP outcome is in Table 5.

**Table 5.** List of climate change and adaptive management strategies in the approved 2018-2019 work plan.

Strategy	Status of Strategy
<b>CE.5.1.1</b> Work with communities, industry, stakeholders and relevant government agencies to identify and assess the vulnerability of existing marine uses and activities to climate change, and the risks of climate change on the viability of those activities.	In development / some activities initiated
<b>CE.5.1.2</b> Identify the level of adaptability of existing marine industries, including the use of potential monitoring indicators, and develop strategies for adaptation or alternative practices.	In development / some activities initiated
<b>CHR.5.1.1</b> Develop action plans, based on climate change vulnerability assessments, for responding to the potential effects of climate change, such as inundation, erosion, and access limitations, on cultural and heritage resources, including food sources.	In development / some activities initiated
<b>RET.5.1.2</b> Gather traditional, local, industry (e.g., aquaculture) and scientific knowledge of climate change (e.g., flooding, severe marine storms, acidification) to better understand the potential impacts of climate change and develop response or adaptation measures.	In development / some activities initiated
<b>RET.5.1.3</b> Using preliminary climate change vulnerability assessments and other resources, prepare a climate change vulnerability assessment for the Plan Area to identify priorities including protection of ecosystems and cultural and heritage resources; economic risks and opportunities; impacts on community infrastructure; and community design/planning.	In development / some activities initiated
<b>RT.4.1.1</b> Determine which tourism activities are vulnerable to climate change and assess new business and tourism impacts and opportunities due to climate change.	In development / some activities initiated

Of the climate change and adaptive management strategies undertaken in 2018-2019 all six are “in development.”

## ECOSYSTEM-BASED MANAGEMENT INDICATOR MONITORING

See 2018 MaPP NVI EBM Monitoring Analysis (Thalassia Environmental, 2019).



*Photo: Kelp monitoring survey (credit: Thalassia.ca)*



*Photo: Tug boat and barge transiting Baronet Passage (credit: Barb Dinning)*

## LOOKING AHEAD

In the next fiscal year of implementation (2019-2020), the NVI Team will continue to focus on projects that were started in the 2018-2019 fiscal year that require additional activities in all MaPP outcomes, and will engage MPAC members on all aspects of implementation.

New projects are anticipated for the following topics:

- Marine governance
- Training and human resource needs
- Supporting the local fisheries economy
- Climate change vulnerability
- Estuary resilience
- Engagement in management and monitoring of protection and conservaiton areas

Efforts will continue by both partners in establishing agreements for enabling the Guardian programs to assist with monitoring and facilitating compliance with provincial tenure provisions, marine plans and existing regulations.

## APPENDIX A – COMPLETED NVI IMPLEMENTATION STUDIES, 2018-2019

Topic	Author	Title	Date completed
Polluted Areas Restoration	ESSA Technologies	Polluted Areas Restoration Strategy: North Vancouver Island Marine Plan Area	13 Aug 2018
Polluted Area Restoration	Aestuaria	(Draft) Campbell River Estuary Habitat Restoration Plan & Salmon River Habitat Estuary Restoration Plan	TBC
Culture and Heritage Action Plan	Nanwakolas Council	(internal) IMPLEMENTATION ACTION PLAN - MaPP North Vancouver Island Marine Plan: Recommendations on Archaeological, Heritage and Cultural Resources	26 Oct 2019
Cultural and Heritage Resources	Inlailawatash	(Internal) Cultural and Heritage Vulnerability and Sensitivity Assessment 2019	28 Jan 2019
Aquaculture Feasibility	Don Tillapaugh	(Draft) MaPP NVI Scallop Farm Feasibility Study	18 Feb 2019
Shellfish Aquaculture	Don Tillapaugh	Tlowitsis Shellfish Aquaculture Pilot (TSAP) Project Progress Report	31 March 2019
Kelp Aquaculture	Don Tillapaugh	(Draft) Tlowitsis Marine Plant Pilot (TMMP) Project Progress Report	10 April 2019
EBM Monitoring	Thalassia Environmental	2018 MaPP NVI EBM Monitoring Analysis	25 April 2019
EBM Monitoring	Thalassia Environmental	2018 MaPP Queen Charlotte Strait Kelp Surveys	8 November 2018
EBM Monitoring	Ed Gregr	Canopy Kelp Modelling Project – MaPP NVI Sub-Region	01 October 2018

## APPENDIX B – NVI MARINE PLAN ADVISORY COMMITTEE MEMBERSHIP, 2018-2019

Name	Sector
Bruce Storry (Member)	Coastal Forestry
Bharat Adhikari (Co-alternate)	Coastal Forestry – BCTS
Christina Mardell (Co-alternate)	Coastal Forestry – BCTS
Richard Snowdon (Member)	Commercial Tourism
Jim McIsaac (Member)	Commercial Fishery
Dan Edwards (Alternate)	Commercial Fishery
Kim Wright / Bill Wareham (Member)	Marine Conservation
Ross Jameson (Alternate)	Marine Conservation
Richard Opala (Member)	Finfish Aquaculture
Jim Abram (Member)	Local Government – Strathcona Regional District
Larry Samson (Member)	Local Government – City of Campbell River
Charlie Cornfield (Alternate)	Local Government – City of Campbell River
Heidi Soltau (Member)	Local Government – Regional District of Mt Waddington
Dennis Buchanan (Alternate 1, Member)	Local Government – Regional District of Mt Waddington
Jeff Long (Alternate 2, Alternate)	Local Government – Regional District of Mt Waddington
Leightan Wishart (Member)	Local Government – District of Port Hardy
Fred Robertson (Alternate)	Local Government – District of Port Hardy
Mike Kelly (Member)	Port Hardy Harbour Authority
Peter Stockdill (Member)	Public Recreation
Nick Heath (Alternate)	Public Recreation
Chuck Ashcroft (Member)	Public Recreational Fishing
Don Tillapaugh (Member)	Shellfish Aquaculture
Todd Russell (Alternate)	Shellfish Aquaculture



## APPENDIX C – NVI TECHNICAL TEAM, 2018-2019

Name	Title
John Bones	Co-Lead, N̓nwaḱolas Council of First Nations
Sally Cargill	Co-Lead, Province of B.C. (from October 2018)
Andy Witt	Co-Lead, Province of B.C. (to October 2018)
Scott Harris	Marine Planner, N̓nwaḱolas Council of First Nations
Barb Dinning	Marine Planner/GIS Analyst, N̓nwaḱolas Council of First Nations
Alexandra Barron	Technical Planner, NVI MaPP
Josie Byington	Planning Assistant, NVI MaPP



*Photo: Guardians conduct an eel grass survey (credit: Scott Harris)*



*Photo: Pictograph of tall ships (credit: Barb Dinning)*

## WHERE TO GO FOR MORE INFORMATION

The Marine Plan Partnership:  
<http://mappocean.org/>

Marine Plan Partnership for the North Pacific Coast | MaPP is a partnership between the Government of B.C. and First Nations.

