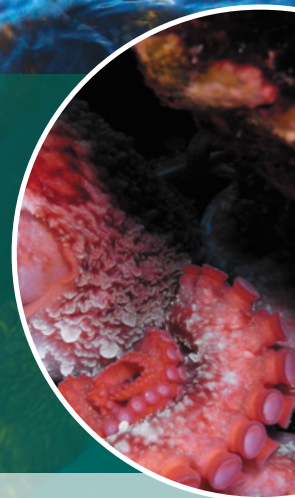


October 2016

CHN MARINE PLANNING PROGRAM NEWSLETTER

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Kii.ngaay Taang.aay Saltwater News

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Stef Olcen

More Marine Protection is Important

A global movement to protect the marine environment is beginning to gain momentum. As the values that humans gain from healthy marine ecosystems is increasingly recognized - from the seafood on our tables to the removal of one quarter of global carbon dioxide emissions - more and more countries are working towards setting aside large swaths of the ocean for protection from harmful human activities. And it is happening fast: in 2006, only an estimated 0.65 per cent of the world's ocean was protected. Since then, there has been nearly a fourfold increase in marine protection, with an additional 10 million km² of new marine areas designated.

In part, this shift has been spurred on by international targets for the protection and enhancement of biodiversity set at the tenth meeting of the Convention of Biological Diversity held in Aichi, Japan, in 2010. Target 11 stipulates that by 2020, at least 10 per cent of coastal and marine areas, particularly those of high ecological value, would be "conserved through effectively and equitably managed, ecologically representative and well connected systems of

protected areas . . . and integrated into the wider landscapes and seascapes." 168 countries, including the government of Canada, agreed to meet these targets. However, as of 2016 only 1.3 per cent of the coastal and marine areas within the Canadian government's jurisdiction have been designated with any form of protection.

As part of their election campaign, the Trudeau-led Liberal Party of Canada pledged to increase the amount of Canada's protected marine and coastal areas from 1.3 per cent to 5 per cent by 2017, and 10 per cent by 2020. The Party also pledged to work with the provinces, Indigenous peoples, and stakeholders to co-manage the oceans.

This past December, the federal government confirmed its intention to meet the Aichi target and committed \$81.3 million over five years to federal agencies to support marine conservation activities, including the designation of new marine protected areas. In March 2016 Prime Minister Trudeau and

U.S. President Obama re-affirmed their countries' shared goal to "achieve and substantially surpass" the 10% target as part of the U.S. – Canada Joint Statement on Climate, Energy, and Arctic Leadership. To reach this target in Canada another 525,000 km² of coastal and marine areas will need to be protected over the next six years— a monumental task, by any calculation.

On the west coast, planning for a Marine Protected Area network is underway in an area known as the Northern Shelf Bioregion – one of twelve marine bioregions across the country. The Northern Shelf Bioregion runs from northern Vancouver Island to the north and central coast and out to Haida Gwaii. The planning process will include government-to-government engagement with Indigenous Nations, including the Haida Nation, and

consultation and information exchanges with marine stakeholders, coastal communities, and the public.

The Haida Gwaii Marine Plan provides recommendations for protection management zones or PMZs within the Haida Gwaii planning area. The significant amount of work undertaken during the marine planning process – including the assembling and analysis of baseline data, the spatial identification of social, cultural, economic, and ecological values, identification of current uses and activities and future economic opportunities, and the recommendation of management objectives to protect values and promote economic opportunities in the Haida Gwaii area, is expected to contribute to the Northern Shelf Bioregion MPA network planning process.

MARINE PROTECTED AREAS HAVE BENEFITS

Marine protected areas may contribute to the protection of marine ecosystems by providing harvesting refugia for commercial species, protecting key habitats for spawning, juvenile rearing and feeding, protecting migration corridors, or assisting in the development of conservation-based fisheries management. There are important benefits for people as well. MPAs have been shown to enhance marine tourism, protect cultural heritage, and increase research and monitoring opportunities. Over time, large marine protected areas with fisheries restrictions have been shown to provide a "spillover effect" in adjacent areas.

