Marine Economic Development Strategy for Haida Gwaii

Submitted to:

Haida Oceans Technical Team

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Abbreviations and Acronyms

ATABC ..... Aboriginal Tourism Association of BC
AAROM ..... Aboriginal Aquatic Resource and Oceans Management
AFS ..... Aboriginal Fisheries Strategy
BC ..... British Columbia
BCSGA ..... BC Shellfish Growers Association
CCG ..... Canada Coast Guard
CEAA ..... Canadian Environmental Assessment Agency
CFN ..... Coastal First Nations
CHN ..... Council of Haida Nation
COF ..... Coast Opportunity Fund
CWS ..... Canadian Wildlife Service
DBC ..... Destination BC (formerly Tourism BC)
DFO ..... Fisheries and Oceans Canada
DSP ..... Diarrhetic Shellfish Poisoning
EBM ..... Ecosystem-Based Management
EQ ..... Explorer Quotient
GMD ..... general management direction
HaiCo ..... Haida Enterprise Corporation
HFP ..... Haida Fisheries Program
HGHES ..... Haida Gwaii Higher Education Society
IQ ..... individual quota
Fte ..... full time equivalent
MAC ..... Haida Gwaii) Marine Advisory Committee
MIEDS ..... Misty Isles Economic Development Society
MJTST ..... Ministry of Jobs, Tourism and Skills Training
NBCTA ..... Northern BC Tourism Association
PICFI ..... Pacific Integrated Commercial Fishing Initiative
PSAC ..... Public Service Alliance of Canada
PSP ..... Paralytic Shellfish Poisoning
RV ..... Recreation Vehicle
SQCRD ..... Skeen-Queen Charlotte Regional District
SoK ..... spawn on kelp
SWOT ..... strengths, weaknesses, opportunities and threats
THG ..... Tourism Haida Gwaii
VP ..... Vibrio Parahaemolyticus

1 Introduction

The Haida Nation and the Province of BC are engaged in a cooperative planning process leading to the formulation of a Haida Gwaii Marine Plan. The Marine Plan will complement the Strategic Land Use Agreement between the Haida Nation and the Province of BC. The plan is also part of a broader Marine Planning Partnership initiative led by First Nations and BC. The Marine Plan reflects a shared perspective on how to restore and maintain a healthy marine environment and sustainable economy on Haida Gwaii.

Embedded in the Marine Plan is a vision of healthy ocean ecosystems that are managed with a balanced perspective and respect, consistent with Haida laws, culture, ethics and values. The plan elements will include marine zones, management guidelines or directions, and the application of ecosystem-based management (EBM). EBM is defined in the plan as an integrated approach to management that takes into account interactions between marine ecosystems, culture, and socioeconomic realities.

The Marine Plan identifies seven overarching goals for integrated marine use planning and management. The goals provide strategic direction to Haida Gwaii planning. This report contributes to the goal of realizing a balanced Haida Gwaii economy. The attainment of this goal would realize opportunities for Haida and local participation in all marine and fisheries sectors.

This document examines the potential for realizing greater economic potential and community benefit through the enhancement of four marine-based economic activities. These activities were identified by the Council of the Haida Nation (CHN) and BC as priorities consistent with a conservation and local economy path as a result of a Future Scenarios workshop (Umma Consulting 2012). The four activities, in the order addressed, are:

- Shellfish Aquaculture
- Marine Tourism
- Community Fisheries
- Marine Research and Monitoring

A brief review of the current conditions contributed to a strategic analysis of each activity's strengths, weaknesses, opportunities and threats (SWOT) for Haida Gwaii. Consideration of these strategic elements led to an initial formulation of strategies that can contribute to the Marine Plan.

The work and report were prepared in close consultation with the Haida Oceans Technical Team. The baseline and SWOT analysis was informed from reviewing background research, supplemented by key informant interviews of sector specialists. The initial findings of the SWOT analysis were presented to the Haida Gwaii Marine Advisory Committee for comment. This economic development strategy was also informed by the direction provided in a draft of the Haida Gwaii Marine Plan but is intended to be a stand alone product. Drafts of the final report were reviewed by the Haida Nation and the Province of BC.

2 Shellfish Aquaculture

2.1 Summary of Current Status

There is evidence of semi-cultured “clam gardens” in many areas of the BC coast including Haida Gwaii. First commercial production in BC began in 1903 with the introduction of oyster seed in Ladysmith Harbour, Boundary Bay and Esquimalt. Aquaculture on a commercial basis began in Canada in the 1970s, and grew very quickly throughout the 1980s. Most shellfish farms in BC are located south of Cape Caution and the industry is dominated by a large number of small operators. In 2010, total sales from BC shellfish farms was $21.7 million with the main cultured species, in order of sales value, being oysters (41%), clams (37%), and scallops and mussels (22%) (Ministry of Environment 2012).

In general, shellfish aquaculture aligns with the priorities for Haida Gwaii and First Nations communities. The harvesting of shellfish for food and cultural purposes is a long standing practice of First Nations. Also, shellfish culture is generally viewed by Haida Gwaii communities as an environmentally sustainable industry compatible with Haida values. Further, it offers a sustainable economic development opportunity with commercially viable operations providing employment and income.

The shellfish culture industry is at a fledgling stage on the BC coast north of Vancouver Island as well as in Haida Gwaii. Over the past 30 years there have been a variety of local trials and pilot projects to culture oysters, mussels and scallops in Skidegate Inlet, Massett Inlet, Naden Harbour, Rennell Sound, Cumshewa Inlet and Tasu Sound. At the time of writing, there are two commercially active shellfish tenures in Haida Gwaii, four tenures in good standing with one being used for scallop broodstock but the others are not being actively worked, and three accepted tenure applications (Table 2-1).

Table 2-1 Shellfish Aquaculture Tenures in Haida Gwaii (valid 2012/11/20)

Site location	Area (hectare)
Commercial operation[a]	
Skidegate Inlet, Kagen Bay	4.8
Skidegate Inlet, West of Burnt Is.	56.5
Tenure in good standing[b]	
Skidegate Channel	35
Maude Channel	35
Maude Channel Skidegate Channel	35
Skidegate Inlet	48
Tenure Application Accepted[b]	
Gillat Arm	50.2
South of Nedden Island	94.7
Cumshewa	94.47

Notes:

a. Source: Department of Fisheries and Ocean. 2013a

b. Source: McDougall pers.comm.

The two active tenures are held by Q.C.I. Shellfish Co.,a private company, and the other by Old Massett Village Council. Gwaalagaa Naay Corporation (owned by Skidegate Band Council) holds the tenure that is being used for scallop broodstock. Q.C.I. Shellfish Co.'s tenure, located in Skidegate Inlet, has been producing Japanese scallops and Pacific oysters primarily for local markets since the late 1990s. Old Massett Village Council and Gwaalagaa Naay Corporation raised scallops for several years on a pilot basis. The Gwaalagaa Naay Corporation tenure is currently being used by Haida Enterprise Corporation (HaiCo) to rear small quantities of juvenile scallops. HaiCo is a Haida-owned entity that is planning first stage commercialization of its scallop farm at several possible sites in Skidegate Inlet or Cumshewa Inlet (Haida Enterprise Corporation 2012).

Among the tenures in good standing are several held by Haida individuals in Skidegate Inlet. Applications for aquaculture tenures include ones from HaiCo in Cumshewa Inlet.

Shellfish production could expand rapidly in the near future if the projects discussed below (currently at different stages of implementation) become operational.

Coastal Shellfish Limited Partnership is a First Nations-owned shellfish production operation that includes a hatchery in Prince Rupert built to support shellfish farms on the north coast and Haida Gwaii. The hatchery commenced operations in January 2011. However the hatchery failed to achieve its production targets in 2011 and 2012, thus stalling farming operations. Once the hatchery is operating up to expectations, HaiCo farms would initially

receive about 10 million scallop seeds, increasing 5 million seeds per year to a target of 25 million (Bowman 2012, pers.comm.). Operations would ramp up from about 13 fulltime equivalent (fte) positions at the 10 million seed stage, to 34 fte positions at 25 million seed scale. There would be a similar number of positions (for 6 months of the year) at a processing plant.

Haida Seafoods Products is a partnership with Old Massett Village Economic Development Corporation, Skidegate's Gwaalagaa Naay Corporation, and a private company, Panasea. The partnership is proposing an aquaculture business that would produce scallops, geoduck and sea cucumber (qciobserver.com 2012). The proposal includes a hatchery located in Sandspit and farms at several locations in Haida Gwaii. The hatchery would cost about $4 million to construct and would employ eight to 14 people during operations. The partnership has applied for tenures for geoduck aquaculture in Skidegate Inlet, Naden Harbour and Dana Inlet.

Geoduck aquaculture has been established in Washington State for more than two decades. Development in BC has been slower with experimentation beginning in the late 1990s and the first commercial tenures issued in 2007on the BC south coast. Sea cucumber aquaculture is relatively new to BC and there were several applications for tenures on the BC south coast in 2012.

2.2 SWOT Analysis

The strengths, weaknesses, opportunities and threats of shellfish aquaculture in Haida Gwaii are outlined in Table 2-2 and discussed in the paragraphs that follow.

Table 2-2 Shellfish Aquaculture SWOT Summary

Strengths	Weaknesses
• Excellent growing conditions • Good capability to grow multiple species • Ability to locate farms to avoid conflicts with other marine users • Locally available labour force	• Few sources of hatchery seed • Difficulties accessing capital • Transportation costs and infrastructure • Limited experience and business capacity • Potential conflicts with traditional use, recreational/aesthetic values
Opportunities	**Threats**
• Growing worldwide seafood demand • Investment funds available from public and private sources • Culture new species • Seek beneficial partnerships • Implement branding and traceability • Establishment of aquaculture special management zones to encourage investment	• Pollution and ocean acidification • Declining Island population resulting in smaller labour pool and reduced economic activity • Cumbersome regulatory environment

2.2.1 Strengths

Excellent growing conditions – Favourable growing conditions for shellfish include water free of pollutants, suitable temperature, appropriate chemistry (i.e. salinity, dissolved oxygen and ph) and sheltered waters. Field research indicates that sites in Haida Gwaii have the highest productivity of anywhere on the BC north coast (Kingzett 2012, pers.comm.). Highly productive sites close to local infrastructure are found in Skidegate and Cumshewa Inlets.

Good capability to grow multiple species – Haida Gwaii has the biophysical capability to grow a diversity of species, including oysters, scallops, geoduck, and sea cucumbers, among others. This capability provides growers the option to diversify production and respond to changing shellfish market conditions.

