

Central Coast 20:00 min

*Central Coast
British Columbia*

VERNON BROWN Kitasoo/Xai'Xais Integrated Resource Authority

Welcome to Dis'ju. So this area is really important to my family, actually one of my grandparents that I never met is actually buried here somewhere's.

Nobody's really sure where he's buried now...

This is actually an old big house and you can imagine a nice roof over this, walls and everything and this being the entrance.

One part of the story they talk about the strength of the big house, they describe four grizzly bears holding up the big house...so that's what it looks like to me.....

And this is only one of the villages that is around this whole area. There was just unlimited access to all the resources that are out there. You've got all the rockfish, the halibuts and all the neighboring salmon streams, all the fresh water, so it's a perfect place to have a village and survive. So it's a good example of our existence and that we've always used this area and always used this coast. You'll see it everywhere.

CRYSTAL SCHOONER Nuxalk Nation

What I've been taught is you say a prayer to the tree, give thanks to what it's contributing to, whether it be regalia, cedar hats, or cedar mats.

We are gathering bark for the Qatuwas tribal journey that's happening in Bella Bella. We're going to weave it so we will braid baskets and head bands for the give-aways for the Nations that will be coming.

Our people have been doing this for thousands of years. They say that the cedar tree is the tree of life. We used it for everything, we've used it for our clothing, we've used it for bedding, our housing, our ceremonies, we've used it for everything and you know by continuing this practice we're honoring what our ancestors have left for us.

Narrator

Intimate knowledge of seasonal cycles and clan-based systems led by hereditary chiefs sustained the resources of the Great Bear for millennia.

The partnership's marine plans are relying on this traditional knowledge that has been passed on for generations.

CHELSEA WALKUS Heiltsuk Nation

Our people, the Heiltsuk People, were a traveling nation. We didn't stay in one spot. We packed up our entire home, our entire house, and we packed it up and we moved to different locations. So we followed the, the seasons. We followed the food and we went to wherever we needed to.

Today we are travelling the highways of our ancestors, looking for gansas??, looking for crabs, picking medicine, cedar bark picking, seaweed picking...

GARY WILSON General Manager, Heiltsuk Economic Development Corporation

Usually there's a number of us that go out, family units, just to harvest for elders and other family members that can't afford to go out. Or don't have the vessels or the time or energy, so we usually harvest a fair amount for the purpose of sharing and trading.

CONNIE (Teacher)

They're in grade 3-4 and we're taken taking them out to pick some of our sea weed, which we call black gold. And our people have been harvesting seaweed for many, many, many years.

GARY WILSON General Manager, Heiltsuk Economic Development Corporation

And they are highly regarded by not only ourselves but others. It's a vital part of our diet.

ERIC WILSON, SR

This is the best...My father in law used to go, her dad, used to go to Nalu ?? Pass in the first week of April and get the best kind of seaweed, nice and black and shine...

PERCY STARR Hereditary Chief, Kitsoo/Xais'Xais Nation

So all of those aquatic resources, land based resources that you see in our traditional territory was what attracted our people here. So we lived off the fat of the land, aquatic resources, halibut, shellfish, you name it, everything, abalone, sea urchin, sea cucumber, all of those my people used. But you know what the government did, they changed management,They practically ruined almost everything we got...we struggle now with aquatic resources, we really struggle....

ART STERRITT Executive Director, Coastal First Nations

30 years ago we had about 100% employment – very wealthy people - had all of the food they needed, all of the economy they needed, all of the jobs they needed. They had lots of boats. They fished all species. But over a period of about 30 years that all started to get mismanaged by government to the point where the salmon industry is down, the different cod fisheries are down. First Nations through legislation began to get marginalized and pushed out of different fisheries so that right now in our communities we'd be hard-pressed to have even one community that had less than 80 or 85% unemployment.

CHARLIE MASON Hereditary Chief, Kitsoo/Xais'Xais Nation

Sort of goes back to the things that we now stand up to fight for. Say like sea cucumber that was the last one, last year. And this year it's herring. These are resources. These are our resources. These are very important to us. They're very important to us," I said, "because once they clean it out there'll be nothing left for us." They're basically just taking your food away, with a care in the world.-They say oh yeah it will come back and it does come back but it is 10,15 years before it comes to a level it becomes satisfactory for us to even harvest it.

We've been hurt a lot by the decisions of the government.

MICHAEL REID Aquatics Manager, Heiltsuk Integrated Resource Management Department

If you look at the central coast, the amount of herring that returned here this past year was minimal! It was nothing compared to what it used to be. Stryker Bay for instance, it had 25 tons, where normally they have like 25,000 tons. In other areas it's similar. Yanking the bottom out of the food chain... It's a devastating blow to the whole ecosystem. Everything depends on herring – salmon, halibut, cod, other species.

JOANN GREEN Hereditary Chief, Heiltsuk Nation; Executive Director, Heiltsuk College

Our elders say that, you know, you open your front door and you have all the fish, the shellfish. You open your back door and you have all our traditional medicine. You know, you go up the woods and you get all the Indian medicine there is to use. So my aunt always says, you know, when you open the door, you're table's set for you.

My father was a fisherman. This was in the 60s and 70s – like he was out all the time. Today the fishermen are lucky when they go out if they get half a day or a day fishing. That's what they call an opening now. They have all these rules and regulations we have to abide by, and when our people go out on food fisheries, they have to apply for a license, and I think that's BS.

GARY WILSON General Manager, Heiltsuk Economic Development Corporation

We can't continue down that same path, in how things were managed prior to now. We've got one of the most pristine territories left in the world, in the Great Bear, in the Heiltsuk territory and we want to protect, protect what's left.

We've got to strike this balance, and it's very difficult. We have to be profit oriented, but at the same time we have to consider our environment. And the value of that environment is part of our balance sheet.

We look at that environment as a way to sustain us now and into the future.

DOUGLAS NEASLOSS Kitsoo Band Council & Kitsoo/Xai'Xais Integrated Resource Authority Stewardship Director

I remember the first battles for the Great Bear Rainforest back in the 90s, and I was still in high school then and I remember going to some of the meetings that they had. A lot of forest companies kind of had a schedule to come and log the Great Bear Rainforest. It wasn't known as the Great Bear Rainforest back then, but at the time, you know, my community basically said that we have plans for our land and for our water, and we talked about protection. We talked about protection for both, and we didn't really see land and water as two separate things.

But unfortunately the way the provincial and federal governments work, that's the only - land is provincial and feds is water, so we had to separate the two in order to come forward with some solid protections. So I think we started working on the land use planning first, and back then we looked at about 50% protection for the territory, which is huge, for the area, but wanted to protect values that the Kitsoo/Xai'Xais people had in those areas. So we picked some very key areas and looked at protecting, you know, all the species within those areas, including the forests. Now we have about 47.5% of the Kitsoo/Xai'xais' territory locked up in protected area.

Now we're able to sit down with forestry companies and determine where forestry is going to happen, and making sure that those forest companies aren't impacting food areas, cultural areas, ecological areas. So that's been very important.

And I think now we want to kind of translate that sort of management on to the marine side. By developing these marine spatial zones, like we have on the land side that will help us protect multiple species and make sure that those species continue to be there, and not just for First Nations, but for everyone.

We wanted to make sure that there was a place for commercial fishermen, recreational fishermen, for food fishermen.

All of us have stewardship responsibilities. It doesn't matter whether you're First nations or non-First nation. So it's really important that we set a good balance.

Narrator

The marine plans initiate that balance by protecting marine ecosystems and supporting economic opportunities that can restore nature and communities. They are a starting point for a different kind of economic prosperity, one that can endure generation after generation.

DOUGLAS NEASLOSS Kitisoo Band Council & Kitisoo/Xai'Xais Integrated Resource Authority Stewardship Director

So it was important that we start doing our own science, and we start partnering up, whether that's with the province, whether that's with the different academic institutions to start gathering the proper data so we can make proper decisions.

Just this year alone we're doing salmon work, we're doing rockfish, we're doing Dungeness crab, we're doing bears, we're doing birds. And we're investing hundreds of thousands of dollars in some of this work, and it's not cheap but it's gonna help us make sustainable decisions, and I think that's really what's important to the community.

Narrator

With the understanding that we depend on a healthy ocean to sustain us now and into the future, the Heiltsuk nation is working with researchers from Simon Fraser University to determine if a commercial harvest of kelp can be done sustainably.

KIRA KRUMHANSL Postdoctoral Researcher & Hakai Scholar, Simon Fraser University

So the kelps are an important form of structure in the ocean, so they provide habitat for a lot of different species, like commercially important fish species, other invertebrates, like sea urchins, abalone, cucumbers, those kinds of things. And so essentially if you remove that habitat structure of the kelp, there's concern that there's impact on these other species that inhabit the kelp, and feed on the kelp.

So we're looking to determine how much can be, of the kelp, can be taken from these ecosystems without impacting negatively the other fishery species in the ecosystem and also the carbon storage and flux value of these ecosystems.

**Dr. ANNE SALOMON Marine Ecologist, Simon Fraser University
MaPP Marine Advisory Committee**

First Nations had been investing a lot of time, intellectual capacity, knowledge, both traditional knowledge and scientific data, to make marine use plans that the communities were comfortable with and were really community driven.

There was a collection of scientific data that included bathymetry data, current data and also biological data like the occurrence or presence of sea ducks, herring, kelp forest, all kind of mapped spatially – and that was made available to anyone who wanted it to identify areas that were ecologically important,

important to commercial fisheries, important to the tourism and recreation sector, and areas that were culturally important.

DOUGLAS NEASLOSS Kitasoo Band Council & Kitasoo/Xai'Xais Integrated Resource Authority Stewardship Director

We're looking at science in a new way. We were able to take traditional ecological knowledge and local knowledge and merge that with the best available western science and I think as stewards I think we have to look at the best way of gathering all information before decisions are made so.