MORE PROTECTION FOR MPAs?

In Canada, marine and coastal areas are protected in different ways, including federal, provincial and Indigenous designations such as the Haida Heritage Sites in Haida Gwaii. But these areas are not necessarily equally protected. The level of protection in marine protected areas range from very high (no extractive activities permitted) to moderate and low levels of protection (some to all extraction activities permitted). A recent report by Canadian Parks and Wilderness Society says less than a tenth of the area within *federally designated* Marine Protected Areas (MPAs) qualify as "no take" zones, meaning that they are closed to activities such as oil and gas extraction and commercial fishing. The 2015 report concludes: "the level of protection for these special places that are intended to protect our most precious marine species and habitats are weak, and too many harmful industrial practices are allowed to continue even after an MPA is legally designated."

Haida Marine Traditional Knowledge 2.0



The Haida Marine Traditional Knowledge Study relied on the dedication of many individuals, including fifty-six Haida who shared and verified their marine knowledge with the CHN Haida Fisheries Program. Photo Credits: Melinda Pick, Russ Jones and Dolly Garza.

This is a HOTT topic. The Haida Oceans Technical Team has a new project underway to better integrate the results of the 2011 *Haida Marine Traditional Knowledge Study* into Haida Nation decision-making processes.

The study to research and document Haida culture, traditions and knowledge about the ocean was started in 2007. Fifty-six Haida shared their knowledge of food fishing and gathering areas, seasonal harvest patterns, sites of cultural and historical importance, and observations about species abundance and population trends. More than 4,000 locations and 150 marine species were recorded, with oral accounts and first-hand observations dating back to the 1920s.

To deal with all this knowledge, the CHN has hired Geomemes to develop a database. Geomemes has developed many traditional knowledge databases and other marine resource data management systems for other Nations, including the Wuikinuxw, Nuxalk, Heiltsuk and Metlakatla.

The goal for the project is to make it easier for CHN staff to retrieve relevant Haida marine traditional knowledge to inform decisions being made that affect the marine area. The knowledge contained in the database is expected to be of particular value for:

- Tenure and resource management decision making;
- Marine planning; and
- Title case work and other legal initiatives by the Haida Nation.

Access and security of the knowledge in the database will be managed on a case by case basis, depending on the CHN staff person's position and needs. Additional security will be put in place to ensure that the knowledge remains private. The identity of individuals will be protected in the database so that people who shared their knowledge cannot be identified.

The Haida Marine Traditional Knowledge database is expected to be up and running by the fall of 2016.

SMALL BUT DEADLY

Meet Haida Gwaii's Aquatic Invaders



Lynn Lee

The Chain Tunicate (*Botrylloides violaceus*) was recently introduced to Haida Gwaii waters. It has since been detected at the Masset dock, in Skidegate Inlet, at Langara Island, and at the Bischof Islands. Invasive species of tunicates may outcompete other organisms for food and space, and pose risks to aquaculture, fishing and other coastal and offshore activities.



Department of Fisheries and Oceans

The Star tunicate (*Botryllus schlosseri*) was recently introduced to Haida Gwaii waters. So far it has been detected at the Masset dock.



Department of Fisheries and Oceans

Japanese Skeleton Shrimp (*Caprella mutica*) are relatively large (50 mm) amphipod crustaceans from eastern Asia. The species is now found in Haida Gwaii waters, including the Masset dock, Skidegate Inlet, and Cumsheewa Inlet. This species are often found in large numbers on infrastructure such as buoys and shellfish aquaculture equipment. There is some evidence to suggest that they compete with mussels for food and space.

...continued from page 4 (Haida Gwaii's Aquatic Invaders)

Haida Gwaii has its fair share of invasive species, some of them are all around nuisances, such as the raccoons and rats that lay waste to seabird colonies, while others like the Sitka black-tailed deer have had a mix of impacts - some negative (reduced vegetation cover and plant species richness) and some positive (charred venison backstrap with horseradish cream sauce, anyone?).