The Coast Shellfish hatchery in Prince Rupert is expected to be capable of providing seed for these species if there is interest (Bowman 2012, pers.comm.). Similarly, the proposed Haida Seafoods Products hatchery in Sandspit would be capable of providing seed for multiple species.

Ability to locate farms to avoid conflicts with other marine users– Relative to southern BC, there is less foreshore development and concentrated marine activity in Haida Gwaii, hence less frequent marine user interactions and potential conflicts. Where there is foreshore

development or other users of the marine area (e.g. commercial or recreational fishing), conflicts can be generally avoided through site selection.

Locally available labour force – According to the most recent Census data available (i.e., 2006), total labour force in Haida Gwaii was some 3,800 persons and about 65% of the work force had a high school diploma or greater (Haida Oceans Technical Team 2012b). This labour force characteristic aligns with shellfish industry's labour needs for managerial and technical skills, where high school completion is a prerequisite. The unemployment rate in Haida Gwaii was 14%, which suggests a potential supply of labour provided there is a good match between the experience of the workforce and the skills sought by the employer. It is expected that the employment in the shellfish industry will be attractive to the local work force.

On-island academic training is also available (e.g. Vancouver Island University) and on-the-job training would be provided by the employer (Bowman and Ainsworth 2012, pers. comm.).

2.2.2 Weaknesses

Few sources of hatchery seed – Shellfish growers rely on hatchery produced seed for oysters, scallops and clams. Most of the clam and oyster seed is imported into BC from the US. There is one scallop hatchery, Island Scallops Ltd., located in Courtenay, selling intermittently to BC growers. Haida Gwaii is distant from these sources of seed and the hatchery in Prince Rupert has not yet proved itself as a reliable supplier. The shellfish hatchery proposed for Sandspit could also potentially address this weakness.

Difficulties accessing capital – The integrated shellfish aquaculture operations (hatchery plus grow out facilities) proposed for Haida Gwaii will require a significant capital investment and several years of operating expenses before product and revenue are generated. The various risks associated with development include uncertainties related to biophysical productivity, technology, production (timing, quality, quantity) and market prices. A conventional lender would typically not advance funds on a project basis, but would require comparable securities or guarantees. In the absence of conventional finance, a new industry entrant needs substantial equity or access to financial assistance from public or private sources. An alternative strategy is incrementally expanding the operation in line with available revenue, which is the approach of the small "mom and pop" operations.

Transportation cost and infrastructure–The movement of goods, materials, products and people to and from Haida Gwaii is by necessity either by air or water. The transport distance and the relatively small volumes involved results in higher per unit transportation costs. This translates into higher production costs and a competitive disadvantage relative to shellfish producers closer to suppliers and markets. In addition to cost, the transit time, frequency and

reliability of service also affects the ability of Haida Gwaii producers to deliver fresh products to time-sensitive markets.

Lack of experience and business capacity –A commercial scale aquaculture operation is a complex, risky business and requires management with substantial business acumen and an effective business organization. Successful management decisions must address unforeseen natural events, impose an operating discipline that satisfies food industry regulations, navigate through a complex tax code, and respond to the competitive challenges in the market place. The lack of experience and business capacity was identified as the most significant barrier to First Nations' development of shellfish aquaculture (Kingzett 2012).

Potential conflicts with traditional use, recreational/aesthetic values – The main planning issues around shellfish aquaculture development relate to the location, the amount of space required and potential conflicts with Haida traditional use such as between bottom culture of oysters and clam digging (Haida Oceans Technical Team. 2012). Depending on location, there may be potential conflicts with recreational activities and commercial salmon fisheries. Debris washed away from the farm and ending up on beaches and degrading visual quality were also identified as potential conflicts (Canadian Aquaculture Systems Inc. 2012).

2.2.3 Opportunities

Growing worldwide seafood demand –Global population growth and rising incomes are expect to increase the demand for seafood by about 7% per year, or some 40 million metric tonnes by 2030 (Kingzett 2012). Wild fisheries are unable to meet this demand as more than 85% of global fish stocks are currently fully or over-exploited. New markets in the Asia Pacific and North America could be targeted by Haida Gwaii's shellfish industry.

Investment funds available from public and private sources – Funding sources are available to Haida organizations/people in the form of grants or better-than-commercial lending terms. For instance, shellfish research and development on the North Coast and Haida Gwaii has been supported by funds from the Coast Opportunity Fund, the Cape Fund, and government funding. These funds provide "patient" capital that may be required for establishing commercial scale operations in Haida Gwaii.

Seek beneficial partnerships – Partnerships may be an opportunity to address gaps in a local organization's industry experience, improve market access, and/or supplement financial resources. Partnerships have played a role in the two large shellfish projects discussed earlier that are at early stages of development on Haida Gwaii. However, there is no guarantee that a partnership will be successful.

Culture new species – Geoduck has good potential in Haida Gwaii based on the abundance of wild stocks. Sea cucumber also has potential but is a relatively new and experimental

species for culture in BC. Cultivation of these species has risks but may offer a “first to market” opportunity for Haida Gwaii industry.

Implement Branding and Traceability – Branding shellfish grown in Haida Gwaii waters involves creating a market identity that will positively influence a consumer’s seafood purchasing decision. Aspects of the brand may emphasize the nutritional benefits of the shellfish species, provide assurance that the grow out process is sustainable and environmentally friendly, or link to Haida culture and the pristine waters of Haida Gwaii. An eco-label that exhibits the seal of a recognized certification standard would substantiate the brand.

A report card of the state of readiness of several BC fisheries, including shellfish aquaculture, found that shellfish aquaculture was fully ready to implement traceability practices (Archipelago Marine Research Ltd 2005), a requirement of most certification standards.

Successful branding builds local community support for the industry, which may be it most beneficial influence (Taylor 2013 pers. comm.).

2.2.4 Threats

Pollution and ocean acidification – Shellfish aquaculture requires excellent water quality. Potential threats to water quality in Haida Gwaii range from sewage discharge to the effects of climate change. There is potential for contamination of shellfish growing sites in Skidegate Inlet from the discharge of untreated sewage from communities of Queen Charlotte, Skidegate and private residences located nearby (Haida Oceans Technical Team. 2012). Climate change could pose a range of threats, including ocean acidification and increased seawater temperatures. Ocean acidification is considered a major potential threat to shellfish growers as it impairs shell growth. The BC Shellfish Grower’s Association webpage specifically tracks this issue (BCSGA 2013). Baseline information indicates that the effects of acidification are found at depths of 100 to 300 meters in the offshore waters of the northeast Pacific. Scientists expect acidification to occur at increasingly shallower depths as carbon dioxide concentrations increase (Irvine and Crawford 2011).

Declining Island population– The population of Haida Gwaii is declining and is currently at a 30 year low. With a declining population, the supply of skilled labour to fill new positions in shellfish aquaculture may be constrained. There are also concerns that transportation costs per unit would increase because of reduced freight volume (Haida Oceans Technical Team. 2012b). This would affect the profitability (and feasibility) of all marine sectors, including shellfish aquaculture. This would generally increase the cost of living on Haida Gwaii, making it more difficult to retain a viable workforce and attract new residents.

Cumbersome regulatory environment – Shellfish aquaculture, because it is a food industry, is subject to a high level of scrutiny, in addition to the usual regulations that apply to

operating a business. A shellfish operator may require the following permissions and documents:

- Shellfish Tenure (Lease or Licence of Occupation)
- Approved Shellfish Management Plan
- Upland Owner Consent (if required)
- Performance (Cleanup) Bond
- Public Liability Insurance
- Coast Guard Navigable Waters Protection Act Permit
- Canadian Environmental Assessment Agency (CEAA) Environmental Assessment Approval
- Aquaculture Licence from Fisheries and Oceans Canada (DFO)
- Transplant Permits
- Local Zoning Permits
- Support of all governments including local government

Aquaculture products are monitored for Paralytic Shellfish Poisoning (PSP), Amnesiac Shellfish Poisoning (ASP), Diarrhetic Shellfish Poisoning (DSP), Vibrio Parahaemolyticus (VP) throughout the year. Shellfish processing plants are registered and certified to federal and provincial requirements, a plant exporting from BC must be in good standing with the Canadian Food Inspection Agency and have an acceptable quality management program in place (Kungl 2010).

The legal and policy framework has been viewed by industry as redundant, burdensome, costly and confusing (Canadian Aquaculture Industry Alliance 2012). Routine approvals can take extended periods. The efficacy of the regulatory framework by the federal government's recent assumption of management responsibility is not yet known.

2.3 Strategies for Enhancing Shellfish Aquaculture Economic Development Prospects

The sheltered clean waters of Haida Gwaii are highly productive for culturing shellfish, and should stimulate investment and development in the context of growing world demand for seafood. In spite of these advantageous influences, only one relatively small farm is culturing shellfish on Haida Gwaii on a commercial basis, selling mainly to the local market.

The draft Marine Plan (Haida Nation and Province of British Columbia 2012) contains general management direction (GMD) for Aquaculture & Enhancement. The plan identifies shellfish aquaculture as an "emerging" industry in Haida Gwaii and summarizes the main planning issues as "possible conflicts with other users, alienation of ocean areas from other uses,

potential ecological impacts on native habitats/species, and the potential for overcrowding should aquaculture development proceed without regulations to manage industry growth." While site use conflicts between shellfish operations and other marine users is not uncommon along the southern BC coast, the relative lack of competing users in Haida Gwaii was identified as a strength for establishing shellfish operations.

Some of the reasons holding back shellfish development in Haida Gwaii can be addressed, by making full use of the advantages available to Haida Gwaii and taking advantage of the opportunities available to the industry. The strategies for building on these opportunities and addressing these weaknesses are summarized in Table 2-3. The strategies are organized around three objectives, intended to establish an industry that sustains itself over the market cycle and makes the maximum economic contribution to Haida Gwaii. The first objective is to encourage investment in shellfish aquaculture industry. This includes strategies that provide a secure tenure and marine use policy framework that will bring forth the long term commitment required to establish the industry. The second objective is to enhance economic sustainability of operations: These are strategies intended to reduce costs, improve regulatory certainty, and secure a stable market position. The strategies would collectively establish the industry as a long term participant, rather than a marginal seafood supplier. The third objective is to encourage full participation of Haida Gwaii residents: These strategies are aimed to equip island residents to participate in all aspects of the industry- research, production and management.