CHRISTINA SERVICE *PhD Student, University of Victoria & Spirit Bear Research Foundation*

We're working on a bear monitoring project in the Kitasoo First nation territory, in partnership with Raincoast Conservation and Spirit Bear Research Foundation. We're basically looking to monitor these animals non-invasively, so we use non-invasive methods, such as barbed-wire, hair corrals and remote cameras to get hair samples from these individuals and be able to see which unique bears are around, how they're moving across the territory and also how much salmon these bears have been eating this past year.

ROSIE CHILD *Field Technician, University of Victoria & Spirit Bear Research Foundation*

So to find out how much salmon they're eating, we grab their hair from these barbed-wire corrals. And they're especially valuable in the spring because they've just woken up and they're shedding their hair from the previous fall, where they eat a lot of salmon. And then we use something called stable isotope analysis, which enables us to see what proportion of their diet is salmon or marine mammals or plant-based.

CHRISTINA SERVICE *PhD Student, University of Victoria & Spirit Bear Research Foundation*

So in Kitasoo territory we've been monitoring bears this way since 2012, but this project's a piece of a larger monitoring project at the landscape scale, which includes partners from Bella Bella, the Heiltsuk Nation, the Nuxalk Nation out of Bella Coola, and also the Wuikinuxv Nation out of Rivers Inlet.

Narrator

This collaborative science paired with traditional and local knowledge is central to the marine plans and will inform decisions on sustainable economic development and stewardship of British Columbia's coastal marine environment.

A strong emphasis of the plans is long-term employment: in shellfish aquaculture, community-based fisheries, marine based renewable energy and marine tourism.

DOUGLAS NEASLOSS Kitasoo Band Council & Kitasoo/Xai'Xais Integrated Resource Authority Stewardship Director

Here in Klemtu we started up a company called Spirit Bear Lodge, and we've been slowly growing that over the last 15 years. And I was one of the first guides, started taking people out, and we started to realize that people around the world absolutely love bears. So people want to come for the bears, want to come for the culture. This year we're gonna employ about 45 people in my community, and it's now the second biggest industry in my community, and I think it's only going up, so it's been quite positive.

GARY WILSON *General Manager, Heiltsuk Economic Development Corporation*

It's not like we're saying 'no' to business, but what we're saying is 'no' to destructive development that's gonna destroy our ecosystems and our environment,

We're doing business in a different way so that when you want to come into our territory you know that there's going to be a viable opportunity here long term. And that if, if industry, whether they're independent or larger corporations, work with us we know that we can guarantee a long term access, whatever resource is in our territory, but we have to protect what's left. It's very important.

LARRY GREBA Director, Kitasoo Development Corporation

the ecosystem has to support itself first, before it can support anyone from the outside. So the conservation needs to maintain the species that are here, to maintain the people that are living in it, whether it's a First Nation or non-First Nation community. And then if, if there's surplus that can support people from the outside, then by all means, there's those opportunities.

So this has allowed people to take stock, I think, in marine planning in terms of all the resources. So all that detail work was done, looking at every resource: what needed to be protected for conservation, which areas? What system of protection was necessary? Which areas were important culturally for people to access for food

And then you look at – OK, what's the fat that's left over in terms of the opportunity, once you've looked after the ecosystem and cultural needs, and then of course you identify certain areas as well //that can support certain types of industry, whether it is shellfish farming, whether it is fin fish farming, whether it's a marine hydro project, you know, with a turbine and a tidal turbine. Wind power is being looked after in terms of energy needs because that's often a marine industry, because they build the towers in marine sites. So all of these things are being kind of looked at into the future.

Haida Gwaii 15:00 min

Haida Gwaii
British Columbia

30 sec excerpt from “Gwaii Haanas Legacy Pole” video

Monumental poles are more than just art. They hold histories, they mark events, they tell stories.

RUSS JONES Hereditary Chief, Haida Nation Project Manager, Haida Oceans Technical Team

I think an important part of management planning or agreements, of course, it's implementing the plan, but it's also celebration. It's a way of identifying with an area, but also around celebrations and affirming your relationships between partners.

Here at the site of an ancient Haida village, Sea Lion town, or Qay'llnagaay. We've built this cultural center, where visitors can come and learn about how Haida people feel about Haida Gwaii and our ocean.

Evelyn Vanderhoop – Master Weaver, Haida Nation

I am weaving a chief's robe that we call the Naaxiin. The pattern that I'm weaving and creating with this particular robe is Qinga. He controls the ocean and he's leader and ruler of many sea creatures, and he also controls the weather. Our ancestors really depended on his benevolence.

In the past they were made out of mountain goat wool. And the Haidas, we don't have mountain goat on our islands, so we would travel by the canoes to trade the mountain goat wool. And it was the people inland, near the mountain ranges that would climb those mountains in the spring when the goats were losing their warm undercoat.

We have, as Haida people, as indigenous people, been really concerned about our environment and our ability to provide for our great-grandchildren and our grandchildren and the future generations. We look back at our stories that our ancestors told of the power of the ocean, and the reverence, and how to be respectful. These stories aren't ancient tales that don't connect to our world now. They really remind us that in order for our abundance, we thank our ancestors, and our grandchildren are going to thank us, hopefully, for our caring for our environment. So I think it's very important to continue our traditions in so many ways and so many respects.

RUSS JONES Hereditary Chief, Haida Nation Project Manager, Haida Oceans Technical Team

We've seen a lot of changes in the waters around Haida Gwaii, and the plan is our effort to maintain Haida Gwaii in a state that future generations can enjoy it the way we have. The vision is founded on respect. Yahguudang is the Haida word, and that means respect for the landscape, it's also a respect for each other, and it's also respect for all the creatures, the living creatures here in Haida Gwaii.

I guess there are several aspects to the vision. One is protection; another one is ensuring that we have appropriate economic development here in Haida Gwaii.

TREVOR RUSS Vice President, Council of the Haida Nation

The world is as sharp as the edge of a knife. There's a fine balance when it comes to resource extraction. We'd love to get our people back onto the water a lot more within the fishing sector, but not at the large industrial scale, which is done more commonly today in other areas. The idea is to have more communal-based fisheries, having the species that are harvested within our territory actually delivered to our docks within Haida Gwaii and processed by, not only our people but other residents that work on Haida Gwaii as well.

That'll really enhance our economy a lot more than it's been in the last few years. In Haida territorial waters, on average annually, there's – the landed catch value is about \$89 million or so. And then, it's a very, very small percentage – I think we'd be lucky if it's even close to 2% of that revenue hits Haida Gwaii. So it comes out of the waters that surround Haida Gwaii, but that revenue isn't hitting where it should, and it's our belief that a lot more of it can come thorough here and be processed and marketed through a Haida brand.

SHAWN BAYBUTT Manager, Haida Wild Seafoods

We buy from select commercial fishermen based on their quality and catch, and we process it for value-adding so we do Chinook salmon, Coho salmon. We do ground fish, we do halibut, rockfish, rough eye, some different species, ling cod, we also do some shellfish. We're buying prawns, smoked black cod. We went from a staff, of previous years of about 10 to 12 people, and this year right now we're at 23 people employed here, so we've increased, you know, 13 new jobs this year alone.

Narrator

Haida Wild is a part of a longer-term vision for far greater local benefits to be gained from the fishing that occurs in Haida territory. Marine planning is about supporting and growing these opportunities.

TREVOR RUSS Vice President, Council of the Haida Nation

Through the terrestrial planning process we've protected 52% of the land between Gwaii Haanas, Haida Heritage Sites and the other eleven conservancies on Haida Gwaii. 52% of the land base is under protection. Some may believe that will play a big role in turning down the economy on Haida Gwaii, but from the Haida perspective we believe they fall in line with the long term vision going forward.

So bringing that over to the marine side, the Haida envisioning a similar approach to that.

Narrator

Like the other sub regional plans for the Great Bear sea, the Haida Gwaii marine plan identifies zones for the protection of key marine ecosystems. These **protection** management zones eventually will become part of a larger network of marine protected areas throughout the Great Bear Sea.

SABINE JESSEN Director of Oceans Program, Canadian Parks & Wilderness Society, MaPP Marine Advisory Committee

Marine protected areas are particularly important because they do provide places where we can have healthy intact ecosystems. And that's a benefit, not only for the ecosystem itself, but as well for ecotourism and fisheries. Fisheries are probably going to be the biggest beneficiaries of marine protected areas.

The science from around the world is showing that if you control or stop fishing in marine protected areas, you're gonna have more fish, bigger fish, and overall healthier marine ecosystems, and some of those fish are going to spill over into the adjoining areas where fishing can still take place.

And so we have had a particular focus on how can we properly plan that network, bring all the best available, not only kind of Western science, but local knowledge and traditional knowledge to that process to design a really robust network of marine protected areas.

RUSS JONES Hereditary Chief, Haida Nation Project Manager, Haida Oceans Technical Team

Because of the way we've done the zoning, there's many areas you can fish, and what these protected areas do is they provide an insurance policy for the ocean.

They're protecting biodiversity and as well they're providing resilience to climate change or other stressors, which effect the marine environment. Protected areas are recognized as a necessity worldwide. Here in British Columbia we've made limited progress on establishing protected areas, so we see the Haida Gwaii marine plan as a way of laying out where we're going here in Haida Gwaii waters on protected areas and taking a step forward in protection of the ocean.

CAROL KULESHA Mayor, Queen Charlotte, Haida Gwaii

We need to ensure that we have a sustainable fishery. Fishery is still an extremely important part of our island economy and our island culture. We need to make sure that growing tourism industry also has opportunities on the water, and we need to be able to use whatever that resource, that marine resource gives us, as much as possible on the island.

Marine planning is extremely important, and this plan has been developed by the people of Haida Gwaii, on Haida Gwaii,

We have a plan for how we deal with the sea around us, An on-island, well-understood, well-documented, well-researched solution to how we handle the waters around Haida Gwaii.