A species is considered "invasive" if it meets two criteria. First, it must be an alien species, which is any species that is not native to the area. Second, it must have negative ecological, social, and/or economic effects in the area that it has invaded.

There are over 30 alien marine species in the waters of Haida Gwaii, but most do not seem to have a significant negative impact. A few of these alien species may be detrimental to Haida Gwaii, but we do not know enough to understand their impacts. These potentially harmful aliens include Japanese skeleton shrimp (*Caprella mutica*), Japanese ogonori seaweed (*Gracilaria vermiculophylla*), and Japanese wireweed (*Sargassum muticum*). However, the aliens of most concern to us are two species of invasive tunicates (also known as sea squirts) that were recently introduced to Haida Gwaii and that are known to cause significant ecological and economic impacts.

While there are some native types of tunicates in Haida Gwaii, the extensive, gelatinous and brightly coloured organic mats created by the recently introduced Chain tunicate (*Botrylloides violaceus*) and the Star tunicate (*Botryllus sclosseri*) pose significant risks to the marine environment. Both species spread quickly, smothering native seaweeds, barnacles, shellfish and anything else in their path. These species of tunicates are also known to disrupt shellfish aquaculture operations by growing over cages and other infrastructure, creating a significant economic cost.



These two types of tunicates have been detected in Masset and Skidegate inlets and around Langara Island (Egeria Bay) and the Bichof Islands in Gwaii Haanas. In a recent survey of the Masset and Queen Charlotte docks, the Haida Fisheries and the Haida Oceans Technical Team found significant growth of the Chain and Star tunicates just a foot below the low tide line. Tunicates have also been found growing on the hulls of boats moored at these locations.

As part of implementation of the Haida Gwaii Marine Plan, the Council of the Haida Nation and the Province of BC will be working with the Fisheries and Oceans Canada, Gwaii Haanas, and other agencies to develop a strategy to prevent the introduction of new aquatic invasive species and stop the spread of species that are already here. This will include an expanded monitoring program, and a survey of vessel traffic.

There are a number of other invasive aquatic species that pose a risk to Haida Gwaii but which have not yet been recorded here. Understanding the way a species spreads is a good first step towards controlling an introduced species. But in some instances, like the European green crab (*Carcinus maenas*), the spread occurs naturally by larval dispersal once established and is therefore not controllable.

Understanding how aquatic invaders that are already present in Haida Gwaii spread from place to place is also important. The invasive tunicates are particularly abundant at dock sites and can spread on the hulls of boats. They can also be spread by gear from shellfish aquaculture and fisheries.

KEEP AN EYE OUT FOR ALIENS

The Chain tunicate is impossible to eradicate once it become well established like it is in Masset Harbour and Skidegate Inlet. However, if we are fast enough in detecting it in a new area, we may be able to eradicate it before it becomes established. Early detection is key, so keep your eyes peeled for any invasive tunicates.

Please contact Stuart Crawford (stuart.crawford@haidanation.com or 250-626-3302) if you come across any of these listed invaders in a new area of Haida Gwaii.



The European Green Crab (*Carcinus maenas*) has not yet arrived in Haida Gwaii waters, but recently made it as far north as Bella Bella and is considered a likely candidate to invade Haida Gwaii. Green Crabs may be small (up to 3 inches wide across the back of the shell) but they are highly effective predators that feed on a variety of intertidal animals, including oysters, mussels, clams and juvenile crabs – so effective, in fact, that they frequently out-compete native crab species. This species is also known to disrupt eelgrass beds.

DOES YOUR BOAT HARBOUR TUNICATES?

Because it is impossible to eradicate the Chain tunicate once it has become established, it is very important to prevent its spread. It does not spread far naturally, but is instead introduced to new areas on the hulls of boats and on other marine equipment, particularly during the warmer months of the year.