Table 2-3 Shellfish Aquaculture Economic Development Strategy

Objective	Encourage investment in Shellfish Aquaculture industry		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Identify and set aside aquaculture areas with high biophysical and economic potential for shellfish aquaculture for future development.	BC and CHN	Industry, Community Misty Isles Economic Development Society (MIEDS)	• Identify priority areas for establishing shellfish aquaculture that have high biophysical capability • Address through zoning, GMD's and other suitable instruments, measures to reduce user conflicts in the priority shellfish aquaculture areas. • Continue research and pilot projects to identify feasible farm areas and sites • Continue habitat assessments and research/pilot projects of other species that may have commercial potential (geoduck, sea cucumber). • Research may result in new areas subject to GMD accommodating shellfish aquaculture
Encourage scale of operations that can mitigate cost and locational disadvantage of farms locating in Haida Gwaii.	BC and CHN	Industry, Community	• Identification of priority shellfish areas should recognize need for road access, advantages of services and marine infrastructure. • Encourage clustering of operations to share infrastructure and localize impacts • Recognize concerns about potential density of shellfish development and seek measures to mitigate adverse effects on other users. • Encourage and support the location of hatcheries, farms and load-out facilities to minimize transportation costs and utilize existing infrastructure. • Indentify key infrastructure enhancements that would support shellfish operations

Objective	Enhance Economic Sustainability of Operations		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Support establishment of hatchery for Haida Gwaii operations	CHN and BC	Coastal First Nations, DFO, Industry	• Monitor and encourage efforts by Coastal Shellfish Corporation to bring its hatchery to design production. • Encourage other potential sources of seed for island farms. • Encouragement information sharing and beneficial competition among hatcheries (e.g. discourage exclusive supply arrangements where it impedes industry expansion in HaidaGwaii.) i
Streamline regulatory regime	CHN and BC	DFO, industry, BC Shellfish Growers Association, MIEDS	• Monitor DFO's formulation of regulatory framework encompassing previous provincial regulations to ensure it meets the needs of the people and industry of Haida Gwaii. • Liaise with industry associations supporting streamlining of regulations
Access lower cost loans and grants to provide seed investment for initial production facilities	CHN,	HaiCo, Coastal First Nations (CFN),Coast Opportunity Fund (COF), other Funding sources	• Coastal First Nations obtaining funds from DFO, private foundations, to pay its share of start-up costs, insurance
Haida Gwaii Shellfish Branding *Example: Investigate potential for developing a Haida Gwaii seafood brand. This includes the growing and production practices that would support and "Eco" label, the values to be conveyed by the brand and market niches.*	CHN and BC to promote	Processing industry, HaiCo, CFN, MIEDS	• Establish multi-stakeholder committee to investigate opportunities for branding shellfish harvest. • Investigate potential for developing a Haida Gwaii seafood brand. This includes that would support and "Eco" label, the values to be conveyed by the brand and market niches. • Encourage industry practices (growing/harvesting/processing) that satisfy eco-labeling criteria. • Encourage development of industry marketing strategy in which Haida Gwaii producers are

			cooperating rather than competing for market share. • Investigate the potential for cooperative marketing with other CFN producers
Objective	Increase Haida Gwaii participation in industry		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Support viable partnerships	CHN and BC to encourage	Funding partners, industry operators, HaiCo	• : Industry partners provide share of up-front investment capital, and mentoring for management positions, • Association with companies with marketing links that will promote Haida Gwaii brand. • Encourage those currently active in the industry, HaiCo, CFN, Q.C.I. Shellfish Co, seafood processors to seek mutually beneficial partnerships in logistics supply, transportation, development of shared infrastructure.
Support training of Island residents for shellfish aquaculture growing (hatchery and farm) or processing operations	CHN and BC	CFN, HaiCo, industry, MIEDS	• Promote opportunities for employment in line with industry development (job fairs) • Hiring of island residents by HaiCo for its shellfish operations.

3 Marine Tourism

3.1 Summary of Current Status

Protected areas provide a foundation for marine tourism of all types. Over 51% of the land base of Haida Gwaii has some form of protection and most of these areas are cooperatively managed. In 2005, National Geographic Traveller magazine voted Gwaii Haanas National Park Reserve and Haida Heritage Site the best national park in North America. In 2010, Gwaii Haanas received a new marine designation as a National Marine Conservation Area Reserve, making it the first area in the world to be protected from mountain top to sea floor. Visitors are attracted by the wilderness experience, cultural sites, wildlife, and other features, and tour operators and rental companies provide a variety of transportation and other visitor services in Gwaii Haanas and throughout Haida Gwaii (MIEDS 2013). Naikoon Provincial Park covers much of north east side of Graham Island and features long sandy beaches and opportunities for hiking, camping and beachcombing.

Marine tourism on Haida Gwaii is comprised of recreational fishing and other adventure tourism activities. Recreational fishing activity is predominantly attributable to commercial fishing lodges and charter boat companies. There are eighteen fishing lodges and 55 charter operators on Haida Gwaii (Haida Oceans Technical Team 2012c). The lodges operate from mid May to mid September with peak visitation in July and August. The majority of visitors are using guides. In the early 2000s markets were evenly split between Canadian and foreign (mainly US) markets, and business and corporate clients were a key segment (Gislason 2003). Over the last 10 years however, there has been an increasing proportion of Canadian visitors to local lodges (McCulloch 2012, pers. comm.). The Haida Gwaii fishing lodge sector is a high risk, high cost industry, operating in a very competitive environment that is subject to regulatory uncertainty (Gislason 2003). After explosive growth in the 1990s, the number of lodges and operating capacity has stabilized over the last decade. Future growth and profitability will be dependent on controlling costs, managing currency fluctuations and maintaining a reasonable price structure while raising occupancy levels through niche marketing.

According to the gohaidagwaii.ca website, there are at least 50 tourism operators providing charters, rentals or tour services in support of outdoor adventures (gohaidagwaii 2013a). In addition to boating adventures such as dinner cruises, inlet tours, surfing and other watersports, hiking, beachcombing and wildlife viewing opportunities are available. A network of museums and galleries, art tours and hospitality services provide alternative activity opportunities for marine tourism visitors (gohaidagwaii 2013a). There are approximately 80

accommodation properties, 13 hotels/motels and inns, 21 B&Bs and hostels, 38 cabins/cottages and suites and nine campground and RV parks (gohaidagwaii 2013b).

Most eco- and adventure tourism in Gwaii Haanas is guided, with approximately nine local operators and 14 off-island operators offering single or multi-day tours, accessing the remote area either by boat or seaplane (Haida Oceans Technical Team 2012c).

Other visitors partake in independent marine tourism activities such as wildlife viewing (e.g, whale watching), kayaking, surfing, beachcombing, visits to cultural sites and general sightseeing. Gwaii Haanas attracted 1,753 visitors in 2011, 990 of whom were on multi-day tours, 501 independent visitors and 262 day visitors (Parks Canada 2012).

The combined attendance at the Queen Charlotte and Sandspit visitor centres in 2012 was 17,762. This represents a decline of almost 45% from peak attendance of 31,823 in 2005. The large majority of visitors arrive in the summer; 92% of visitor centre attendance is in the June to August period (Tourism BC 2013). In Gwaii Haanas, 97% of visitors arrive between June and August, with peak visitation occurring mid July to mid August (Kendrick 2012).

The majority of visitors are from British Columbia, followed by other Canadians and international arrivals. Haida Gwaii has proportionately more international visitors and fewer US visitors than the rest of British Columbia (Tourism BC 2009). Visitors to Gwaii Haanas tend to be older Canadians from BC (Kendrick 2012).

The majority of visitor arrivals to Haida Gwaii are by ferry, followed by air. In Gwaii Haanas, 41% of visitors in 2011 travelled by powerboat, 23% by kayak, 22% by sail, 9% by kayak mothership and the remaining five percent by air (Parks Canada 2012).

In 2006 (the last year available for Census labour force data), tourism accounted for 11% of total community income on Haida Gwaii and approximately 12% of employment (Horne 2009). The recreational fishery employs a total of 292 people, most of which are seasonal positions (Haida Oceans Technical Team 2012c). Gwaii Haanas employed up to 60 full-time, seasonal and summer staff in 2011 (Parks Canada 2012). In aggregate, employment is clustered in accommodation and food and beverage services, but recreation, transportation, retail, personal service and government (e.g. parks employment) jobs are also supported by visitor spending.

3.2 SWOT Analysis

The strengths, weaknesses, opportunities and threats of marine tourism on Haida Gwaii are outlined in Table 3-1 and discussed in the paragraphs that follow.

Table 3-1 Marine Tourism SWOT Summary

Strengths	Weaknesses
• Access to wilderness • Diverse fishing experiences • Haida culture • Gwaii Haanas and new protected areas • Safe communities • Airports and ferry services (relative to other coastal communities)	• Reliable products • Seasonality • Entrepreneurship • Limited community infrastructure and support services • Business and travel costs • Local attitudes • Limited tourism industry cooperation • Lack of coordination and co-operation between Island communities
Opportunities	**Threats**
• Brand identity • Target markets • Marketing programs • Strategic infrastructure • Tourism career paths • Zoning to promote tourism/recreation	• Rising value of Canadian dollar • Availability and health of fish stocks • BC Ferries service disruptions and reductions in sailings • Transport Canada regulations • Non-compatible activities

3.2.1 Strengths

Access to wilderness - The majority of Haida Gwaii is remote and accessible only by water or air. There are a number of wilderness recreation opportunities relatively close to population centres, and the absence of large communities and major industrial areas contributes to the sense of wilderness even in town centres like Masset and Queen Charlotte.

Diverse fishing experiences – The location of the islands along the migrating route of Pacific salmon draws anglers from around to the world. The abundance of targeted species such as Chinook, coho and halibut, limited resident fishing pressure, ease of access to fishing grounds and the opportunity to expand the angling experience to include other nature-based activities such as whale watching, have all contributed to the growth of the recreational fishing sector.

Haida culture - Haida Gwaii's cultural resources, including the Haida language and culture, cultural heritage sites, and the visual arts, are a significant draw for visitor markets. Research of North American travel markets indicate that 9% of US visitors to Canada participated in aboriginal experiences (Tourism BC 2009). The participation rate for visitors from Canada was 11%. However, more than half (52%) said there were not enough aboriginal tourism

opportunities available. This indicates that while visitors were generally satisfied with the aboriginal tourism experiences, there is a larger demand than supply.

Gwaii Haanas and new protected areas - Gwaii Haanas and other protected areas on Haida Gwaii have tourism potential as they largely protect the land base from industrial development and over-use. There are also marketing opportunities with over 50% of Haida Gwaii now considered some form of protected area.

Safe communities – Haida Gwaii is a safe destination where travellers can enjoy unhindered travel experiences in terms of their personal safety and security.

Airport and ferry services (relative to other coastal communities) – Haida Gwaii has regularly scheduled air service from Vancouver to Masset and Sandspit, and BC Ferry services out of Prince Rupert and Skidegate. Compared to other remote communities on the north and central coasts, Haida Gwaii is reasonably accessible.