RUSS JONES Hereditary Chief, Haida Nation Project Manager, Haida Oceans Technical Team

We've worked with Haida community for about five years to kind of make clear that whatever we're bringing forward is something that's supported internally by our community.

We've had a marine advisory committee that we established and that group has sat down 11 times and given us feedback in terms of the management direction as well as the zoning.

They've seen the same changes we have in the ocean around Haida Gwaii, and they see the need for more protection. They also see the need for more local decision-making.

LEANDRE VIGNEAULT Biologist & Fishing Guide, MaPP Marine Advisory Committee

I definitely support this plan. I signed on to the Marine Advisory Committee because I believe really strongly that we need to do things differently, that what we've done to date around marine management has not always been successful. We have many examples of stocks in decline, in terms of fish that suggests that we're not managing things particularly well at the current time.

There's a lot more support locally than I thought there was gonna be. Like that one protected area lays over an area that all of us charter fishermen use and I thought there was gonna be a lot of opposition to that.

And some of the places on the east coast that we're identifying for protection are some of my favorite places to go fishing, but because they're pretty amazing places I think we should protect them before we deplete them.

LYNN LEE Biologist, MaPP Marine Advisory Committee

I really love this place, and I really want to see the communities and the ecology, like ecological communities and human communities benefit and do well over the long term together. So this place, like many other places on the coast, has a very long history of people being part of the ecosystem, so in this case over 10,000 years with the Haida. And so our society has maybe lost its connection with place, so this is away of reestablishing local communities and their say in what happens to their place.

Gwaii Haanas Legacy Pole" video

Jaalen Edenshaw

It is such a powerful moment to watch the pole go up. It shows that our way of life is continuing. The world around us is always changing but the meaning behind what we do stays the same.

TREVOR RUSS Vice President, Council of the Haida Nation

Our role as Haida people, as taught by our elders and predecessors, is that we really are stewards of the land, and it's our obligation to ensure that the land, is left intact for the future use of our children and the generations to come.

With that, we foresee Haida and the Haida Nation playing a lot larger role in the management of our territory, which is really began on the terrestrial side in the last four and a half years in working with the province of British Columbia, and taking more of a role in decision-making at the strategic level, but also the operational level. The long-term vision of the Haida, at the same time, is to take on that same role within the marine sector.

The Haidas are part of the ocean and the ocean is a part of us.

RUSS JONES Hereditary Chief, Haida Nation Project Manager, Haida Oceans Technical Team

It really is protecting Haida Gwaii for future generations. It's based on an ecosystem-based management framework, so it says all activities, whether that's commercial fishing or some other activities, you need to be looking at what are the impacts on the overall environment. How does it affect the human community?

The marine plan is a living document. It is based on an adaptive management framework, so as new information comes in the plan might be changed or it could be amended to account for, kind of, new circumstances.

But it does lay out a blueprint for where we want to go here in Haida Gwaii.

North Coast 16:30 min

*North Coast
British Columbia*

BRUCE WATKINSON Marine Program Coordinator, Gitxaala Environmental Monitoring

The North coast area is facing development issues like we've never seen before, with the race to move liquefied natural gas out of BC to Asian markets, with the Northern Gateway Enbridge project to move dilbit bitumen to Asian markets. It's putting a lot of pressure on the north coast area, in terms of transportation issues of large tankers, in terms of terminals in Kitimat and Prince Rupert.

So it gets back to the fact that these marine use plans that each community has are very, very important – to be able to put your community's voice forward to decision-makers in government, to stakeholders, and really to the world that we have to make right decisions, and that those decisions need time, and unfortunately those time frames do not always match up with our capacity to deal with those issues. It doesn't always match up with our community's decision-making process.

DON KRUSEL President & CEO, Prince Rupert Port Authority

Canada is a trading economy. Our economic livelihood depends on our ability to trade with the world, and the Port of Prince Rupert is that gateway. We really see our role as facilitating and enabling Canada to fulfill its trade objectives and to keep the trading economy going.

And Prince Rupert is being looked to as the solution to many of North America's and Canada's trade challenges, and as a result, we've planned for and we foresee tremendous growth. And with that growth comes jobs. I mean the liquefied natural gas industry is a good example. North America, British Columbia has a lot of gas that is quote trapped, and the only way it has value is if it gets to international markets. And this region is viewed as one of the gateways to those international markets.

DAVID LEASK Land & Marine Implementation Manager, Metlakatla Stewardship Office

We're in the, what we refer to as the estuary of the Skeena River, or the mouth.

The tide runs up the Skeena River about 60 to 80 kilometers. And so basically what's happening here is it's all the mixing, it's the mixing of the fresh and the salt water, and it's just really, really, really productive in terms of the juvenile salmon coming out, but also for shellfish and everything like that also.

Narrator

Three quarters of harvested fish and shellfish species depend upon estuaries during their life cycle. The greatest threat to estuaries is, by far, their large-scale conversion by draining, filling, damming or dredging. These activities result in the immediate destruction and loss of essential marine habitat. In and around the Skeena River estuary major industrial developments are now proposed.

DES NOBELS Director, Area A, Skeena-Queen Charlotte Regional District

People here have a very close tie to the region, to the water itself, the marine environment. We are people of place. There are families here that go back many generations, whether it be First Nations or European, many of us live off of the resources from the marine environment here and don't necessarily see what's being proposed as a fit for us.

If government is allowed to move forward with industry in terms of how they see the future, then this will be a complete industrial site. This will be a massive industrial zone all around Prince Rupert here, the Skeena Estuary and the surrounding areas. You will have massive LNG development. You will have massive oil by rail and pipeline out of there. You will have massive coal being distributed out of there. You will have massive everything going out of this place, but there will be no consideration given to the marine environment around it.

Well we stand to lose many things, but I think what is first and foremost in many British Columbians' minds is our salmon. The wild salmon that presently exists here. We have the Skeena River, the second largest salmon-producer in Canada, and one of the largest salmon producers in the world. It's untouched. It's un-dammed. This is an incredible piece of water with a major productivity.

ART STERRITT Executive Director, Coastal First Nations

there are currently a lot of job opportunities that are being presented to our communities. The natural gas industry will require tens of thousands of people, literally, to build that industry. Oil companies are coming along and saying, "If we build a pipeline there will be thousands of jobs. And because you, First Nations, you don't have any jobs, we'll train you and you can go and build pipelines, you can build natural gas plants, and so on." The problem with that picture is that these are not jobs that are gonna be around in ten or fifteen years. They're gonna be gone.

So you've got a population of people who have been involved in a couple of monocultures, one on the fishing side, which is salmon, and one on the terrestrial side, which is logging. Those industries, they used up all the natural capital in those and left us there with nothing. That took about 100 years to do that. We're now looking at industries who are coming along that have about a ten-year shelf life. It'll take about ten years to build a natural gas industry. And those 10,000 jobs that we've trained our people for – they won't have jobs after that. So it doesn't make any sense for us to re-tool a whole population to do a job that is not gonna exist. We've been down that road. We're not going down that road again.

ROSS WILSON Director, Metlakatla Stewardship Office

When I came on board, this was little over two years ago, this LNG was just starting to put through applications for referral. And on our table today we have 19 major files associated to major activities, not all of them are LNG, but the majority of them are.

There are so many issues related to LNG that we have to address on the Stewardship program. We have to address the air emissions that come out of a facility that uses 100% power from gas. There's a disposal at sea issue here when a facility goes in a site and has to remove some soil and they want to pump it back into the ocean. There's the issue with the port in establishing additional anchorages outside of their boundary lines, without consulting Metlakatla. There's the issue of shipping, as it relates to the potential for ships to come out of Kitimat and out of Prince Rupert.

Narrator

Marine traffic is estimated to increase three fold over the next decades along the British Columbia coast – the Marine Planning Partnership is asking for a comprehensive analysis of the inherent risks and impacts that are associated with increased ship traffic and for an emergency response plan to reduce the threat and impacts of an incident.

STAFFORD REID EnviroEmerg Consulting

Well we have actually a lot of shipping right now in BC. We don't even have to talk about enhanced shipping. There's enough out there to warrant investments.

I used to be the environmental emergency planner and analyst for the BC Ministry of Environment for the last 20 years, with a particular focus on marine oil spill response. And that segued into looking at marine vessel casualty in general.

We haven't looked at the whole matter of coastal protection as it relates to marine vessels – whether it's the marine vessel casualty, the ability of all vessels and not just oil spills, and as well as the chronic impacts of operational impacts from noise, sound, acoustical noise, and emissions and evasive species.

Another example is chemicals. We carry chemicals in bulk in carriers. Chemicals are very much a big part of our container vessel casualty, and we don't have a marine chemical response regime yet. We don't have that capability

And that's one of the reasons why MaPP is stepping out and talking about marine vessel casualties, all types of shipping sectors, all types of cargoes, all types of risks to bring it into the context of good coastal management, good coastal planning, and bring it in within their overall planning strategy. And then once you get that going, then you can ask the right questions and make sure that there's action being taken.

JIM McISAAC BC Commercial Fishing Caucus, MaPP Marine Advisory Committee

There's issues on two sides. There's the ecological issues an ocean that is very complex. Climate change and ocean acidification that's changing that ocean. On the other side we have the socio-economic issues.

From a fisheries point of view, we're a traditional user of the ocean space. We've got all different kinds of new users on the ocean space. We have the energy sector, renewable and non-renewable pushing for access. Recreation users more and more pushing for access.

We have aquaculture pushing for more access. So we have a variety of different challenges to face, when we were a traditional user and had full access to the marine space.

The Marine Planning Partnership, provincial jurisdiction doesn't cover fisheries and so it's been taken off the table for that kind of integrated approach.

So we've had discussions with First Nations directly on fisheries issues. And we're working with Coastal First Nations on a coastal fisheries strategy to identify a common vision for fisheries on this coast, for First Nations and for fishermen on this coast.