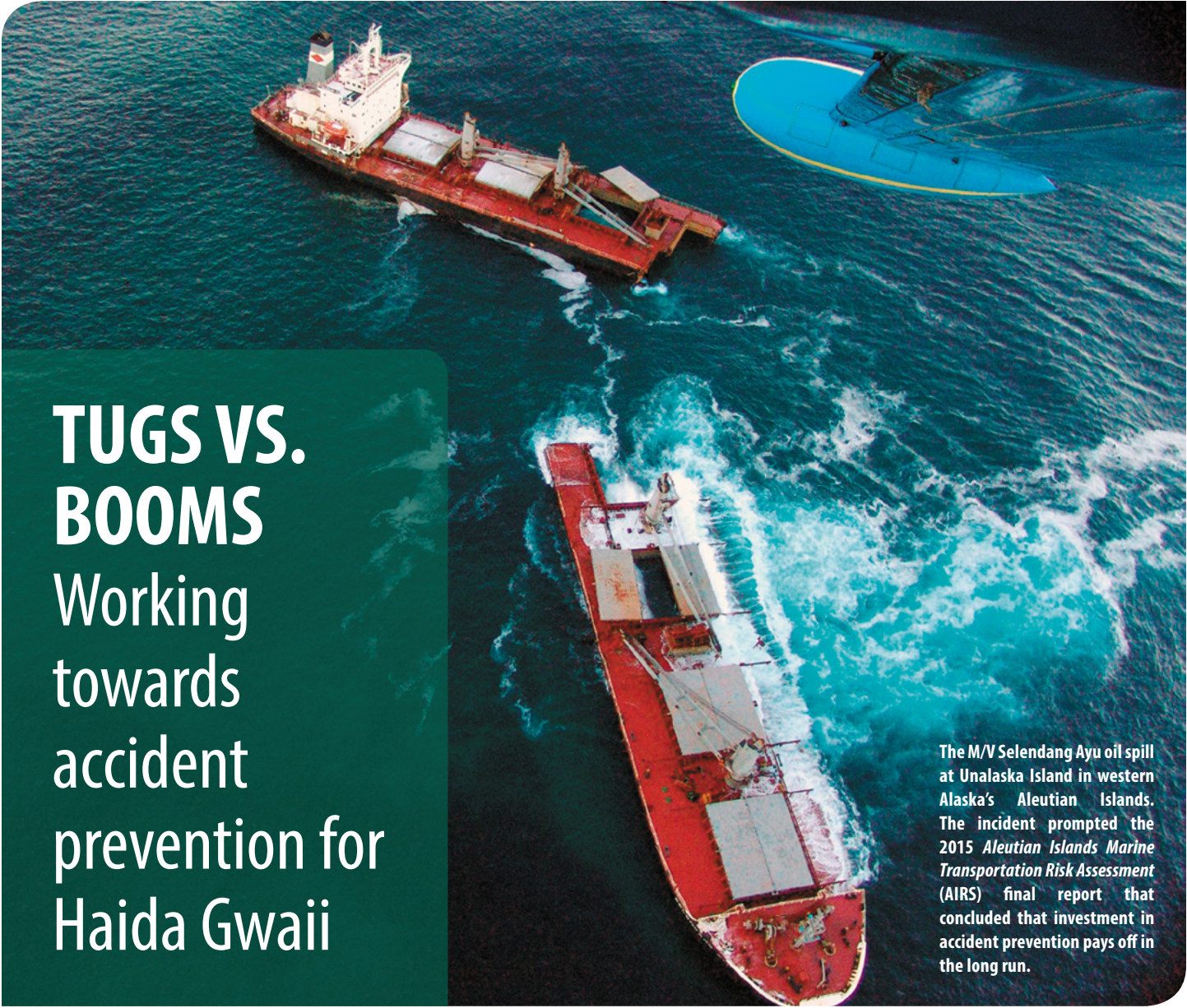
The only effective way to kill the Chain Tunicate is to let it dry out. To play your part in halting the tunicate invasion, consider taking these precautions this upcoming season:

- **DO NOT** scrape the organism off in the water. Each small piece can grow into a new colony.
- Dry off floats and other gear (including fishing gear) for at least 48 hours before heading into a new area;
- Whenever possible, bring your boat onto land to clean it. Let it dry off for 48 hours, and then clean it in an area where the run-off will not run into the ocean;

If you are concerned about your boat spreading invasive tunicates, please contact Stuart Crawford (stuart.crawford@haidanation.com or 250-626-3302) for suggestions on best practices.

TUGS VS. BOOMS

Working towards accident prevention for Haida Gwaii



The M/V Selendang Ayu oil spill at Unalaska Island in western Alaska's Aleutian Islands. The incident prompted the 2015 *Aleutian Islands Marine Transportation Risk Assessment* (AIRS) final report that concluded that investment in accident prevention pays off in the long run.

US Coast Guard Service

"Prevention takes priority over response," is the conclusion of the *Aleutian Islands Marine Transportation Risk Assessment* (AIRS) final report which came out in February, 2015. The assessment was launched following the 2004 grounding of the M/V Selendang Ayu and oil spill at Unalaska Island in the Aleutian Islands to look at ways to reduce the risk of oil spills from large vessels. The AIRS study concluded that investment in the prevention system recommended by the report would be significantly more cost-effective over the long term than the cost of spill damage without the prevention system in place.

The Aleutian Islands' share many characteristics with Haida Gwaii. With just over 8,000 residents in six small communities, the Aleutians are remote and prone to harsh and unpredictable weather. The remoteness and notoriously

wild weather make response and oil recovery extremely difficult. It is predicted that poor weather conditions would prevent any response 75% of the time.

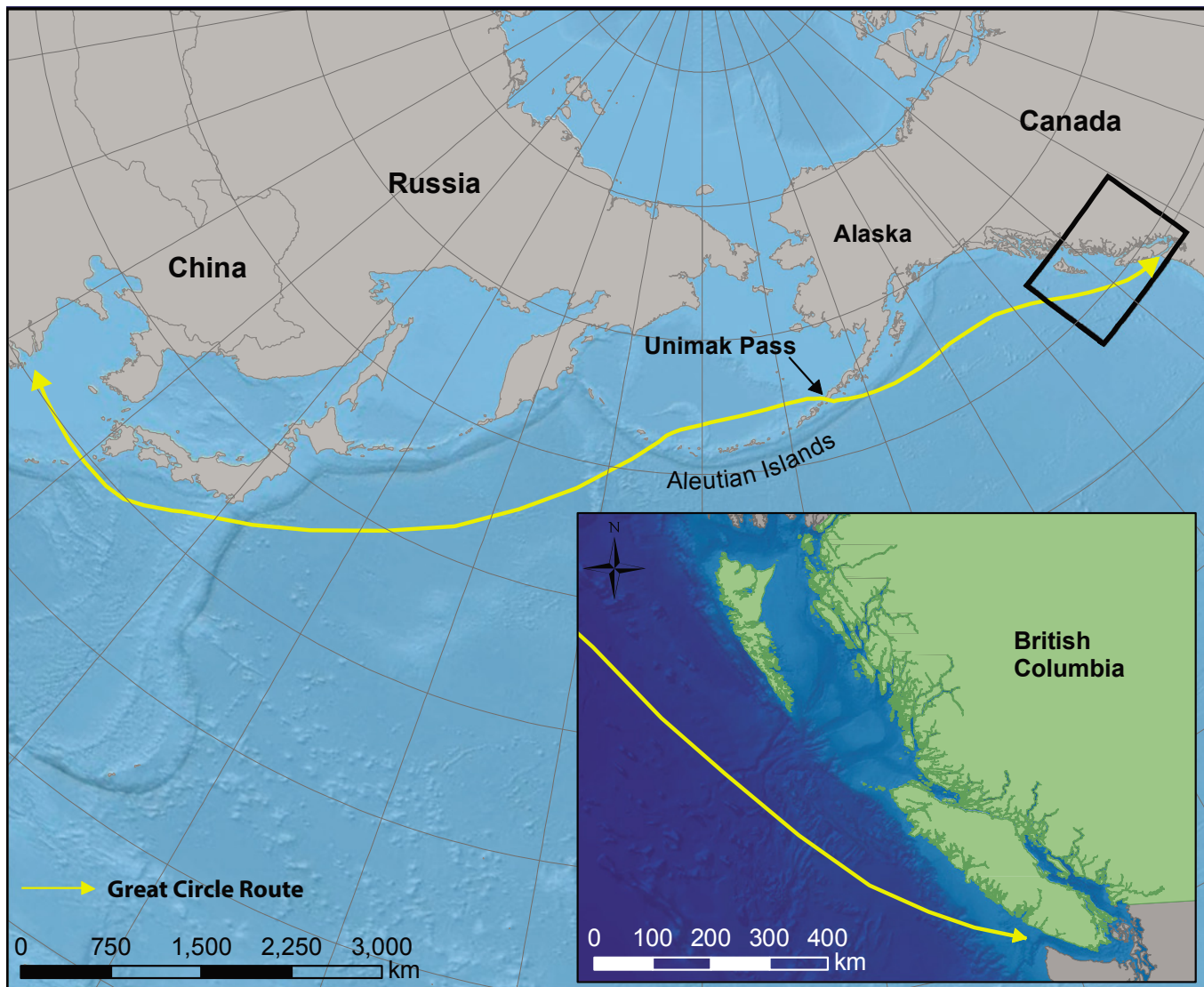
Both Haida Gwaii and the Aleutians are along the Great Circle Route and experience high numbers of large vessels transiting the waters under "innocent passage." Under the United Nations *Convention of the Law of the Sea* a vessel not calling on a Canadian port can freely pass through another country's waters and are not subject to Canadian and/or US oil spill prevention and response regulations. Both areas face the prospect of increasing large vessel traffic over the next several decades and the associated increased risks to local environments and communities.