3.2.2 Weaknesses

Reliable products - More market-ready products with good customer services and improved facilities would benefit Haida Gwaii and create better experiences that appeal to a broader base of visitors (Adel 2012, pers. comm.). There are some exceptional tour operators and experiences on Haida Gwaii, but some operators lack management expertise, service training and professional accreditation (Tourism BC 2009). Tourism BC defines market-ready as having a published pricing policy, a 24 hour response time to enquiries during the operating season, and quality marketing materials, as well as being part of a local tourism association and having staff trained in customer services such as WorldHost (MJTST 2013).

Seasonality – The highly seasonal nature of tourism is an ongoing problem for industry expansion (Ainsworth 2012, pers. comm.). Between 2004 and 2012, 92% of attendance at the two visitor centres on Haida Gwaii was between May and September, and 77% was between June and August (Tourism BC 2013). Capital that is only able to earn income for part of the year will bear opportunity costs for the remainder. This means that business cases for tourism enterprises are often non-viable and investors are reluctant to develop new or even upgrade existing operations.

Entrepreneurship – Entrepreneurs develop new products and services, while bearing the risk of investment in untested (and sometimes competitive) enterprises. Only a small part of any population has entrepreneurial characteristics and the small size of Haida Gwaii's labour force means the pool of entrepreneurs is limited.

Limited Community Infrastructure and Support Services – The same infrastructure and services that residents require for their quality of life (e.g., affordable and reliable ferry services, good roads and quality telecommunications) are also important to visitors. Although

Haida Gwaii has basic services, improved telecommunication services and regular ferry sailings would encourage more leisure and business travel.

Business and Travel Costs – Travelling to Haida Gwaii is time consuming and expensive. For many visitors, the cost of transportation is the majority of the expense of their trip. Even "low budget" options for travel on BC ferries can end up costing hundreds of dollars for a mid-sized family. Travel by air is even more costly. Other areas in the central or north coast that may be less expensive to reach have a competitive advantage.

Local attitudes – The attitude of local communities toward tourism can affect the climate for development and the perceived risk of investing in new products and services. On Haida Gwaii, some residents consider tourism development contrary to the uncrowded, quiet life they enjoy on Haida Gwaii. Communities may also be resistant to investment in infrastructure that benefits visitors unless there are equivalent benefits for residents. (Adel, Ainsworth 2012, pers. comm.)

Limited tourism industry cooperation - Despite regional tourism and marketing initiatives, the participation of operators is not at the level needed to increase performance over the long term. The destination marketing organization now being promoted by Misty Isles Economic Development Society may be a positive step to coordinate the tourism industry on Haida Gwaii.

3.2.3 Opportunities

Brand identity – The marketing and promotion of tourism would be more effective if a brand identity was developed with the full support of industry and the community (Adel 2012, pers. comm.). Ideally, the brand would capture the unique selling proposition of Haida Gwaii and be utilized by any industry or product that is sending goods or services to outside markets. For tourism specifically, the brand would be expressed in all aspects of marketing, promotion and visitors services, including signage.

Target markets – Haida Gwaii should be developing target markets that match features and experiences distinctive to the islands (Ainsworth 2012, pers. comm.). This has been done successfully by many recreational fishing lodges, and there is potential for targeting the growing cultural and adventure tourism market. The Canadian Tourism Commission's Explorer Quotient (EQ) would be a starting point for identifying targets based on traveller profiles.

Marketing programs – The Misty Islands Economic Development Society **(**MIEDS) is leading implementation of the "Destination Marketing Project" which promotes Haida Gwaii as a premium travel destination to the world. There are marketing partnership opportunities with the Ministry of Jobs, Tourism and Skills Training (MJTST), Northern BC Tourism Association, Aboriginal Tourism Association of BC, tourism operators on Haida Gwaii,

aboriginal cultural institutions in BC, and the travel trade[1] that could be expanded (Tourism BC 2009).

Strategic infrastructure – Improving ferry, telecommunications, and other services (such as way-finding/signage) improves the visitor experience, encourages longer stays and creates more investor interest in new visitor experiences and amenities.

Tourism career paths – If tourism potential is realized it can create significant career and ownership opportunities for the local labour force (McCulloch 2012, pers. comm.). There are national and provincial labour market resources that could be delivered locally to promote tourism employment in guiding, food and beverage services, accommodation, recreation and entertainment, transportation and travel services.[2]

3.2.4 Threats

Rising value of Canadian dollar – In 2002, the Canadian dollar hit a record low of $0.62 versus the US dollar. Since 2009 it has been near or above parity. For US visitors this represents more than a 50% rise in the cost of a Canadian vacation. A similar trend has affected the Euro currency. Although most visitors to Haida Gwaii are Canadian, the strength of the Canadian dollar limits opportunities to diversify and develop international markets because of the increased cost of travelling in Canada, particularly to more remote areas such as Haida Gwaii.

Availability and health of fish stocks – Availability and access to quality recreational fisheries is currently a significant part of Haida Gwaii's marine tourism industry. The industry would be affected by declines in fisheries stocks or fisheries closures.

BC Ferries – BC Ferries is a critical link between the islands and visitors arriving from and departing to the mainland. Already the cost of ferry travel is high and services considered sub-optimal for tourism (Ainsworth 2012, pers. comm.). BC Ferries Corporation is also indicating that they may raise costs and reduce routes with low profitability (such as the Skidegate to Prince Rupert run).

Transport Canada regulations – Transport Canada regulations, policies and programs have made it increasingly costly for operators who wish to conduct tours or offer visitor services on marine vessels. The cost and logistics of vessel inspections, for example, are prohibitive for many local operators as these services are not available on Haida Gwaii.

Non-compatible activities – In terms of land and marine use, tourism development is primarily reliant on a healthy, pristine ecosystem as the basis for nature-based tourism

[1] Travel trade is a collective term referring to sales intermediaries, including tour operators, wholesalers and travel agents.
[2] For example, go2 is the organization primarily responsible for providing the tourism and hospitality industry with labour market resources.

activities. It is possible to develop tourism in highly modified human environments, but at this time the key tourism products on Haida Gwaii are not particularly compatible with intensive industrial use. Industries such as forestry may offer “educational” opportunities for visitors, however it is important that these industries are managed sustainably and perceived to be reasonably low-impact.

3.3 Strategies for Enhancing Marine Tourism Economic Development Prospects

Table 3-2 outlines major initiatives and associated actions that could advance marine tourism development on Haida Gwaii. The strategies contribute to three key objectives: 1) a visitor friendly destination, 2) sustainable tourism products and experiences and 3) greater awareness of Haida Gwaii as a visitor destination.

The draft Marine Plan (Haida Nation and Province of British Columbia 2012) contains General Management Directions (GMDs) for Marine Tourism. Building a visitor friendly destination can be influenced by the marine planning process, specifically through the identification of tourism areas in non-sensitive areas that do not have carrying capacity concerns. The Marine Plan could also inform appropriate tourism infrastructure development and promote community understanding of tourism as a local economic driver.

Sustainable tourism products can be supported by encouraging industry to deliver market-ready tours and experiences, as well as by meeting or surpassing recognized quality standards. Adding to and enhancing authentic experiences and boosting visitor services could increase yield and strengthen visitor trip perceptions and satisfaction levels.

The third aspect of destination marketing is less likely to be affected by the marine planning process, but more collaboration on preferred destination markets through the use of the Canadian Tourism Commission’s Explorer Quotient segmentation model could significantly improve the return on marketing programs and expenditures. It would also provide good direction and traction for the rebranding or repositioning of Haida Gwaii as a destination, a recurring theme in the tourism research over the last decade.

Finally, a sustainable model of tourism funding is a priority for the islands. At this time, local industry has not been supportive of an additional hotel room tax (used elsewhere in the province). This means other approaches to secure the resources necessary for implementation must be found.

Table 3-2 Marine Tourism Economic Development Strategy

Objective	A visitor friendly destination with quality infrastructure that encourages private sector investment		
Strategies	Lead (CHN, BC)	Possible Partners	Actions
Direct new tourism development in non-sensitive tourism areas	CHN and BC		• Improve baseline understanding of tourism use in at-risk areas • Identify capability and suitability potential for tourism, with a focus on prime locations and unique features, in all marine areas • Identify appropriate types and levels of tourism use in specific locations • Use research results and management directions to protect areas with limited carrying capacity • Promote areas where there is good investment/development potential and associated development opportunities •
Improve local awareness of the benefits of marine tourism	CHN BC	MIEDS Destination BC (DBC) Local government, Local community	• Quantify the value of tourism in Haida Gwaii • Consider an annual tourism industry summary that will document and analyze trends over time • Establish an ambassadors program that facilitates connections between visitors and locals
Advocate for tourism infrastructure that enhances business competitiveness and reduces travel costs for visitors	CHN BC	MIEDS municipalities Regional District	• Compile a regional tourism infrastructure database and assist where appropriate with pre-feasibility assessments for new infrastructure • Encourage communities to include tourism infrastructure priorities in future plans • Work with transportation providers to maintain reasonable costs and promote Haida Gwaii as a destination
Objective	Sustainable products and experiences that result in longer stays and higher		

	spending		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Support development of more market-ready tours and visitor experiences	CHN	MIEDS Tourism Haida Gwaii (THG) DBC Northern BC Tourism Association (NBCTA)	• Develop baseline understanding, including a list of operators and all organizations involved in tourism marketing and development • Encourage networking through the use of social media and a Tourism Advisory Committee • Promote access to packaging resources at Destination BC and the Canadian Tourism Commission • Help identify both gaps and opportunities for new packages and promotions
Promote recognized operator accreditation and certification standards	CHN	MIEDS THG Tour Operators	• Promote greater uptake of WorldHost training • Encourage participation in Destination BC's Approved Accommodation inspection and registration program • Promote industry certification and training resources, including emerit and go2. • Promote eco-friendly and sustainability programs including the Sustainable Tourism Certification Network of the Americas
Identify and promote authentic experiences	CHN	THG MIEDS Aboriginal Tourism Association of BC (ATABC)	• Develop an inventory of marketable heritage resources suitable for use as visitor experiences • Identify and promote existing destinations (e.g. Tllal House, Haida Heritage Centre) • Promote use of Aboriginal Tourism Association of BC resources by businesses and organizations to build authentic experiences
Encourage delivery of integrated visitor services	CHN and BC	Visitor Centres DBC NBCTA MIEDS	• Increase market-readiness of businesses through the delivery of customized WorldHost and FirstHost training • Use the new brand identity to promote visitor services throughout the region • Encourage and coordinate more private sector and heritage facility involvement in the delivery of

			visitor services
Objective	Greater awareness of Haida Gwaii as a visitor destination		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Re-evaluate product market match to guide marketing and promotion expenditures	CHN	THG MIEDS DBC NBCTA	• Evaluate Explore Quotient (EQ) resources available on the Canadian Tourism Commission website to evaluate product-market potential
Assess the viability of a Haida Gwaii brand for promoting tourism and other goods and services	CHN BC	THG MIEDS Bands, Municipalities Regional District	• Synthesize the brand elements that have been or are featured in promoting Haida Gwaii • Conduct a brand evaluation to identify dominant themes among successful operators and visitor perceptions • Review good practices in community tourism branding • Determine costs and benefits of developing an island-wide brand
Support the adoption of a long term sustainable funding model for tourism marketing	CHN BC	THG MIEDS Tour Operators	• Determine the amount of annual funding required to support a Haida Gwaii destination marketing organization • Evaluate and prioritize funding options