So those are kind of key pieces – having independent fishermen in communities on this coast is essentially having small business in your community that employ people, that provide healthy food to your community. It's of value across the board. So there's a lot of commonalities. Fishermen want to see the ecosystem protected, but they also want to use the ecosystem, and I think First Nations do that same, right?

ART STERRITT Executive Director, Coastal First Nations

Certainly we recognize that we're living in a world economy now, but we also know that there are things within that region that are going to be valuable to the world economy. So we're building this sustainable tourism industry. We're building a sustainable shellfish industry, a sustainable salmon industry, a sustainable ground fish industry - but incrementally, building it up slow that you can't tear it down quickly. If you build stuff up too fast, it falls real fast.

Narrator

The development of shellfish aquaculture has been identified as a sustainable economic opportunity in British Columbia's waters. The marine plans designate management zones for shellfish aquaculture in all regions of the planning area.

Vittorio Venturini Vice President Operations, Coastal Shellfish Corporation

This marine planning was developed to identify the best uses of the ocean, and BC, the north coast of BC, has a lot of potential for shellfish industry. We identified many places where the shellfish aquaculture can be developed, as a sustainable business.

It's not only doing tourism or fishing activities, aquaculture has a place here in north BC. We found out that the water quality and the environmental conditions are very, very good for the aquaculture development.

Coastal Shellfish Corporation is a multi-million dollar project. We currently have two sites, with a total of over 200 hectares, so we're gonna put several hundreds of long lines in the tenure.

We are planning to grow many millions of scallops in there. I would say the most important production of shellfish product in Canada.

DES NOBELS Director, Area A, Skeena-Queen Charlotte Regional District

People really want to see responsible use in terms of the environment here, They want to see sustainable industry, industry that won't affect what we presently have so that we're building on what we have as opposed to removing from or watering down what we have so there is a great deal of concern over that.

The MaPP process, the Marine Planning Partnership...I have a little more faith in terms of the ability to at least implement it because it's a smaller plan. It's really between two governments, although communities would like to think of themselves as a third level of government within that structure also ensuring that that which we value the most is protected, and that's our access to the marine environment and the rich foods and tradition that it provides us.

DAVID LEASK Land & Marine Implementation Manager, Metlakatla Stewardship Office

This place is productive all year round. There isn't really a time where it takes a break that it would be really good to do any development. It's just important all year round for us. So it's highly utilized, not only by the Metlakatla, but by a lot of the First Nations throughout the whole North coast use the estuary here for various reasons.

ROSS WILSON Director, Metlakatla Stewardship Office

They call it their supermarket. They can go out there whatever time of the season to harvest, but if there are supertankers, either passing through there or anchored, which could be contaminating the region, nobody's addressing it. And that's where we have to address it.

So the bottom line is Metlakatla wants to be able to protect the lands, waters and resources so that their membership can harvest in perpetuity.

And that's what the Stewardship Program is doing, is to make sure that the childrens' childrens' children can go out and access that sockeye, or the seaweed, or that halibut, knowing that all this industrial activity is still ongoing. And that's our plan.

BRUCE WATKINSON Marine Program Coordinator, Gitxaala Environmental Monitoring

In the face of all of these proposed developments, we can't ignore the fact that we have unresolved rights and title issues with the federal and provincial governments. And really, in the end, I think that's where a lot of First Nations want to end up, with the ability to self-govern, with the ability to manage our resources as we did in the past, with the ability to determine what we want to develop in terms of an economy, what we want to protect in terms of certain ecological values, and how we want to evolve our culture.

North Vancouver Island 19:40 min

Narrator

We're off the coast of Northern Vancouver Island on the fishing vessel Nordic Queen with Captain and Chief Harold Sewid and his sons as well as Dallas Smith, President of the Nanwakolas Council. They are on a food fishing trip getting halibut and prawns for their community. We'll be talking with them about their vision for their territories and how the North Vancouver Island marine plan can help make this a reality.

Chief Harold Sewid

My name is Mumxux, my Chief name and Potlatch name. My Christian name is Harold James Seawid. I am a Hereditary Clan Chief from the Mamalilikulla-Qwe'Qwa'Sot'Em clan from Gilford Island.

When I told my grandfather that my choice was to be a commercial fisherman he said you could be a brain surgeon or you can be a ditch digger but as long as you love what you do and you do well at it, you'll have a great life. So I fished all of my life and I loved it all of my life, and it was a good life and it treated me well.

My crew consists of two of my sons and one of my son in laws and Tony, he's a very close friend, and so we consider him part of our family.

Norman Sewid

This is food fishing, food fishing for our band members. And they are trying to stop us from using so many traps, using less traps, but that doesn't make sense to me because there are so many band members and not enough prawns going to one trap, to feed a whole band.

Dallas Smith - President, Nanwakolas Council

We're a coalition of First Nations who are working together through land and marine use plans to build a self-governance model that will evolve over time to help our nations regain control over their traditional territories.

We started together with terrestrial planning in the late 90s. And understood that for the plans to complete, there had to be the marine component. And so over the last half dozen years, we've been working diligently with local government, marine stakeholders to develop the Northern Vancouver Island Marine Plan.

And, that's gonna be integral for us going forward when it comes to economic development, protection, food, social, ceremonial, fish issues, allocation issues. This plan is really gonna be the foundation for us going forward with our governance aspirations.

You know, colonization had brought our people out of our territories. But there's still Chiefs and leaders who still live in their traditional territories, and didn't care what government said. They said we'll repatriate our lands ourselves, and we'll rebuild our communities that you forced us out of. And so it's a tremendous story to see these communities re-establish themselves in a place where someone told them they couldn't live any more. So these people had these homelands that sustained them for thousands of years.

Norman Sewid

It's like the walkway that goes into the big house.

This is my grandfather's house from years and years and years ago. He grew up here when he was very little, little, young.

Dallas Smith - President, Nanwakolas Council

And then in the late '60s and early '70s, the government figured it was too hard to control us out in these territories. So they colonized us, and moved us into reserves and amalgamated our communities. And over the last 20 years, we've seen a lot of our leadership say "you know what, that's not acceptable to me anymore. I'm going to find a way to rebuild my community." And, they've really been integral parts of our planning process because they are the eyes and the ears out here. They're the traditional ecological knowledge. They know where the Loxiwe are, the clam terraces that have sustained our people. They know the best places to go for halibut. They know the safe ports to go to in a storm. And all those sorts of things. And so that's all part of the epistemology that has to happen in transferring that knowledge. So, they're really stalwarts and keepers of our customs and our traditions.

Chief Harold Sewid

The ironic thing is that when our reserves were allocated they were very smart parts of land because the government told our people you live off the sea not of the land, so that was very wrong, but now we're into the marine plan and it has great possibilities, to me they are almost endless - we can create different kinds of employment, That's what's really needed amongst my people. We need to have employment so we can give our people some self-respect back. They can stand and walk tall.

And that's one hard thing to see is when we have young people don't feel they have a future, and they take their own life. That's very hard to accept. I don't accept it. I've had my own family members. My brother-in-law, my nephew, and my cousin, all took their own lives. They hung themselves. All within five months, and that's not acceptable. And it's because they thought they had no future. They were wrong, but it's too late. Hopefully, we can keep going and give everybody that needs it some hope, create the employment that's needed. The best. It's something that I feel very, very passionate, strongly about. It hurts. Hurts deep down.

Dallas Smith - President, Nanwakolas Council

It's important to re-establish that tie between the youth and their traditional territories and get them to understand that they come from these magical places that don't have cable, that don't have video games, but there's this way of life that sustained their ancestors for thousands of years -

So part of our economic development plan includes working with the aquaculture industry, working on the existing management of salmon resources, ground fish resources, the processing of those seafood resources. We think there needs to be more value added to keep some of the jobs in the territory of where these fisheries are being taken from.

That's important to our people. It's important to our communities to have our people working in our communities.

We're looking at more ways to build sustainable economic development that lead to solid job creation. We've been working too much on temporary job solutions, and we need to really rejig the playing field to understand how we can make this a long-term success.

Narrator

The Nanwakolas Council is comprised of six member First Nations whose traditional territories are located in the Northern Vancouver Island and adjacent South Central Coast areas of British Columbia. Their Office is located in Campbell River.

Chris Roberts - Regional Economic Development Coordinator, Nanwakolas Council

My first task with the Council was developing a Regional Outcome Development Strategic Plan and naturally a lot of the sector areas that we focused on tend to be related to the marine economy: commercial fisheries, aquaculture, sustainable aquaculture interests, and marine tourism.

I was pretty excited to have this challenge or this task, and to be the one responsible to lead it, and I have to admit I am, I have somewhat of a bias. My family is five generations of commercial fishermen on the coast, and I believe that, you know, prior to contact in how our coastal communities live, the line of my family would have had that responsibility of managing the fish resources, of gathering, collecting, harvesting fish resources. As many of the people did in our community. But that's a strong connection that I've always felt to fisheries.

How do we increase First Nation participation in the marine economy? And I found I learned a lot, I didn't realize the extent to all the different sort of businesses, and even, subsectors within that catch-all of the marine economy from the transportation, renewable energy explorations, aquaculture, obviously.

There's a strong skill set over just experience of living in these areas, of knowing, you know, navigation routes. A lot of our people make great water taxi boat captains, tug captains, freight transport, tour guides, and eco-venture-cultural tourism. So what are those barriers that are in place, that are not seeing the full participation in those sectors? And that's been, those have been started to be identified, and we're looking at ways of how we can help change that.

Chief Harold Sewid

In front of the bow of the boat is a very well pronounced Loxiwe it's a clam garden. Loxiwe is, it means, the way the rocks were rolled.

Our old people rolled the rocks, down to the edge of the low, low water mark, and the wave action would put silt over the top of it, to build up a terrace so that the people could gather the clams from these beds, at a smaller tide, than they would normally have without the terrace there.