Many of the recommendations in the AIRS report were similar to those identified in the workshop, *Lessons from the Simushir*. The workshop took place at the Haida Heritage Centre at Kay Llnagaay on May 12 and 13, 2015 and was called to learn from the drifting Russian cargo vessel *Simushir*'s near miss in October of last year, and to apply those lessons to the current Haida and provincial emergency prevention and response systems. The workshop focused on three themes: accident prevention, emergency response and community engagement.

In his opening remarks, President of the Haida Nation, kil tlaats 'gaa *Peter Lantin* stated that "Prevention is the priority. Prevention needs to come first given the remote location and challenges with oil spill response" and recommended a dedicated north coast rescue tug and a substantial increase in the distance transiting vessels keep offshore. Kil tlaats 'gaa also highlighted the need for First Nation's oversight of regional investments in accident prevention and preparedness. Other participants highlighted the importance of preparedness for the Haida Gwaii region.

"The shipping issue here on Haida Gwaii is extremely complex," concluded kil tlaats 'gaa, "but if you look at our history, the times when we've made meaningful change and done good work is when we've faced challenges that caused us to come together. The *Simushir* could have been another catastrophic event. I'm glad that it wasn't and that we are moving forward on actions to protect the Islands."

Since then, the Haida Nation has been hard at work laying the foundations for effective accident prevention and emergency response capability on Haida Gwaii. This work includes discussions with the federal and provincial governments on marine shipping issues. The Haida Nation is also leading an initiative with Transport Canada to identify potential Places of Refuge. Work is also underway on a framework for developing Geographic Response Plans for the Haida Gwaii region through the Marine Plan Partnership.



Map of Northern Pacific Great Circle Route.

Gearing up for a Shellfish Aquaculture Carrying Capacity Study



Stuart Crawford.