4 Community based fisheries

4.1 Summary of Current Status

Community based fisheries, in the context of this report, are defined broadly as Island-based community participation in the various commercial fisheries that occur in the waters around Haida Gwaii. Community participation can be at a variety of levels including harvesting, processing, marketing and management. Economic development in the context of community based fisheries requires an understanding of the role of fisheries management in addressing the community's economic needs and priorities. That is, in simple terms, a goal of increasing economic benefits to the community by maximizing the value of the fishery and creating jobs and services (Graham 2006)

Fishing has been an integral part of Haida culture and commercial fishing has been an important source of employment and income to the Haida Gwaii economy. However, over the past forty years local participation in commercial fisheries has declined substantially due in part to declining stocks, limited entry licensing, fleet buyback programs, area licensing as well as fisheries management and allocation policies. More recently, opportunities for increased First Nation access to commercial fisheries have been provided by several ongoing federal government initiatives: the Aboriginal Fisheries Strategy (AFS), and more recently the Pacific Integrated Commercial Fishing Initiative (PICFI).

Commercial fishing around Haida Gwaii accounted for about 22% of BC's landed value (1996-2006) with sablefish, halibut and crab making up 81% of the value (Gardner Pinfold 2010). It is noted that halibut, hake, sablefish and pink salmon are certified as sustainable fisheries by the Marine Stewardship Council (Ministry of Agriculture 2011). The certificate is fully consistent with the United Nations guidelines for eco-labeling and is considered the global standard for fisheries sustainability.

In 2008 approximately 65 commercial licences operating in Haida Gwaii were owned, leased or fished by Haida Gwaii residents aside from the razor clam fishery (Gardner Pinfold 2010). Most of the Haida Gwaii held licences are salmon (29), followed by herring (17) and crab (5). Of these, about 22 licences were held by the Secretariat of the Haida Nation and were acquired under AFS. A further 10 licences have been acquired through PICFI since 2008.

These totals don't include the razor clam fishery. Razor clams fishery has been a commercial fishery since 1922. It is presently co-managed by the Council of the Haida Nation and DFO.

Under this agreement, the Secretariat of the Haida Nation holds a communal licence and designates Haida participants. The fishery is open from March until June and from September to December or until the annual catch ceiling is reached. About 114 participants are engaged in the fishery with a harvest value in the order of $260 thousand per year (Gardner Pinfold 2010).

Another indicator of island resident participation in commercial fisheries is the number of Haida Gwaii-based boats delivering to local processors. In one case, of the 29 ice trollers delivering to a Masset processor, 4 were locally based. Of the 17 freezer trollers delivering to the plant, 2 were locally based (Frick 2012, pers. comm.). During 2012, there were only about 3 locally-based crab boats out of a total of 53 crab boats licensed to fish in Area A (Edwards 2012, pers.comm).). The Area A fishery occurs primarily in the shallow waters of Hecate Strait and Dixon Entrance.

There are four processing plants in Haida Gwaii, three of them located in or near Masset and one in Queen Charlotte. The plants are smaller than the provincial average as measured by gross sales. Gross sales range from less than $500 thousand to the $1-5 million range for island processors compared to a provincial average of $5.2 million. Processing activity also fluctuates with the timing of catch, and some plants have recently been expanding to process recreational catch. The operating year is March to November with the peak period July through September. The four plants account for about 240 jobs in processing, offloading, dock workers and an additional 10 persons in administration/ management. Employment is seasonal, ranging from three to six months. All of the work is filled by Haida Gwaii residents (Gardner Pinfold 2010).

The plants take fish from both local and off-island boats. Each plant offers a unique product mix and services including:

- Processing of traditional fishing and recreational fish; for two of the plants
- Processing of recreational catch by fishing lodges and charters is a key market segment
- Razor clams – processed mainly for bait although roughly 30% is processed as a food grade product
- Troll caught salmon –
    - mostly washed, crated and iced whole for the fresh market
    - about 10% head off and frozen or fresh cut; processed into filets, steaks, etc. for the higher margin retail market; a small amount for smoked salmon market

- Other finfish (e.g., halibut, rockfish, sablefish) - head off and iced for fresh market; no value added products
- Crab: 80% chilled to fresh market; 20% frozen whole cooked.

C.B.I Fisheries recently processed scallops from one of the shellfish pilot projects in Skidegate Inlet. If aquaculture expands in Haida Gwaii then the farm harvest could be processed in the shoulder season to extend processing operations.

HaiCo recently purchased Seapak (recently renamed Haida Wild), an established operation based in Masset that was mainly processing sport fish. HaiCo expects to expand its production in the future (Ainsworth 2012 pers.comm.).

Marine infrastructure and services support the resident and visiting commercial fleet. The three main public wharves are located at Sandspit, Queen Charlotte and Masset. The wharves are under the Small Craft Harbours program and designated as “core fishing harbors”, meaning each are considered critical to the fishing industry (DFO 2013b). Private wharves are located at Skidegate Landing and the C.B.I. processing plant in Masset. Most of the commercial catch is unloaded either at Queen Charlotte dock (Albion Fisheries) or the C.B.I. dock (Doerksen 2013 pers.comm.). Ice and fuel is available in Masset and Queen Charlotte. Tide grids are available for some types of boat maintenance, and there are local technicians that offer a range of mechanical and electric repairs. Large or highly specialized work may require the specialist flying in or taking the vessel to Prince Rupert.

4.2 SWOT Analysis

The strengths, weaknesses, opportunities and threats of community fisheries on Haida Gwaii are outlined in Table 4-1 and discussed in the paragraphs that follow.

Table 4-1 Community Fisheries SWOT Summary

Strengths	Weaknesses
• Experienced labour force • Proximity to fishing grounds • Existing licenses and quota • Existing processing Industry • Diversity of commercial species • Established governing structures	• Lack of investment capital • Logistics and shipping costs • Small local market • Small fleet and effects on the service sector
Opportunities	**Threats**
• Growing worldwide seafood demand • Fisheries transfer programs and policies • Seek beneficial partnerships • Co-management • Distinct brand identity • Traceability • Emerging fisheries • Synergies with shellfish aquaculture	• Fluctuation in fish stocks • Existing fisheries access policies • Escalating fuel costs • Threats to ecosystem health • Globalised seafood market

4.2.1 Strengths

Experienced labour force – Haida Gwaii has a labour pool with experience in commercial fisheries and processing that is currently underutilized. Although participants in commercial fisheries are aging (average age 58 years) their experience can be passed on to younger fishers if the opportunity arises, such as mentorship programs. In the processing sector there is a group of experienced middle management level staff who could possibly be trained to fill gaps in upper level and professional positions.

Proximity to fishing grounds – For certain fisheries (e.g. ice salmon troll fleet and halibut) Haida Gwaii fishers and processors have a location advantage relative to competing locations (Frick 2012, pers.comm.). This is the case where the Haida Gwaii based processor gives fishermen the potential to avoid extra travel costs, boat wear and tear, and weather issues by landing their catch on Haida Gwaii.

Existing licenses and quota: As noted in the profile, there is a small base level of licences and quota that are held by CHN, Haida citizens and residents of Haida Gwaii. This is a strength for development of community fisheries since the licences and quota can used to stimulate local processing development and expanded fishing infrastructure and services.

Existing Processing Industry –The existing processing plants are already adapted to the conditions necessary to sustain a commercially viable facility on Haida Gwaii. This operating

experience can provide a guide for future expansion into new markets or new species. Given the decline in deliveries to Haida Gwaii processing plants, plants are under-utilized and have the capacity to increase production

Diversity of commercial species –There is an range of commercially valuable species around Haida Gwaii, including salmon, herring, sablefish, halibut, geoduck, crab, sea cucumbers, cod, rockfish, and sole. This diversity may offset fluctuations in catch levels and market conditions of individual fisheries. The diversity also allows processors to extend the processing season.

Established governing structures –- There is potential to develop community fisheries or address fisheries and marine issues through existing agreements between the Council of the Haida Nation and Canada under DFO's Aboriginal Fisheries Strategy, PICFI or Aboriginal Aquatic Resource and Oceans Management (AAROM). As noted in the profile, the Haida Gwaii razor clam fishery has been co-managed since 1994 and involves stock assessment carried out by CHN Fisheries, jointly setting a catch limit for the fishery and development of an annual management plan.

4.2.2 Weaknesses

Lack of Investment capital – License and quota for a number of fisheries are tradable and values are determined by market forces. For the more profitable fisheries, the market value of licenses/quota can be beyond the financial capacity of Haida Gwaii residents to secure equity or qualify for loans.

Logistics and shipping costs – Businesses landing or processing seafood on Haida Gwaii are distant from its suppliers and markets, and the need for marine, air or highway transportation infrastructure increases transportation costs and involves longer transit times. For seafood processing, incremental costs are incurred in the delivery of input material (e.g. packaging material) as well as shipping product to market.

Small local market – While Haida Gwaii processors have a locational advantage over off-island competitors in serving Haida Gwaii residents, the island population is small and demand is limited**.**

Small fleet and effects on the service sector– The small size of the local fishing fleet results in a limited demand for infrastructure, goods and services required for maintenance and operations. This limited demand affects employment and capacity in the supply industries.

4.2.3 Opportunities

Growing worldwide seafood demand – World demand for seafood is forecast to grow at more than 7 %/yr. Wild caught seafood from clean waters should have a strong and growing market appeal.

Fisheries transfer programs and policies – Since 1992, several federal initiatives have been created to increase First Nation access to fisheries resource, including transfer of commercial fishing licenses and quota, in advance of treaty settlements or other reconciliation measures. Collectively these initiatives had transferred about 13% of all Pacific fishing licenses and quota to First Nations by the end of 2011. First Nations have proposed the proportion be increased to 33% in future transfer programs (First Nations Fisheries Council 2011). Commercial fishing licenses and quota acquired by the Haida under these programs have increased local participation in the fishery, and with future allocations could be used to leverage increases in on-island employment in harvesting and processing sectors and related support industries (Jones 2013, pers.comm.).