There is some 470-plus clam gardens that are identified in this area. And it's sustained a lot of our people, and there were times when the salmon runs were poor, so our people relied heavily on the clam gardens to keep them alive.

Another thing I'm very proud of is these clam gardens, some of them have been carbon-dated back to more than 10,000 years – 12,000, I was told. And that makes my people the first aquaculturists in the world.

Dallas Smith - President, Nanwakolas Council

And that's really been a focus of the marine planning process is it's a great way to introduce: "Hey, in the old days we did this. In the future, we want to continue to do this. What steps do we need to take now to ensure that we're going to be able to do that in the future? What knowledges do we have to pass down to various generations? What kind of capacity building do we need to do so that this is just something that goes on. It's not something that stops. We rekindle it. Stops. We rekindle it." Make sure that we have that even flow of capacity that goes on for future generations.

Norman Sewid

This one is a prawn, it has the white spots. This one is a side shrimp, it has white strips down this way. This one is I believe a tiger shrimp, it has the stripes going up and down and this one is what called a red shrimp, pink shrimp-red shrimp. These three here are shrimp because they don't eat meat and this is a prawn because he does eat meat.

Chris Roberts - Regional Economic Development Coordinator, Nanwakolas Council

In 2013-14, when I engaged our member nations on: "What are your key community well-being and capacity needs?" We developed a plan around that, and it was really exciting because it had this sort holistic framework of, sort of, five key areas that contribute to First Nations well being.

Culture, the strength and vibrancy of our culture and our communities, our connection to place, is so important. Community was one of those categories. And that has factors of our relationships with one another as a community, or even just more physical, like the infrastructure needs that our communities have to be functioning, and be able to provide for the citizens of the community. Health as far as our physical health, mental health, and our spiritual health. So, obviously there's going to be some overlap between these category areas.

Resource stewardship was a big one, and separated on its own because of the importance of managing our resources sustainably, so that they'll be here for future generations. And economic prosperity has been the other area that helps sort of tie it together. In that, we need some financial independence to be able to support our community's ability to grow and develop, and our government's abilities to manage their resources and to provide services to our people.

Dallas Smith - President, Nanwakolas Council

It's important for us to do a hard analysis check of the health of our ecosystems. We have fisheries watersheds that have just been destroyed. We have some that are near destruction. And so it's a matter of prioritizing which ones are fixable in the near term. Which ones are going to take some longer time to recuperate and bring around. And that's all part of our implementation plan. Of course, you know, that costs money. That's why we've had to work so closely with the other nations up and down the coast to build this implementation fund so that we can make sure that we're fixing parts of the territory all the way up from our territory up to the Haidas, across to the central coast guys to make sure that we're not just focusing everything in one area because it's politically convenient.

So there's a discipline that has to be struck amongst ourselves, but we believe that that was the same discipline that our forefathers used. These territories and the bounty that exists within them sustained our people for thousands of years, at probably 100 times the population levels that we have right now. So, we know it can provide if it's managed and taken care for well.

Norman Sewid

This is Village Island, this is the mouth of Knights Inlet. Deer Island is up here were we going, I think that's where we going anyway.

The halibut, this is the halibut all around through here. So we fished halibut right there where we stuck the longline for our halibut gear and right below there at the rock is where we put our prawn traps.

Dallas Smith - President, Nanwakolas Council

You know, we've developed these tremendous plans over the last half dozen years, and they're only as good as the implementation is gonna be.

So, we have all these visions about how we're gonna restore some fish watersheds, how we're gonna change how logging practices are done, and how it affects the marine environment. And so it's a matter of taking those relationships and implementing these plans so that we're actually having a positive gain when it comes to the ecological issues around our territories.

And we understand that there has to be a balance between the economy, protection, and those sorts of things, and so that's why it's important for us to work with the other stakeholders in the region.

Chris Roberts - Regional Economic Development Coordinator, Nanwakolas Council

You don't want to do a plan that's gonna sit on a shelf, that's not going to be implemented." That's very important. And I think that if the process is very engaging, and there's opportunity for different points of views to be heard, and people to come together, then that's how you create that energy, the commitment to see it through to the next levels.

The MaPP initiative has raised the profile, or raised the need to work together in certain areas and as far as some of the implementation activities coming out of that, that's what we see happening.

...really so important that the nations have found a way to work together, and in 20 years from now that there is a powerhouse of a commercial enterprise that is First Nations owned and operated enterprise - this corporate entity is doing a very good job at marketing the sustainable harvest of the commercial fisheries that take place in our territories and that's probably the biggest thing for me.

Not to overstate the importance of that are our nations and our members are also leading the work on the environmental monitoring and research that needs to take place to ensure that sustainability needs are truly being met now.

Dallas Smith - President, Nanwakolas Council

Some of the challenges we face when it comes to implementing our marine plans is still "decisions are made on the almighty dollar." And that's just a fundamental philosophy that we have to break away from, but it's not something that happens overnight.

And it's actually incumbent upon us as First Nation's leaders to play that role. To bring that balance to the environmentalists. To bring that balance to the industry. And make sure that they understand that there's a long-term game plan here. It's not about the next quarter profits, or the next fundraising

campaign. This is about a long-term plan to bring sustainability back to our communities, as it existed before contact.

It's no secret that the Great Bear Rainforest is one of the last majestic places left on the earth. And the Great Bear Sea is probably twice as majestic as that, And we've gotten enough people who are living in it, dependent on it, who agreed that it needs to continue to be a majestic place. And so that really puts us in a position of opportunity.

Herring Research 21:00 min

Charlie Mason

Hereditary Chief, Kitasoo/Xais'Xais Nation

This time the year is the start of our harvest season. The start of our harvest season usually starts with herring eggs. When the herring move into the "beach" to spawn we wait, watch, watch and as soon the start spawning we set up our poles, tie up one end to the beach, one end to an anchor out at sea and we fill out our poles with trees and put that kind of tree to the pole and leave it there for about 3-4 days to let the herring spawn on it. When it gets thick enough like that we pick it up to take home and we peel it and put it away.

Alejandro Frid

Science Coordinator, Central Coast Indigenous Resource Alliance

Herring is just a really key species. Not only from a cultural perspective, but from a whole ecosystem perspective. I mean, it feeds, you know, whales, salmon, I mean, feeds terrestrial mammals like wolves, and bears have come down during spawn. And then culturally, I mean, it's just tremendously important.

Karen Meyer, Producer, Great Bear Sea

These ones, can you eat the kelp with it?

Ruth Robinson

Yeah

Karen Meyer, Producer, Great Bear Sea

Do you eat it like this? Oh, wow! Delicious!

Title:

THE SPAWN IS ON

PACIFIC HERRING AND THE GREAT BEAR SEA

Karen Meyer, Producer, Great Bear Sea

Hi, I'm Karen Meyer, producer of the *Great Bear Sea* documentary. We're here on the Central Coast of British Columbia to witness the spectacle of the herring spawn and to meet with First Nations and scientists who are working together to save the herring.

What are herring. When do they come here? When do you see them?

Charlie Mason

Hereditary Chief, Kitasoo/Xais'Xais Nation

Well they are basically here all year around, but they just go to a certain spot to spawn. Like Kitasoo Bay is one of them. Also through the pass here. Years ago they used to spawn right down on the end of the island, all the way up to the top end of the island. That was years ago. There are things that happened, where they stopped spawning here, but the herring are still there, eh? Always around Easter time that they move in until they're ready to lay their eggs, you know, mill around the bay by the thousands. Go by the tonnage.

We got the sea lions out feeding, humpback whales out feeding, the cormorants, the eagles, the ravens, all along the beach waiting, waiting in the trees, watching, so it's a big change for them. Every one of them, they would grab a herring, eat it, go back grab another one, grab another one. So that's part of what we call a "harvest season." That's the start of it.

Markus Thompson

Masters of Resource in Environmental Management

Simon Fraser University

If you go out to KITASOO Bay during the spawn, you can see hundreds of sea lions, dozens of whales, and hundreds of eagles, the amount of wildlife out there is astounding. So the herring are a vital source of energy for the entire ecosystem, including the local First Nation population. And so, that's where my interest lies, is that it is a key part of the ecosystem, and if we don't treat it properly, if we don't fish it responsibly, then it has massive consequences. Not only on the people, but on the ecosystem.

Karen Meyer, Producer, Great Bear Sea

Markus and his team are collaborating with Central Coast First Nations to look at recent changes in the behavior of herring. Collaborative research such as this builds on First Nations traditional knowledge and the tools science can provide.

Markus Thompson

Masters of Resource in Environmental Management

Simon Fraser University

Where my project comes in is in Bella Bella, the spawn kelp fishermen, have been noticing over the past few years really deep spawns. Now herring typically spawn in the shallow, the intertidal, you can often see it on the shoreline at low tide.

But they have been noticing spawns that are as deep as 30 or 40 meters below the surface. And that's really uncharacteristic. It's not something that researchers or local fisherman have seen before. And, there are a number of reasons why this might be happening. And there are a number of consequences that could result in that.

Ernie Mason

KITASOO/XAI'XAIS Nation

Up in the shallow you got the surface current, where you know everything's moving back and forth, and you know that the sperm is fertilizing eggs. Whereas at 100 feet, you don't have as much current, you don't have the swells, so how much of those eggs are getting fertilized. How much of the them actually survive, anyway, right. That's one of the unknowns, I would say.

Markus Thompson

Masters of Resource in Environmental Management

Simon Fraser University

It could be temperature induced, so it could be a result of recent climate change or El Niño. We have warmer water in here now, and the herring may be diving deeper to find the colder water that they're accustomed to. It could also be a result of large aggregations of predators. If you have a large amount of predation on the surface, then the herring may dive deep to get away from the predation.

And, for the same reason, they might be doing that with vessel traffic. So that's another hypothesis.