Brian Kingzett and the VIU team (from left to right: Brian Kingzett, Ramón Filgueira, Don Tillapaugh, and Dave Cake – and Captain Barney Edgars) survey Skidegate Inlet.

There is significant interest on Haida Gwaii to pursue shellfish aquaculture as part of a diversified marine economy. This interest is captured in the CHN-BC Haida Gwaii Marine Plan, which lists shellfish aquaculture as one of five priority areas for marine economic development for the islands' communities. Several inlets have been identified as having good potential for cultivating shellfish, including scallops and oysters, and the seasonal outdoor work associated with shellfish cultivation is well-suited to the islands' existing labour force.

But like a "choose your own adventure" book, the boating scenario above points to some of the issues that can arise when economic development is pursued without careful consideration of the cultural, social, and ecological activities in an area. To address those concerns a study known as a 'carrying capacity analysis' is usually carried out. This type of study focuses on the ability of an area to sustain a particular activity without compromising the natural environment, as well as ensuring that the people who live, work, harvest food, and recreate in the area are not significantly impacted by a type of activity.

'Capacity' is measured in different ways, depending on the activity that is being looked at. For example, in 1996 Gwaii Haanas established an annual limit of 33,000 visitor days and nights based on visual impact surveys as

Just imagine – It is a beautiful spring day, and you're out on your skiff with the family. Crab and prawn traps, coolers, and blankets are loaded. You are looking forward to a meal of crabs later on, but as you cruise towards your favorite spot, you see a row of buoys ahead of you and as you draw closer, you realize that your passage is blocked – you will have to turn back!

well as stakeholder and public consultation. The limit was developed to protect the ecological and cultural heritage of the area and to maintain a "wilderness" experience for Gwaii Haanas visitors.

A 'capacity' study for shellfish aquaculture may focus on things like the location of traditional seafood harvesting areas, unacceptable changes in plankton density, ocean views from the homes, and the routes of local tourism companies, to name only a few. In turn, a carrying capacity study may also inform management decisions related to the *number, location, and size* of permitted

sites, as well as *aesthetic requirements* (e.g. the use of black or green floats to maintain views in an area) and direction on the *types of species* that may be cultivated.

The Marine Planning Partnership has contracted shellfish aquaculture specialist Brian Kingzett and Vancouver Island University to develop and apply a methodology to calculate the carrying capacity for shellfish aquaculture development in several key sites in the Haida Gwaii area, including Skidegate Inlet. Mr. Kingzett has assembled a cross-Canada- team which came to Haida Gwaii in January for a site visit and to meeting with CHN and BC technical staff and go over the proposed methodology. The CHN Marine Planning Program and BC staff will continue to work closely with the consultants as the project proceeds.

Haida Gwaii Herring Research

For the past two years, the Haida and Heiltsuk Nations have been working with a group of scientists to increase knowledge about iinang *herring*. The research team – made up of researchers from the University of British Columbia, the University of Toronto and the University of Washington – presented their preliminary findings to community members on September 15th, 2015 at the Haida Heritage Centre at Kay Llnagaay.

On the coast of British Columbia, iinang are currently managed by the Department of Fisheries and Oceans as five major “stocks” – Haida Gwaii, Prince Rupert, Central Coast, Strait of Georgia, and the West Coast of Vancouver Island – and two minor stocks (including Area 2 West). One of the major research focuses across the four research modules was whether these management stocks are consistent with iinang population dynamics and genetic composition.

Heiltsuk traditional knowledge contends that juvenile iinang learn migration routes and key habitats from older generations of iinang – they attribute the near disappearance of iinang from certain areas in Heiltsuk territory to the depletion of “chiefs” (adult herring) in the population. **Module 1**, led by researchers Dr. Martin Krkosek, Dr. Brendan Connors and Luke Rogers, aims to test this theory with a mathematical model.