Seek beneficial partnerships – Similar to the discussion under Shellfish Aquaculture, partnerships may be an opportunity to address gaps in a local organization's capability to advance the development of a community based fishery. A partner organization may provide expertise in fishing, processing or marketing. Partnerships may also provide opportunities for joining other community based organization to promote a common interest e.g. maintaining marine infrastructure.

Co-management – Co-management involves partnerships in management decision-making. In the case of the razor clam fishery the agreement between the CHN and DFO involved a new approach to licensing that included a communal licence held by the Haida, development of a joint management plan, surveys and stock assessment, and monitoring of the fishery.

Distinct brand identity – Branding is the process of creating a market identify for seafood harvested from the waters around Haida Gwaii. A successful branding would convey distinct features that would positively influence the consumers' purchasing decision. The Copper River salmon is an example of a successful branding an Alaskan fishery that is founded real advantage that the fishery occurs about 2 weeks before other salmon runs. The Haida Gwaii Marine Advisory Committee (MAC) that provides advice on the Haida Gwaii Marine Plan indicated that at one time crab caught in Haida Gwaii had its own label. "Wild Haida Gwaii Coho Salmon" is a trademark brand advertised on the Wild Ocean Fish website (http://wildoceanfish.ca/products/wild-haida-gwaii-coho-salmon/) There is the view that effective marketing (i.e. creating a brand image) may lead to higher prices (Doerksen 2013 pers.comm.), but this may be restricted to selling small volumes into niche markets and there is real product advantage to command a price premium (Taylor 2013 pers. comm..)

Traceability – Since it is difficult to know the place of origin of a fish product, traceability would be advantageous for establishing a Haida Gwaii brand. To implement traceability, certain organization and administrative processes are required to support reporting requirements. A report card of the state of readiness of the several BC fisheries that have prominence in Haida Gwaii is summarized in Table 4-2-2. For those fisheries found to have an "A" and "B" state of readiness, the opportunity is closer at hand. Based on this information, Haida Gwaii fisheries ready to implement traceability processes include sablefish, halibut, and herring.

Table 4-2 Readiness of selected BC seafood sectors to implement traceability systems

Seafood Sector	Management Regime	Overall Rating
Sablefish	IQ	B+
Halibut	IQ	B+
Roe Herring	Pooled Quota	B
Herring SoK	IQ	A
Salmon (all gear types)	Time and area	D
Crab (trap)	Area, time and size	C
Shellfish Aquaculture	N/A	A-

Source: Archipelago Marine Research Ltd (2005)

Emerging Fisheries – Markets sometimes change to create opportunities for new fisheries. Changing ocean conditions could also change the range or increase abundance of some species creating the potential for new or increased fisheries nearby Haida Gwaii. Species may include sardines, hake, and albacore tuna. Sufficient harvest volume would need to be available for Haida Gwaii processors to justify any plant retooling investment that might be required

Synergies with shellfish aquaculture – Expansion of shellfish aquaculture could result in processing opportunities that would allow extended operations and employment in local processing plants.

4.2.4 Threats

Fluctuation in fish stocks– Economically important fisheries in Haida Gwaii (e.g. salmon, herring, halibut, crab) frequently show large and unpredictable changes in abundance, and as a result, harvest volumes.

Existing fisheries access policies– Fisheries policies and programs have both reduced (e.g. Mifflin buy back) and enhanced fishing opportunities (e.g. PICFI and First Nations). PICFI addressed the federal policy objective of increasing First Nations share in the fishery and there is no corresponding program available for non-Aboriginal persons. Aside from

programs such as PICFI a major barrier for new fishery entrants in the high cost of licences and quota. PICFI also has some limitations that restrict the ability for First Nations to see the full value of potential community fisheries. Licences are transferred for a fixed term (usually one year) which limits the investment that an individual or commercial fishing enterprise is likely to make in a new fishing operation. PICFI licences can only be fished under the same rules as the commercial fishery so that if a community wants to split a quota among several community members it requires a licence for each, under current policies. These and other factors limit the ability to acquire and efficiently utilize fisheries access for community fisheries.

Escalating fuel costs – Because fuel accounts for a large proportion of operating costs, rising fuel prices affect fishermen's decisions, such as where to fish, where to sell the harvest, and where to purchase supplies (Frick 2012 pers.comm.). For fishers operating in waters around Haida Gwaii, escalating fuel prices will increasingly favour delivering to Prince Rupert because the port has lower fuel prices and Prince Rupert processors typically offer higher product prices relative to Haida Gwaii outlets. Fishermen will favour Prince Rupert when the resulting gain in revenue exceeds the cost and lost opportunity of the longer transit time, relative to selling to a processor on Haida Gwaii and purchasing fuel from an island based retailer**.**

Threats to ecosystem health – Marine ecosystem health could be eroded by changes resulting from climate change as well as marine pollution. The threats of particular concern relate to ocean acidification, changes in plankton communities, endocrine disruptors, increase in ocean temperatures, and a proliferation of low oxygen zones (Haida Oceans Technical Team. 2012d).

Globalized seafood market – The globalization of the seafood market has resulted in export markets that are highly competitive and volatile. High margins are quickly eroded by competing suppliers or products entering the market and consumers substituting other foods. BC's fishing and fish processing industries have changed over time, partially in response to these external pressures. That is, processing capacity has migrated to locations in southwestern BC to take advantage of the transportation network, labour supply and access to services the region has that reduces costs. Fishers and processors in Haida Gwaii will need to continually seek comparative advantages to remain cost competitive.

4.3 Strategies for Enhancing Community Fisheries Economic Development Prospects

The preceding discussion identified the opportunities and limitations facing the Haida Gwaii community for increasing economic benefits from its marine resources. This section suggests strategies for harnessing the community's strengths and opportunities to overcome, or lessen, constraints to realizing greater economic benefits from its marine resources.

Community fisheries involvement should include the principles of greater local involvement and control, equity and inclusiveness and promoting sustainability for communities and resources. Whatever the sustainable level for the particular fishery, the objective is the same. That is, to maximize the value of the fishery to the community by creating jobs, services and increasing economic benefits to the wider community.

The key challenge is that the contribution of marine resources to Haida Gwaii's economy has shrunk from historic levels and is continuing on a declining trend. The causes of this decline are varied and were discussed earlier, but have collectively resulted in reduced participation in harvesting, reduced landings to on-island processers, and the loss of wealth, income, employment, and infrastructure that has directly or indirectly affected all island residents. Nevertheless, Haida Gwaii's labour force has the appropriate industry skills and experience, there is an established on-island processing capacity, a diversity of fisheries in close proximity, opportunities for unique branding, quota transfer policies and growing demand for seafood products. These strengths and opportunities may be garnered to enhance the economic contribution fishery resources make to Haida Gwaii. Several strategies for realizing this outcome are highlighted in Table 4-3.

The strategies advance three objectives that are expressions of improved community benefit from the fishery resource.

The first objective focuses on strategies that increase participation and value at the harvesting level. This includes leveraging licensing allocation programs (e.g. PICFI) and modifying license terms that are closing potential avenues for community participation. This may involve changes in fishery management practices to maximize value, as well as fishing and fish handling practices. Given the number of different fisheries accessible from Haida Gwaii (i.e. groundfish, salmon, shellfish, crabs) the strategy may imply different changes in practices particular to the characteristics of each fishery.

The second objective is aimed at increasing the volume and value of seafoods products produced by island processors. This includes maximizing the landed value of the primary product through appropriate handling, maximizing volume to island processors, and encouraging value added through branding.

The third set of strategies focus on opportunities to keep the wealth created by the above actions in the community to the maximum extent practical. Strategies related to this objective engage the broader community, not just those persons involved in the fishing industry, to increase value and support an integrated economy. This includes training the next generation of fishermen, and increase spending in Haida Gwaii.

The impetus for implementing most of the strategies is not directly connected to the Marine Plan, but the strategy objectives are consistent with plan goals and the strategy outcomes

are compatible with the Marine Plan. The proposed strategies and Marine Plan are viewed as mutually supportive.

Table 4-3 Community Fisheries Economic Development Strategies

Objective	Increase community participation in fisheries management and harvesting		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Increase Haida Gwaii fisher's access to commercial fishery through allocation transfer programmes.	CHN	CFN and DFO	• advance business plans for increased allocation • Continue to pursue opportunities through PICFI to increase CHN quota for halibut, sablefish, crab, salmon seine (Area A) and other fisheries
Remove constraints to increasing local participation embedded in licensing policies.	CHN to support	DFO, fishing industry	• Promote flexible licence conditions to allow several vessels to fish under a single licence (i.e. encourage a mosquito fleet) • Communal licences provided on perpetual basis, and licence conditions can be subject to flexible terms
Enhance the value of local fisheries through fishery management changes.	CHN to support	DFO, fishing Industry	• Review the seasonal timing and volume of fisheries occurring in Haida Gwaii waters relative to local landings and Identify opportunities to create value • Enhance market value by adjusting timing of harvest such as has been realized in IQ fisheries. • DFO to make management changes (e.g. timing or volume) to increase value to Haida Gwaii • Consider unique fisheries that create branding opportunities
Objective	Maximizing value from Community Fisheries		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Encourage/reward fishers and fishing practices that produce higher quality catch delivered to processor.	CHN to support	On-island processing industry	• Identify opportunities to maximize value • CHN to work with processers to encourage/reward practices that maximize landed value particularly for CHN held licences
Encourage locally held licences to deliver to local processors	CHN to encourage	Island fishermen and processors	• Liaise with on-island processors so that contribution to island economy is realized by the incremental landed volume. • Encourage processing to adopt strategies to addresses cost disadvantages, such as reduced weight or packaging, that reduces transport costs