Dan Okamoto

Postdoctoral Researcher, Simon Fraser University

And one of the challenges that we're facing right now is there's a lot we don't know about Pacific Herring in terms of how they move, how they behave as....are they one huge population? Or are they all very small pockets of populations that operate independently. Because we don't know a lot of those things, the assumptions about how we think herring populations operate, have very strong impacts on the kind of risks that are imposed by fishing. And so we use a combination of field methods and mathematical modeling to try to understand those tradeoffs between do we take a lot of fish and leave just a little? Or do we leave a lot and just take a little? And how do we allocate how the fishery use is executed in space and time. There is different kinds of people that use herring for different reasons and how do we balance the tradeoffs, the needs of those different kinds of people, and the ecosystem?

Charlie Mason

Hereditary Chief, Kitsoo/Xais'Xais Nation

Over time when it starts tipping, it gets to the time when it tips over and that's when they sort connect this with the herring. Because the herring tip over to spawn. That's the term they use. When they go into the kelp they spawn on their sides - that's when they watch the moon tipping over, coincides with the herring when they spawn they tip over onto their sides to spawn. That's one of the ways they connect, not having no calendar, having no type of GPS, it's just nature.

Markus Thompson

***Masters of Resource in Environmental Management
Simon Fraser University***

Herring typically live up to about nine years. And they'll spend their winters at really deep depths out in Hecate Strait, and offshore. When the spawning season comes around, they'll start swimming into these areas of the coastline and there are different locations that they'll return to. The same spots every year to spawn. It's remarkable how accurate the timing is. So for the last three or four years in Kitsoo Bay, herring have spawned starting on roughly about March 28, and that's exactly what happened this year. So, it's a really interesting phenomenon. Before they spawn, you can go out there and all the wildlife has showed up because they're expecting it.

Alejandro Frid

Science Coordinator, Central Coast Indigenous Resource Alliance

So there's three types of herring fisheries in this part of the world. The first one is the commercial roe fishery. And this is very industrial. They catch the fish before they spawn to extract the roe. So they're catching reproductive adults and they're killing them.

We also have what's called a commercial spawn on kelp operation, they're collecting only the herring eggs. But this is done in two ways. Some First Nations they do it what's called open ponding. So they're just setting the lines where herring are going to spawn, as in the food fishery. But just on a much larger scale.

And the other approach is to have the equivalent of basically a fish pen, in which they catch herring with the seine net, adult, put them into the pen, and they provide the kelp for them to spawn, and they wait for them to spawn, and once they spawn, they release the adults and collect the eggs on the kelp.

For their own food use and in a cultural context, First Nations go to spawning areas, prior to spawn, and they set hemlock boughs or kelp on lines at the bottom and then the herring come and spawn and the eggs collect on the hemlock boughs or the kelp, and they pull that up, and they're covered with eggs,

and that gets distributed in the community. There's the very strong cultural context to it, as well as tremendous nutritional value to that food.

And in their view, which is completely consistent with scientific studies, says that if we harvest just the eggs, rather than the adults that are about to reproduce, which is what the commercial fishery does, you have a much lower impact on the population.

Ruth Robinson

This is how they make it, they put rocks on there to keep it tucked under water.

Karen Meyer, Producer, Great Bear Sea

Oh that's a rock

Ruth Robinson

Yeah, they tie a rock on there.

Markus Thompson

Masters of Resource in Environmental Management

Simon Fraser University

A lot of these ideas that we were considering have largely been fueled by local people here. So they're here year round. They've lived here for their entire lives, and they have observed these changes over time. So they're telling us where they're observing this happening, and giving us ideas of why it might be happening. And it's that collaboration with us, Simon Fraser University and the Central Coast Indigenous Resource Alliance and the people here in the community that is allowing this project to happen. The local people are really key to this because we have to travel to some really remote areas out on the outer coast to find these areas, and to find where the herring are spawning, where they might be spawning deep. The local knowledge of where to go, how to find these places, and when we can go and cannot go.

For example, today it seems calm in here, but out where our experiment site is it's blowing 30 knots. And it would be impossible to get any work done. So it was the locals who gave me that information, and it's the reason that I've got a shore day today.

Ernie Mason

Kitasoo/Xai'Xais Nation

We're blowing 25 south east, won't be as bad, but if it's 25 north west, it blows right in the bay, stacks up the waves, when the tide was coming out you get big chop not as much fun.

Alejandro Frid

Science Coordinator, Central Coast Indigenous Resource Alliance

So Wednesday the forecast looks better. It's 10 to 20 going to light, and then it's crazy. It's light, light, light after that. So maybe we just

Markus Thompson

Masters of Resource in Environmental Management

Simon Fraser University

Tomorrow we're going to head out into Kitasoo Bay, and we're going to set up an experiment to test how depth affects herring eggs. And to do this we're going to place eggs that we harvest from the

natural spawn to three different depths in the bay. So we're going to put them at 30 meters, at 15 meters, and at 3 meters. To do this we going to have to have two dive crews out there. One dive crew is gonna be harvesting while the other dive crew is collecting the stuff from harvesters and putting it into these pre-constructed frames, and those frames will be lowered from the surface to the bottom, and we will collect those eggs at different intervals. So, I collect them just before they hatch, and then I preserve them, bring them back to the lab and I can examine them with a microscope and see how well they survived. If a lot of them have died. And we'll also have temperature, salinity and dissolved oxygen loggers on those systems.

Dan Okamoto

Postdoctoral Researcher, Simon Fraser University

Studying fish is like studying trees, except they're invisible, and they move," and not only are herring like that, but also studying herring is like studying the vast majority of the ecosystem. Right?

So there's all these interacting pieces that we have a very limited understanding of. And yet, human intervention is such that we'd like to try to simplify things so that we can manage it well. But in reality, management means considering all those different tradeoffs between all the different players in the system. And that's something we're just starting to touch the tip of the iceberg of, in the sense that we have data on some of these things, but we don't really understand how they interact. And how they're going to change in response to the impending stresses of climate change.

Clark Robinson Sr.

Hereditary Chief, Kitasoo/Xais'Xais Nation

We had a lot of strong winds hitting out there, but, we ran into rough water. We made it through there, everybody managed to get their stuff in, what they needed to get in. But what we brought in there is not enough for the whole community.

With the same amount of trees, I set, which was 12 in one area, would fill this whole bulk grid up, every bin would have been full if it turned out good. But, three boats that were there this morning only had two bins, like you see in mine. Charlie probably got two bins, the other boat had two bins, where we usually come in with four or five bins each, that's enough for the whole village to come down and take their share for the winter. But we're gonna have to run out again tomorrow to go try and set up again. Reset, the trees to see if we get enough for the village. But, I doubt it. But right now we're just chasing the spawn that could be moving. Usually the elders tell us when the spawn is in one area, it gonna stay there, but once it gets disturbed by everything. I told my son on the way in, four things bothering the spawn: The first one there was the whales. There was probably about a dozen humpback whales in there. Then you got about three or four pods of sea lions. Then you have the fisherman that's out there doing the draw of kelp, and then you've got us. Four things bothering the herring. So that's probably the reason why it didn't turn out as well. But maybe the stocks are weak, too. That could be another thing we just gotta look at it, and then talk about it amongst ourselves and see what went wrong and what we could do a little bit better next year, I guess.

Alejandro Frid

Science Coordinator, Central Coast Indigenous Resource Alliance

What's rather exciting about all this work that I'm involved in is that it's not someone with an academic background like me coming into a place and bringing my own ideas, and just making my own moves, and making decisions as if I knew any better. It's about listening to people, have been living in place for many generations, have a very long-term perspective, who have an intimate relationship with their

resources that nourished them culturally and as well economically, nutritionally, and saying, “Hey! We’re noticing these changes. We understand a lot of this from our own perspective, but what can you as a scientist bring to round out our understanding better?” And that’s a very enriching experience because it’s the synergy of the old traditions and all of their wisdom. And new tools that science can contribute. It just complements our understanding as well. And it’s very gratifying where that requests for scientific research comes from the First Nations themselves.

Clark Robinson Sr.

Hereditary Chief, Kitasoo/Xais’Xais Nation

Make sure to respect the area, not to ruin it for the future. Make sure that we have enough goin’ around there, all of them. Not to overtake. Not to waste. Not to be disrespectful to any of the animals. They’re all there to feed as well as we’re gonna feed ourselves. Make sure that we’re looked after well with whatever we have left there for the herring.

Alejandro Frid

Science Coordinator, Central Coast Indigenous Resource Alliance

So what different First Nations are trying to set up are areas that are exclusive for their harvest of herring eggs So, they’re zoning areas that they want to keep just for their own harvest of eggs, and they’re saying when there’s enough herring coast-wide we can consider commercial roe herring fisheries to open outside those areas. But there has to be a minimum threshold of abundance.

We’re trying to achieve a positive and collaborative relationship with the Department of Fisheries and Oceans, in which they contribute their substantial scientific expertise, we contribute scientific expertise and indigenous knowledge and indigenous laws and come up with a co-management structure that promotes access to this very important resource by First Nations, but also that promotes the conservation of herring in the whole ecosystem. If that is achieved that we can contribute to improved management so that other non-indigenous fishers can access herring as well.

Karen Meyer, Producer, Great Bear Sea

In addition to herring recent collaborative research with First Nations and Universities includes kelp and otters, bears and salmon, crab, rockfish and birds.

Doug Neasloss

Chief Councillor, Kitasoo Band Council & Resource Stewardship Director, Kitasoo/Xai’Xais Nation

We don’t want to be one of those people that say, “We used to have salmon here, we used to have halibut, we used to have herring, we used to have eulachon,” that’s not something we want to do. We want to be very proactive. We’re prepared to do whatever it takes to make sure we protect these resources and make sure things are done in a sustainable way. We’re working on marine planning with the province of British Columbia, so we’ve getting involved with processes like MaPP, we’re doing a lot of science work, incorporating a lot of our traditional ecological knowledge, in term of the management. Because we want to protect those. You want to make sure that people have the opportunity to still harvest those resources in the future. So I think just being able to be a part of the decision making, I think will hopefully bring better sustainability to our coast.