Recent genetics research on the eastern seaboard has proven that the Atlantic herring “stock” is in fact made up of many smaller populations or “stocklets” that are distinct because of environmental adaptations. The early findings of NSERC researchers Dr. Lorenz Hauser, Dr. Dongya Yang and Eleni Petrou (**Module 2**) suggest that this is also the case for Pacific herring, with samples taken from spawning herring in over 20 areas ranging from Sitka, Alaska to the Puget Sound area exhibiting distinct genetic signatures. Haida Gwaii samples were taken in Juan Perez Sound, and Skincuttle and Skidegate Inlets to look for differences. The researchers hope to collect samples in Masset Inlet this upcoming season.

Module 3, led by fisheries biologist Dr. Tony Pitcher, uses complex ecosystem modeling to predict the ecosystem impacts of different iinang fisheries management scenarios. The preliminary findings from this research suggest that current management policy – commercial fishery quota of 20% of the projected biomass; fishery opening once a threshold of 25% of the estimated unfished biomass is reached – poses additional risks to a broad cross-section of animals in the herring food web. In contrast, a food and commercial iinang spawn on kelp fishery was found to minimally impact the ecosystem as a whole.

The work of **Module 4** focuses on the implications of the research findings of **Modules 1 and 2** for local communities’ food security and livelihoods. Dr. Dan Okamoto, a researcher with the Coastal Marine Ecology and Conservation Lab at SFU who is leading the project, has developed a model to predict the likelihood of iinang “stocklet” collapse under current management policies. The research findings to date show that managing herring “stocklets” as an aggregate “stock” significantly increases the likelihood of “stocklet” collapse.

To close the evening’s events, Haida and Heiltsuk representatives offered their reflections on the role of science in their respective Nations’ struggles to conserve and protect herring.

Athalis-Dhadhiyasila *Frank Brown* from the Heiltsuk delegation spoke to the importance of First Nations guidance in the development of research agendas: “I am grateful for our allies for bringing some serious brain power to bear on these issues. The question is, will we be able to affect change? Research is a wonderful thing, but how does that inform our responsibility? We are here to guide and direct the questions so we can take our rightful place as stewards of the land and sea, with the best that science has to offer and our fundamental truths.”

Nang Jingwas *Russ Jones* spoke on behalf of the Haida Nation, concluding the evening with the statement that “this type of collaborative research provides us with the kind of information that we need to better understand iinang, and to guide the Haida Nation in working towards better management of these fisheries.”

The NSERC-funded research project is currently in its third and final year with another year of funding remaining. The Council of the Haida Nation will continue to work with the research team to support the conservation of Haida Gwaii iingang.



ABOUT THE CHN MARINE PLANNING PROGRAM

The CHN Marine Planning Program is staffed by the Haida Oceans Technical Team (HOTT), a group of marine planning professionals who provide expertise and technical support for the CHN's marine planning and plan implementation initiatives, including:

- Haida Gwaii Marine Plan
- Gwaii Haanas Land-Sea-People Plan
- SGaan Kinghlas-Bowie Seamount Management Plan
- Pacific North Coast Integrated Management Area Plan
- Tri-partite shipping discussions
- Marine Protected Area network planning

In addition, HOTT provides support for other marine-related initiatives, including: reconciliation, cooperative and coordinated management with BC and Canada, and communications and outreach.

ABOUT Kii.ngaay Taang.aay

The CHN Marine Planning Program developed this newsletter to provide Haida and other island residents, and the broader public, with information about the Haida Nation's marine planning initiatives. Each issue of Kii.ngaay Tang.aay features stories about specific marine-related projects that are underway in Haida Gwaii as well as updates on relevant laws, policies and reports that relate to the Haida Nation's marine planning and implementation activities.

Kii.ngaay Tang.aay is distributed to all of the communities of Haida Gwaii, and is also available online on the Haida Nation's website (www.haidanation.ca).

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For more information about the CHN Marine Planning Program, including current issues and initiatives that the program is currently working on, check out our website at: www.haidanation.ca/Pages/programs/marine_planning