Encourage recreationally caught fish to be processed locally	CHN to encourage	On-island resorts, HaiCo, seafood processors	• Identify preferred seafood products and on-island processing capabilities • Discussion with lodge owners to identify opportunities
Investigate the feasibility of a Haida Gwaii "brand"	CHN	Industry, DFO, other First Nations	• Identify candidate opportunities for branding, by fishery, species timing • Assess feasibility using a working group that includes industry and seafood marketing reps. • Promote unique or early fisheries to command higher market values Explore potential of HG brand (winter troll, crab, razor clam)
Encourage local processing from Shellfish Aquaculture operations Note: This opportunity is linked to the expansion of shellfish production from Haida Gwaii operations	CHN to support	Shellfish producers and On-island processing industry	• Facilitate discussions between parties to realize on island processing
Objective	Keeping wealth in the community		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Provide better quality employment opportunities in the fishery by establishing training/education/mentoring programmes to ensure Haida residents are fully involved – from deck to boardroom – in all facets of fishing industry business	CHN to support	Northwest Community college, Skidegate Band Council, Old Massett Village Council	• Seek funding from PICFI, utilize FishSafe programme • Utilize harvester training to support strategy to maximize landed quality and value • Utilize mentoring to train the next generation of vessel skippers
Maximize local employment, in terms of creating more jobs and or extending the length of employment	CHN to encourage	HaiCo, industry	• Pursue strategies for on-island landings and processing identified above. • Increase volume and value of local fishery landings (e.g. shellfish aquaculture opportunities).
Partnerships with the community to capture synergies	CHN to encourage	BC Ministry of Jobs, Tourism, MIEDS, and industry,	• Support an open dialogue between industry, agencies, and researchers to address Haida Gwaii issues. (e.g. Coalition of island processors disposing of fish waste to island farmers for composting, eliminated the need for sea disposal or costly investment)
Maintain existing infrastructure that supports the fishing industry.	CHN	MIEDS, Community, industry, service industries	• Monitor status to function/operation of infrastructure and facilities and act on threats and opportunities. e.g. Community sources requested North Arm Transportation to continue to operate the fuel supply facility serving the fishing industry when Petro-Canada closed its Masset operations

			• Continue to lobby for reductions in transportation costs

5 Marine Research and Monitoring

5.1 Summary of Current Status

Marine research and monitoring consists of services supporting the study, management and use of marine resources.

The main actors on Haida Gwaii include the Haida Fisheries Program (HFP), DFO, BC Parks and the Canada Coast Guard (CCG), which is a department of DFO (Gardner Pinfold 2010). Other organizations, including education institutions and conservation groups, are also involved in marine research and monitoring in different capacities.

HFP activities include co-management of the razor clam fishery, stock assessment contracts, Fisheries Guardians, and integrated marine use planning, among many other responsibilities. DFO maintains two offices, one in Masset and the other in Queen Charlotte City, for managing Areas 1 and 2, with a focus on salmon and herring. CCG has two auxiliary units on the islands and monitors vessel activity around Haida Gwaii and has a search and rescue function in Sandspit. BC Parks' focus is on monitoring within the new Protected Areas, recreational crab and clam fisheries in Naikoon Park, small boats fishing for halibut from North Beach/Hiellen and tsunamia monitoring (Gardner Pinfold 2010).

Non-government organizations are also involved in research and monitoring. Current and on-going research programs and studies involve UBC, Simon Fraser University, University of Victoria and University of Northern British Columbia (Gardner Pinfold 2010, Salomon 2012, pers. comm.). Other government agencies involved in research and monitoring include the Canadian Wildlife Service, which has engaged in seabird research and the effects of introduced species on seabirds.

The presence of research and monitoring activities has prompted discussion of a marine research facility on Haida Gwaii that could provide research facilities and equipment to Canadian and international scientists, as well as university and public education programs.

In 2010, research and monitoring activity on Haida Gwaii was estimated to employ 31 full time and between 26 and 31 part time jobs (Gardner Pinfold 2010).

5.2 SWOT Analysis

The strengths, weaknesses, opportunities and threats of research and monitoring on Haida Gwaii are outlined in Table 5-1 and discussed in the paragraphs that follow.

Table 5-1 Marine Research and Monitoring SWOT Summary

Strengths	Weaknesses
• Unique biodiversity and healthy ecosystems • Engaged residents • Existing resources and capacity • Search and rescue capacity • Expanding network of protected areas	• Lack of a champion • Reliance on transfer funds • Travel and development costs
Opportunities	**Threats**
• New user-funded monitoring programs • Partnerships with major institutions • Devolution of DFO activities (fisheries modernization agenda) • New activity, compliance, traceability and monitoring requirements • Growing interest in research-focused tourism activities	• Competition from other institutions for scarce research funding • Increasing use of technology in place of labour • Declining need for fishery monitoring • Decline in government funding

5.2.1 Strengths

Engaged residents - Residents of Haida Gwaii are generally aware of land and marine planning issues, and appreciate the importance of research to understand and adapt to ongoing change in the environment. This high level of engagement could be used to leverage funding, partnerships and community support for the establishment of a research facility.

Existing resources and capacity – DFO, Gwaii Haanas, BC and HFP have staff and other resources that support marine monitoring and (to a lesser extent) research. HFP has expanded its capacity through improved infrastructure, support vessels, communications and safety equipment as well as staff and management resources. There is available expertise and capacity in watershed restoration, hatchery operations, management and operations consulting, commercial diving and environmental monitoring. Facilities such as the Haida Heritage Centre at Kay Llnagaay are already used for educational programs and this could be extended to include some research.

Search and rescue capacity – The capacity of the Canadian Coast Guard (marine) and Archipelago Search and Rescue[3] (terrestrial) have created a network of safety infrastructure that allows wilderness areas to be more accessible. Nearby search and rescue capabilities enhances the safety standards of field research in remote areas.

Expanding network of protected areas – Protected areas provide an important baseline or reference point for research. About 70% of the shoreline of Haida Gwaii currently has some form of protected areas status. The Gwaii Haanas marine area is another significant area, including areas that have recently been fully protected along with existing Rockfish Conservation Areas.

Unique biodiversity and healthy ecosystems – The presence of many endemic species and sub-species not found on the mainland is of continuing interest to the research community and one of the main reasons for recent and current research programs (Salomon 2012, pers. comm.). The natural environment is relatively healthy due to its isolation, protected areas and limited industrial activities.

5.2.2 Weaknesses

Lack of champion – A research facility on Haida Gwaii requires a champion who is capable of marshalling resources and pushing forward a vision (Lee 2012, pers. comm.). The availability of funding for research centres is limited and competition is intense. The Hakaii Beach Institute is supported by a single benefactor while the Bamfield Marine Science Centre is funded primarily by a consortium of five western Canadian universities.

Reliance on transfer funds – The research "market" is highly dependent on government funding and research programs that are under increasing pressure to reduce funding commitments (Anholt 2012, pers. comm.). Similarly, government funds for monitoring programs have been reduced.

Business and travel costs – Business and travel costs are higher on Haida Gwaii than the mainland, which works as a competitive disadvantage for locally delivered services. For example, research activities at the Bamfield Marine Science Centre or Hakai Beach Institute are likely less costly than Haida Gwaii. (Anholt and Salomon 2012, pers. comm.)

5.2.3 Opportunities

User funded monitoring programs – Funding for the monitoring of commercial quota fisheries are paid by licensees themselves, and there could be opportunities to deliver these services locally.There could also be opportunities to change legislation that would allow funds from licence fees to be used for monitoring (e.g. recreational licence fees).

[3] Archipelago Search and Rescue is the Search and Rescue Association's member responsible for Haida Gwaii.

Partnerships with major institutions – Monitoring and research generally require institutional partnerships (Lee 2012, pers. comm.). There are considerable barriers to establishing research projects but partnerships are a way of creating new opportunities. The institution provides the research concept or need, while Haida Gwaii provides a natural and relatively unspoiled setting of distinct natural assets, supportive infrastructure such as exist in Gwaii Haanas (e.g. remote accommodation) and with the Haida Fisheries Program (e.g. equipment for lease) (Anholt and Salomon 2012, pers. comm.).

Devolution of DFO activities – DFO will continue to transfer monitoring responsibilities to non-government entities, but reduced funding commitment may limit business opportunities. Federal budget measures and strategic marine directions as set out in DFO's Sustainable Fisheries Framework foresee greater involvement of industry and independent contractors in fisheries monitoring. In the 2012 federal budget, DFO stated it would end all funding for the At-Sea Observer Program, so industry will now pay for observers on fishing boats to monitor industry fishing quota compliance (PSAC 2012). The budget also indicated that more monitoring services will be contracted out to third parties rather than being conducted by DFO staff.

New activity, compliance, traceability, and monitoring requirements – Monitoring activities will increase in the future as a result of better resource management practices and reporting procedures. These will be related to:

- Traceability and quality assurance guidelines required for access to key food markets
- Other stewardship commitments such as aquaculture or forestry
- Mitigation and follow-up activities required as part of the issuance of environmental certificates to major project developments (Hutton and Lee 2012, pers. comm.)

Research tourism – There is opportunity to create demand for research tourism that takes advantage of Haida Gwaii's biodiversity and recreational assets (Lee 2012, pers. comm.). Organizations such as EarthWatch sponsor research expedition programs to sites around the world. The expeditions, or tours, are usually small groups of individuals that volunteer to join a team of scientists for field research related to an environmental issue or problem.

5.2.4 Threats

Competition from other institutions for scarce research funding–Existing marine research facilities and programs represent significant competition for a potential Haida Gwaii facility. There are several existing institutions that created their own niches for locally-based research centres. Bamfield and the Hakai Beach Institute have established relationships with BC's post secondary institutions and will continue to explore funding and program opportunities so they can continue their research (Anholt and Salomon 2012, pers. comm.). In the case of Hakai, a generous benefactor underwrites research activities although such

champions are difficult to identify and recruit. In terms of monitoring, there are many well-established companies on the mainland which manage monitoring programs and have developed industry relationships, good practices in service delivery and the capacity for taking on major contracts. Breaking into this field would be challenging.

Increasing Use of Technology in Place of Labour - Technology increasingly enables remote monitoring and reduces the need for labour-intensive research and monitoring methods. For example, remote sensing and video equipment has greatly reduced the use of human observers while lowering costs. Internet-based technologies may also reduce the need for creel, log and observation activities for the sport fishery.

Declining need for fishery monitoring - The decline in commercial fishing fleets based in Haida Gwaii, growth in the recreational sector, decline in returns to local creeks and the decline of interception fisheries all have reduced the need for monitoring (Gardner Pinfold 2010).

Decline in government funding – DFO cutbacks are reducing monitoring activities such as stock assessment work. Managers are having to rethink many programs and front-line services, including fisheries biologists who are involved in habitat monitoring. Staff reductions and in some cases office closures will reduce opportunities for the building of local relationships and contracting services (Hutton 2012, pers. comm.).

5.3 Strategies for Enhancing Research and Monitoring Prospects

The draft Marine Plan does not currently provide directions for the development of research and monitoring as an economic activity. Monitoring will play a central role in the implementation of the Plan and research could conceivably contribute to many aspects of the marine planning process, but as economic opportunities their future role and ultimate potential is not that well understood.