Intertidal Walk 9:20min

Ali Pearson, Interpretation Officer, Gwaii Haanas National Park Preserve, National Marine Conservation Area Reserve, Haida Heritage Site

Today it will be a lot of fun because we take the kids out to take a peak at the intertidal area. That boundary between the land and sea is always moving around and the intertidal area is where that happens and today we take the kids out and see what we can see and let them find some interesting things on the beach.

Jody Bissett, Interpretation Coordinator, Gwaii Haanas National Park Preserve, National Marine Conservation Area Reserve, Haida Heritage Site

Can everybody look out at the ocean. Can everyone see the ocean way down there. So right now is what we call low tide. So the ocean is way out there. What happens, does anyone know what happens when there is high tide? So maybe everybody can stand up and sort of put on your detective glasses and can you guys see or guess where the tide, the ocean will come up to at high tide? Can you use your detective glasses to see if you see any clue along the beach that might tell us how high the water comes at high tide?

When we're on the beach and can sort of can see this line of seaweed and sticks and debris, this is a good clue of how high the tide comes at high tide.

So we have this amazing space between high tide and low tide. So this area between high and low tide is called the intertidal zone. And the intertidal zone is this amazing area we can explore, we can harvest food from, we can get a glimpse, a peak into the ocean world and we can and we actually can walk through it. But the intertidal zone is also an area people can harm when we're not careful.

This is a great beach to explore and see a lot of different habitats, a lot of different creatures in a small area. So when you look out you see the green, that's eelgrass. So it's not seaweed, it's a true plant and eelgrass is an incredible important habitat for a lot of different marine creatures.

Often people call eelgrass meadows the nurseries of the ocean. So this is a very important habitat. It's also a habitat that's very easy for people to disturb. So you can imagine pulling boats up or anchoring boats or building docks, the eelgrass because it's a true plant, it has a root system, once that's disturbed it's not necessary gonna grow back. And because it's sort of the nursery of the oceans you can imagine the repercussions of harming those nurseries, you'll have less babies, less successful reproduction, less creatures in the ocean. So a really, really rich area.

Are you guys ready to do some exploring? We've done a lot of talking. We need to be respectful, we need to be responsible and we need to be ready to learn. So let's see what we can find.

A crab! But now watch this! It is empty, there is no crab in the shell! So where do you think the crab went? It grew itself a new bigger shell and because the shell can't grow the crab actually backs itself out of the old too small shell and it grows a much bigger one.

So what I'm going to look for is a moon snail. Oh you found a moon snail?!

What do you think this is?

Kelp!

It kind of looks like kelp. Other guesses?

That is a moon snail casing. The moon snails lay their eggs inside these casings.

Oh the moon snail casing. I'll try to find a real moon snail because there were a bunch here yesterday.

Can you see this poking out of the sand? You know what that is? Be gentle! This is a giant clam called a gooey duck. Oh, here is another one. We need to walk softly and do you see this? They can camouflage very well. That means they can hide within their environment. So those are clams that are under the sand. So as we're walking along there are actually hundreds and hundreds of animals under the sand, under our feet.

Jody Bissett, Interpretation Coordinator, Gwaii Haanas National Park Preserve, National Marine Conservation Area Reserve, Haida Heritage Site

We all are stewards of the earth and it can be a big job of thinking of being a steward of the entire earth, so how I like to think of it is that I like to pick a special place I'd like to be steward of. And maybe that's your backyard, you can keep it clean, you can look after it. May that is a special section of beach, you can go to and check on the plants and animals.

What kind of animal is this?

This animal is called a Moon snail. You can see its big snail shell. If you like you can touch the skin of the moon snail. And tell me what it feels like.

Slimy! Slimy!

It likes to cruise around with this fleshy, gooey, slimy foot. And it actually goes under the sand and it hunts for clams. So this animal likes to eat clams. And have you guys ever seen a clam shell that has a hole in it like that?

So how do you think the moon snail makes that perfect circle in the shell to eat the clam?

Digging?

You think it digs in?

Drills!

It drill, its a great word, It drills.

Moon snail have this special appendage called a radula. It's really really rough like a drill and they actually will drill that hole into the clam shell and then they will drink the clam out of the shell. So when you find shells like this with a hole in it you know it's been eaten by a moon snail.

Jody Bissett, Interpretation Coordinator, Gwaii Haanas National Park Preserve, National Marine Conservation Area Reserve, Haida Heritage Site

Because its totally overwhelming to think about the entire planet we might pick little areas, there might be a small section of forest that is very special to you and you can be the steward of that spot. You can go and check on the plants and animals. You can walk carefully and observe what's living there and growing there. You can pick up garbage you can see. You can tell other people how they can be stewards in their own special place. And if everybody picks a section of beach or a little bit of forest and looks after it, all of sudden we have this a are taking care of and are stewards for. The plants and animals can live and thrive. And in little ways we can make sure we're protecting the entire planet because if everybody in the world picked a special space or place to be the steward of then we would be looking after the entire world.

Cumulative Effects 20 min

Karen Meyer, Producer, The Great Bear Sea

We're here on the North Coast of British Columbia standing alongside the Skeena River estuary. This region is facing some of the largest proposed developments in North America and this week we'll be talking to people who are taking a groundbreaking new approach of how we look at the potential impacts. So rather than looking at one project by one project by one project they are looking at the cumulative effects of how all these projects may have an impact on both the ecosystem and the people who live here.

Rina Gemeinhardt

Environment, Lands and Referrals, Kitsumkalum First Nation

Kitsumkalum territory goes from Terrace all along the Skeena, over to the coast. It used to always be, forestry and fisheries, and maybe some tourism. People would come and fish on the Skeena. And all of a sudden from all directions, we are being inundated by pipelines to feed liquefied natural gas plants. With that all of a sudden came other things as well, like a refinery, somebody's talking about. Huge mega projects in wind power.

Nicole Wallace

Consulting Biologist, Kitsumkalum First Nation

We've got, at this point, five facility projects, and two major pipelines coming into that area. And even if just one project goes through, you know, we are talking 6,000 people to come into a very small area to construction over five years for a facility. You know, different workers, sets of workers. Another 3,000 or so for pipeline, 6 for facility, and that's just one. There's five proposed out on the coast of Rupert, there's another three in Kitimat at this point, it's that scale. And people just need to try to wrap their head around that scale of things.

Rina Gemeinhardt

Environment, Lands and Referrals, Kitsumkalum First Nation

Right now, there's no holistic approach to any, anything really. Be it socio-economic, or environmental. Nothing is looked at as a package. A holistic package. So cumulative effects, I think, is a tool to come up with: "How does this system, a holistic system, gets impacted? And how can we measure it? And how can we make sure that we know going into the new project what is going to happen, cumulatively?"

Nicole Wallace

Consulting Biologist, Kitsumkalum First Nation

And then there's all the other factors to consider. I mean, we've sort of focused just on the projects, and their effects, but the other things in cumulative effects. There's those things that are extraneous, like climate change, which is a big one. And, it can't be sort of left out either.

Rina Gemeinhardt

Environment, Lands and Referrals, Kitsumkalum First Nation

It's all a steep learning curve. What we're finding is not only are we completely inundated and unprepared for the onslaught of projects, we find that the federal and provincial government are unprepared. They did not organize themselves in a way that they could address mega-situations like this. How can we all get together and talk about these things? Look at all the environmental issues we need to talk about. The economic issues. The social issues.

Nicole Wallace

Consulting Biologist, Kitsumkalum First Nation

So some of the initiatives that we've been participating in include the federal, we're talking about, it's called "Cumulative Effects Monitoring Initiative." It's being led by Environment Canada and Climate Change. We've pulled together some of the federal family – Fisheries and Oceans Canada, Natural Resource Canada. And then at this point it's been, not limited, but included the Tsimshian Nations. So those that have interest on the coast. That's Kitselas First Nation, Kitsumkalum First Nation, Metlakatla, Lax Kw'alaams, and Gitga'ata and Kitkatla.

Taylor Zeeg

Advisor, Cumulative Effects Management Initiative

Metlakatla Stewardship Society

Basically, cumulative effects are the combined effects of past, present, and future activities on the things that people care about. In our case it's what the Metlakatla membership cares about. So the starting point for us was going through a process to understand the priorities of the membership given the development context within the territory.

One of the Metlakatla priorities is, we called it "food, social, and ceremonial activity." We loosely define that as hunting, fishing, gathering, social events, cooking, eating. So it's a broad spectrum of things. And trying to understand to what degree people are participating in these activities. And is that level of participation being negatively or positively affected by the development activity that we're seeing in the area.

So, that would have been something that sort of fits in the cultural category, but in the case of at least Metlakatla First Nations it has implications for health, economy, and social well-being as well.

Metlakatlas always taken economic development very seriously, but it's always been said "never at the expense of stewardship." So there's all this stuff happening and the environmental assessment process tends to be focused on a single project. There wasn't, it's not well suited to address the relationship amongst different projects and the effects that can result. That's where Cumulative Effects more steps in.

David Leask Jr.

Land and Marine Implementation Manager, Metlakatla Stewardship Society

We're starting to gather the baseline. Trying to get a better picture about what state the entire zone is in, in terms of a holistic view.

We're at one of the clam gardens in Metlakatla pass here. The wall is about 2 feet under the water right now. But what it is exposing here right now is the terrace behind it. They did testing on it, carbon dating, and this one was one that was abandoned 2000 years ago. The forest looks natural back there but there is a village in there.

So we zoned this area as a Special Management Area in our marine use plan. An area that we as Metlakatla people want to fully manage. As Metlakatla people we did not just want protection in the area, we want full stewardship and management authority out there so that we could create our own

opportunities out of these areas and kind of manage them holistically and not just viewing them as a conservancy but as an active stewardship area where we enhancing, revitalizing, we're educating and we're creating opportunity for our people here.

Taylor Zeeg

Advisor, Cumulative Effects Management Initiative

Metlakatla Stewardship Society

Ideally what you want to have in place for the cumulative effects management system is that you know your tolerances ahead of time. And so, when a new project comes along, is it bumping up against that tolerance? Or is there lots of room within that? So, limits and tolerances, and knowing that ahead of time, that's what makes it different. And, then, if a project comes along, and starts to impact something beyond that tolerance, well, that's a whole conversation you need to have about mitigate, avoid, manage, or offset. And it's an opportunity for decision makers to get really engaged with good information.

Caroline Butler

Heritage Research Coordinator, Gitxaala Environmental Monitoring

So working with community members and working in collaboration with other nations, we have identified a long list of values. Gitxaala people harvest probably close to 100 different species from the territory. So, we've identified species of concern. We've identified critical habitats. We've identified cultural values. And, it's a case now of creating the indicators for being able to monitor those values and the impacts on them.

So, wake, for example. The community members have a lot of concern about the impacts of a wake from tanker traffic. So, harvesters out in a small speedboat, what that means to their safety, what that means to their gear, what it means to the species on the beach, the clam beds, what it means to boats on the beach, and people on beach. What it means to the marine archeological sites, the coastal archeological sites. So looking at the speed of the vessels and the size of the wake, the consistency of those impacts over time as the traffic increases, and how that can be managed, or mitigated, or stopped.

Bruce Watkinson

Marine Program Coordinator, Gitxaala Environmental Monitoring

It's very easy for one project to come in, and Mr. Industry to say, "Oh, we're not going to have an effect on the environment. We're not gonna have effect on your culture. We're not gonna have effect on your social values."

Well, when they start having two, or three, or four, or five of these projects, the additive effect, the cumulative effect, of those projects, it needs to be examined. Both in a short-term perspective and, more importantly, I think, in a long-term perspective. What effects are these projects, as a group as a whole, what effect are they having on our environment and our resources? And our culture.

First Nations want to take the lead on this. We think we have a plan in place to start addressing this. And we have talked to the provincial government. We have put objectives and implementable items into the MAPP plan.

We're working as individual First Nations. We're working collectively with our neighbors to deal with LNG, to deal with marine shipping, to deal with all those issues like safety, wake, underwater noise, protected habitats, anchorages, invasive species. We're dealing with those in other arenas, and that include the federal government. We've had as recently as a month ago, we've had some really good conversations with ministries – Environment Canada, Transport Canada – and promises from ministers to work with First Nations on addressing some of these issues. Including continuation of the moratorium on crude oil shipment in British Columbia waters.

David Leask Jr.

Land and Marine Implementation Manager, Metlakatla Stewardship Society

So this is one of our other village sites. It's one that was abandoned during the time of European contact. So it's kind of a recreational beach and our graveyard is here. It's kind of sensitive in that regard. There's quite a bit of erosion on this side, so we like to come here and monitor the beach once in a while if there's any artifacts or even potentially human remains because this whole thing was a graveyard so we had gravestones that had been eroded out of the shell midden up here.

We have a couple of places in Metakatla pass where erosion is happening, it seems like quite rapidly. So the cultural remain is the shell midden. Most of the things we find are things like broken tools but we're also finding a lot of animal and fish bones.

But the other thing with all these developments is that the pass is one of the only ways in and out of Prince Rupert harbor. So just boat traffic alone, whether we're talking about industrial traffic or recreational traffic, it's all going to go up. So we have more people here and more wake, more wash, that's gonna disturb this even more and make this erosion happen faster.

We'd like to at least understand what's going on here before that pressure comes. But yeah, the main thing is that vessel traffic will have the biggest effect on this.

Nicole Wallace

Consulting Biologist, Kitsumkalum First Nation

Probably of the biggest one that comes up from First Nations' perspective is access. Access to the resources. Access to getting to their fishing spots. Getting to the vegetation or marine vegetation harvesting areas. Cockles, clams. You know, are we gonna still be able to get to those places? This comes down to First Nations governance. It's, you know, this is where we traditionally went. This is our spot. You know, you can't tell us: "Well, you could probably go next door if you like. This isn't the place anymore." That's not the way it works. You know, "Somebody else has that spot," and then we have to ask permission, and now suddenly there's a change in our status around that. So, there's a lot more to it, than: "Here, go over there," sort of thing. So access is probably one of the bigger ones.

Caroline Butler

Heritage Research Coordinator, Gitxaala Environmental Monitoring

So, we have an LNG project that's proposed. Have a trestle over an eel grass bed where there are juvenile salmon and crab. We have another project proposed in an area where there are 50 archeological sites. And then we'll have tankers coming through in the commercial fishing grounds

where people make a living, so there are multiple potential impacts to people's experience of the territory, their ability to harvest resources, their ability to make a living.

Our office has done climate change research that's already showing the sensitivity of particular species, such as seaweed, to climatic shifts and change, and to add other forms of impacts on top of what's already happening is a concern to people. Some of these species are very sensitive. Herring is extremely sensitive to noise. Gitxaala people always managed noise impacts in herring spawn areas, and so adding tankers to the territory makes a big difference in terms of the underwater acoustics. So that's a key concern as we approach the cumulative effects monitoring.

So right now people can go out in a small speedboat and they may not see another vessel while they're out harvesting in their territory. Or they may only see the odd fishing boat. But they're going to go out in those small speedboats and be dodging tankers down Principe Channel if the projects are approved. That changes the experience of your territory. It changes the experience of learning about harvesting from your uncle, if that's what you're doing. So those impacts could be huge on the way people experience their place in the world. And their ability to actually put fishing nets across the channel, or their ability to pull their boat up on the beach and dig clams. And those are harder to measure, but we're looking for ways to do that because those are changes to Gitxaala lifestyle and culture that are as major as the air quality concerns and the impacts on herring spawn as well.

Taylor Zeeg

Advisor, Cumulative Effects Management Initiative

Metlakatla Stewardship Society

These are the things that make people's lives work living, I think. If they have access to good food, and a healthy Butter clam population, and the ability to fish for Chinook, and their kids can go to school and have high school completion rates that are acceptable, that just makes for a good life.

The main point of cumulative effects is to maintain the condition of things people care about, in good condition. And, if the arrow starts going in the wrong direction, what it's supposed to do through management regime is inflect the arrow, turn it in a different direction. So, if it's going into a "danger zone," we'll call it, there should be a management regime in place associated with that zone. So that's the whole point of cumulative effects is try to keep things in the "good" zone. The happy zone.

Bruce Watkinson

Marine Program Coordinator, Gitxaala Environmental Monitoring

Some of the questions I grapple with, that keep me awake at nights is, you know, are very basic questions. You know, how much is too much? You know, how much industrial development can this area take? And where is the proper places for some of this development? You know, we have proposals that are, in the Skeena estuary, right, and Skeena River is a world-renowned river, and there's still, ah. It's the second-largest salmon-producing river in British Columbia. It's very important to our culture, to our people for economic reasons. And so, some of the questions are "Why are these LNG facilities so close?" "Why are they located within Skeena estuary?" "How much is too much?" "How much development can this area handle?" "How much is too much for our people?"

On the same hand, we wonder “What are the economic opportunities for our people, our younger people?”

Caroline Butler

Heritage Research Coordinator, Gitxaala Environmental Monitoring

This is a really important time. And it's an important time for everyone to be really diligent about what happens here. There's been a lot of change here, and a lot of impacts over the last 150 years, but people have been able to maintain their way of life, and protect their territory, and protect their culture, but this is a different level of threat. So, it's really important to plan it well, and trace out all the potential impacts, and some of them are more clear. Like clear out the eel grass. There are very clear, ecological impacts to that loss of habitat. But, what's more difficult to trace out, but equally important, is to understand how the population increase, the rise in the price of housing, the increased traffic, the size of the wake down Principe Channel, what that means to how people feel about their territory. How they are able to manage the resources.

Taylor Zeeg

Advisor, Cumulative Effects Management Initiative

Metlakatla Stewardship Society

So key to us is the management of cumulative effects. And put it right in our word. Right in our title. So it's about setting up a program. Not a project, a program to manage cumulative effects. So it goes on and on and on, it never stops. It just becomes part of the way our resource and environmental management is done. It's a new era. And there's all these opportunities to do a better job of stewardship in the face of all the development activity that's going on.

Bruce Watkinson

Marine Program Coordinator, Gitxaala Environmental Monitoring

We might not get this chance to enter into benefit agreements with companies again. So, there's a large responsibility for our nation to make sure that these agreements do have long-term benefits for our people. But at the same time, do not go over the line in terms of compromising our culture, our social values, and our environment.

Clam Gardens 1:45 min

**Dr. ANNE SALOMON Marine Ecologist, Simon Fraser University
MaPP Marine Advisory Committee**

We are here on Quadra Island, in Waitt Bay, and in this bay alone right here, there are 49 clam gardens. Clam Gardens are prehistoric rock walls that people made in ancient times to, we think, increase the productivity of clams. And, what you can see right here is one of the rock walls. So if you look at the dark strip in the water, that's the rock wall. So, people rolled, as we hear from elders, rolled rocks down to the edge of the water at low tide to make these walls. And here we are at high water, high tide, so you can see the clam garden's flooded. So the clams right now have their siphons out, and they're filtering phytoplankton from the water, but it's this clam garden structure that creates like a terrace, and what we're doing here today is we're picking up an experiment where we're actually measuring the growth rates of the clams to ask "Do you get faster-growing clams and more clams in clam gardens than non-clam gardens?" So really how did people actually perform these ancient forms of mariculture?

We have all these little baby clams that are in a mesh bag that my student Amy and colleagues carefully put little tags on, little vinyl tags, that have numbers on them. And, we've got the length and width and weight of these tagged clams, which we are now going to retrieve to see if they grew any bigger, and if they weigh any heavier.