Recommended strategies for monitoring include: better baseline information on existing and emerging opportunities and an improvement in the capacity for undertaking more monitoring activities. Partnerships with more experienced and better resourced companies could lead to a greater share of monitoring contracts on the islands and opportunities for procuring contracts off-island.

Recommendations for enhancing research activities focuses on the pre-feasibility and feasibility of a research centre or institute. This would require careful planning in scoping the opportunity and its potential for development. As noted in the SWOT, the Bamfield Marine Science Centre and the Hakai Beach Institute both have established partnerships with BC's major universities for marine research programs. The increasing scarcity of, and competition for, government funding for research is a major impediment. However, almost all post-secondary institutions have policies for establishing research centres and review of these

policies could help identify strategic partners who could contribute to the pre-feasibility process and the creation of a development concept.

Table 5-2 Marine Research and Monitoring Economic Development Strategy

Objective	Capacity for environmental and activity monitoring		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Document baseline conditions of monitoring opportunities	CHN BC	Coastal First Nations	• Document and quantify potential opportunities in: ○ on-island fisheries that are monitored by off-islands companies ○ emerging opportunities in non-monitored fisheries such as salmon and recreational fishery ○ potential changes to legislation that would allow funds from license fees to be accessed for monitoring ○ devolution or transfer of DFO monitoring to the private sector ○ environmental monitoring in non-fisheries sectors
Improve contracting expertise and capacity in support of marine plan implementation	CHN	HFP DFO CWS	• Explore strategic partnerships and alliances with experienced companies • Encourage innovation, skill development and best practices in monitoring services • Gain a greater share of on-island monitoring contracts by offering competitive per diem rates and travel costs • Identify mechanisms for funding or financing incremental monitoring needs of the marine plan
Objective	A world-class research institute that augments the marine plan		
Strategies	Lead (CHN, BC)	Possible Partners	Action
Study the potential and feasibility for a research institute	CHN	Haida Gwaii Higher Education Society (HGHES)	• Obtain and review policies from identified institutions on the establishment of research

		Education Institutions	centres • Identify potential research champions who could provide insights and direction on a prefeasibility assessment • Prepare the prefeasibility assessment on potential scope of activities or programs, organizational options, strategic partners (i.e. post-graduate education institutions) and funding options • Create preliminary rationale, mission and vision statements to direct the feasibility process • Determine the intended function of the institute (teaching programs vs excellence in research, discipline-based vs. multi-discipline) • Identify niche opportunities for research based on potential for expansion of existing programs (e.g. HGHES) and with non-BC institutions that have marine programs • Recruit strategic partners to provide support and guidance •
Explore research tourism potential	CHN	THG MIEDS	• Review best practices from EarthWatch and other research holiday organizations • Review opportunities for pilot tours in collaboration with organizations such as Coastal Ecosystems Research Foundation • Consider a research proposal to Earthwatch focusing on two of the institutes priority areas, Oceans and Cultural Heritage (an applying scientist must first be identified)

References and Internet Sites

Archipelago Marine Research Ltd. 2005. An Analysis of the Requirements, Current Conditions and Opportunities for Traceability in the British Columbia Seafood Sector. Prepared for the BC Seafood Alliance. Accessed at : http://www.bcseafoodalliance.com/documents/Traceability.pdf

The BC Shellfish Grower's Association. 2013. Accessed at http://bcsga.ca/

Canadian Aquaculture Industry Alliance 2012. . Production and Markets. Accessed at http://www.aquaculture.ca/files/production-markets.php

Canadian Aquaculture Systems Inc. 2012. Financial Feasibility of Geoduck Aquaculture in British Columbia (Final Report)

Council of the Haida Nation 2014. Constitution of the Haida Nation. Available at: http://www.haidanation.ca/Pages/governance/pdfs/HN%20Constitution%20Revised%20Oct%202014_official%20unsigned%20copy.pdf Accessed: August 2016.

Counterpoint Consulting Inc. 2010. *Commercial Seafood Sector Strategic Plan (confidential).* Prepared for Council of the Haida Nation.

Department of Fisheries and Ocean. 2013a. Current Valid British Columbia Shellfish Aquaculture Licence Holders. Accessed at: shttp://www.dfo-mpo.gc.ca/sch-ppb/maintenance-entretien-eng.asp

Department of Fisheries and Ocean. 2013b. Small Craft harbours webpage. Accessed at: http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/shell-conch-processors-transformateurs-eng.htm

Gardner Pinfold Consulting Economics Ltd. 2012. *Haida Gwaii Marine Market Sector Analysis* (final report),

Gohaidagwaii. 2013a. *What to Do*. Available at: http://www.gohaidagwaii.ca/what-to-do Accessed: March 2013.

Gohaidagwaii. 2013b. *Where to Stay*. Available at: http://www.gohaidagwaii.ca/where-to-stay Accessed: March 2013.

GS Gislason and Associates Ltd. 2003. *British Columbia Seafood Sector and Tidal Water Recreational Fishing: A Strengths, Weaknesses, Opportunities, and Threats Assessment The Queen Charlotte Islands Fishing Lodge Industry*.

Graham, Jennifer, with Anthony Charles and Arthur Bull. 2006. *Community Fisheries Management Handbook.* Gorsebrook Research Institute, Saint Mary's University.

Haida Enterprise Corporation. 2012. Aquaculture Progress Report Oct 12, 2011. Accessed at http://www.HaiCo.ca/aquaculture

Haida Nation and Province of British Columbia. 2012. *Haida Gwaii Marine Plan* (draft). Revised 11 October 2012.

Haida Oceans Technical Team. 2012a*. Haida Gwaii Shellfish Aquaculture: Status and Trends*

Haida Oceans Technical Team. 2012b*. Haida Gwaii Demographics and Economic Development: Status and Trends*

Haida Oceans Technical Team. 2012c*. Haida Gwaii Marine Tourism: Status and Trends*

Haida Oceans Technical Team. 2012d*. Haida Gwaii Future Scenario Analysis*

Horne, Garry, 2009. *British Columbia Local Area Economic Dependencies: 2006*. BC Stats.

Irvine J.R. and Crawford W.R. 2011. *State of the Ocean Report for the Pacific North Coast Integrated Management Area.* Fisheries and Oceans Canada. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2971.

Kendrick, Drue. 2012. *Tourism Future Scenarios Workshop July 17-18, 2012*. Powerpoint presentation.

Kingzett B. 2012. Haida Gwaii Marine Future Scenarios July 2012 Shellfish Aquaculture. Powerpoint presentation

Kungl Gina. 2010.Haida Gwaii Shellfish Study. 2010 Special Report for MIEDS

First Nations Fisheries Council. 2011. Fishing for a Better Future A First Nations Business Case for a Second Phase of PICFI. August 2011.

Fisheries and Oceans Canada. 2013. Current Valid British Columbia Shellfish Aquaculture Licence Holders. Accessed at http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/shell-coq-eng.htm

GSGislason & Associates Ltd.. 2012b. Geoduck Aquaculture in British Columbia Economic Implications. Prepared for Canada Fisheries & Oceans

Meadfield Consulting Inc. and Economic Growth Solutions. 2004. Haida Nation Tourism Business Opportunities Plan Study Report. Prepared for Council of the Haida Nation and the Haida Tribal Society.

Ministry of Agriculture. 2011. British Columbia Seafood Industry 2010 Year in Review.

Ministry of Environment . 2012. Shellfish Aquaculture in British Columbia. Accessed Dec 18, 2012. Available at: http://www.env.gov.bc.ca/omfd/fishstats/aqua/shellfish.html

Ministry of Jobs, Tourism and Skills Training (MJTST). 2013. *Market Ready Standards*. Available at: http://www.jtst.gov.bc.ca/industryresources/Documents/planningresources/Market_Ready_Standards.pdf. Accessed: January 2013.

Misty Isles Economic Development Society. 2013. *The Gwaii Haanas Experience*. Available at: http://www.gohaidagwaii.ca/blog/the-gwaii-haanas-experience/. Accessed: January 2013.

Parks Canada. 2012. “A Year in Review”. *Kii.ngaay 2011/12*.

Public Service Alliance of Canada (PSAC). 2012. *DFO tells more than 1,000 workers they could lose their jobs*. Available at: http://www.psac-afpc.com/news/2012/releases/20120517-e.shtml. Accessed: July 2012.

qciobserver.com 2012. *Shellfish aquaculture plans revealed. April 18, 2012. Accessed at: http://www.qciobserver.com/Article.aspx?Id=5432*

Tourism BC. 2009. Haida Gwaii/Queen Charlotte Islands Draft Community Tourism Plan.

Tourism BC. 2013. *Visitor Centre Network Statistics Program Year Over Year Report*. Report for years 2004 to 2012 for Queen Charlotte and Queen Charlotte – Sandspit visitor centres.

Uuma Consulting Ltd. Haida Gwaii Marine Planning: Future Scenario Analysis. Report from a workshop held July 17 and 18, 2012. September 2012.

Personal Communications

Adel, Heather. Economic Development Officer, Misty Isles Economic Development Society. Telephone conversation December 12, 2012.

Ainsworth K. Chief Executive Officer, Haida Enterprise Corporation. Telephone conversation Dec. 13, 2012.

Anholt, Brad. Director, Bamfield Marine Sciences Centre. Telephone conversation December 4, 2012.

Bowman S. Chief Executive Officer, Coastal Shellfish Corporation. Telephone conversation Dec. 13, 2012

Collinson S, Wharfinger, Queen Charlotte. Telephone conversation Feb. 1, 2013.

Doerkson L. Commercial fisherman and member of the MAC member. Telephone conversation Feb. 1, 2013.

Edwards D. Executive Director, Area “A” Crab Association. Telephone conversation Dec. 7, 2012

Frick A. Plant Manager, C.B. Island Fisheries. In-person interview Dec 5, 2012

Hutton, Claire. Network Coordinator. Coastal Guardian Watchmen Network. Telephone conversation December 3, 2012.

Kingzett B. Manager of Deep Bay Field Station, Centre for Shellfish Research, Vancouver Island University. Telephone conversation Dec. 11, 2012

Lee, Lynn. Marine Advisory Committee. Telephone conversation December 14, 2012.

McCulloch, John. VP Operations, Langara Fishing Adventures. Telephone conversation November 30, 2012.

McDougall, Chris. GIS/Planning Analyst - Haida Oceans Technical Team. From BC Tenure Data base at November 20, 2012. E-mail reply to Russ Jones, February 28, 2013.

Nelson S. Nelson Bros Fisheries Ltd. Telephone conversation Dec. 3, 2012

Salomon, Anne. SFU and Hakai Beach Institute. Telephone conversation November 29, 2012.

Taylor, Greg. Skeena Wild Conservation Trust. Telephone conversation February 12, 2012.