

Dr. Elliott Norse, Marine Conservation Biology Institute
Marine Conservation Workshop
May 24, 2002
Cacilia's Bed and Breakfast, Tlell
10am - 3pm

Disclaimer: Please note that this is a paraphrased record of workshop events. Any misrepresentation in workshop participant's comments, questions, and/or responses is unintentional.

Introduction by John Farrell (Facilitator):

- Introduction of the hereditary chiefs and elders and recognition of the two sponsors for the workshop: World Wildlife Fund Canada (Lynn Lee) and the Haida Fisheries Program (Russ Jones).
- Welcome to territory by Reynold Russ and a prayer by John Williams.
- Background and impetus for the workshop:
 - Islanders have put a great deal of effort into terrestrial management (eg. cedar strategy, community forest, and land use plans) but we are falling short on extending resource management needs into marine habitats. World Wildlife Fund and the Haida Fisheries Program are moving this discussion forward.
 - Marine conservation is a tool to protect values that need protection—we need to identify which values we want to protect and how we want to protect them (eg. herring, abalone, urchins, geoduck, mariculture/aquaculture). To date the focus has been primarily on Gwaii Haanas—now it is time to think outside of the park and consider all the waters surrounding Haida Gwaii.
- Introduction of Dr. Elliott Norse, President and Founder of the Marine Conservation Biology Institute in Redmond, Washington.

Presentation by Dr. Elliott Norse:

- Honoured to be here—"in this beautiful, special place."
- Encourages two-way learning—since 1969 he has been training himself about marine conservation, and he is here to share this knowledge but also to learn himself.
- During his research on blue crabs in the Caribbean he learned that "the ocean gives life, food, and the air we breathe." However he has also noticed that the ocean is in trouble—things are changing faster and faster over the past twenty to thirty years. "The things we have loved and worshiped are disappearing and, in some cases, things we don't love are becoming more abundant."
- Haida Gwaii is an important place because the sea here is in better shape than in many other places. In other places excessive nutrients (run-off), pollution, and fishing have harmed the marine ecosystem. Similarly, on Haida Gwaii things have been taken from the ocean at unsustainable rates and things that were once abundant are no longer. However, Haida Gwaii people are an "ocean people" and everyone here is connected to the ocean directly ("it is part of you"—in art, on the table etc.). The question is then, "What do you do about it?"
- Suggestion to focus on the possibility of using marine protected areas (MPAs) as a way of bringing back the life and the wealth of the ocean. People seem to understand the

value of protecting the land, and use terrestrial protected areas to achieve that, however we haven't yet adopted this idea for the sea.

- In 1872 the first national park in the United States was designated. In 1972—a full century later—the first national marine sanctuary was designated. Terrestrial national parks serve to protect wildlife, scenic beauty, and a spiritual connection to place. MPAs, on the other hand, are small and few and don't seem to protect very much ("they mainly keep out oil and gas development").
- The biggest threat to marine ecosystems is fisheries—"we've taken more than the ocean can sustain and harmed the capacity of the ocean to replenish." MPAs may be a tool to bring back species that are almost gone.
- In fisheries management in the United States, fish stocks are managed one-by-one. This is expensive and requires a lot of science—and even then politicians don't always listen to the scientists.
- An alternative may be to look at the ocean in another way—"We are going to protect certain areas and agree (for the good of us all) that we won't take fish from these areas. Then we watch to ensure no one cheats." In this scenario there may be less fishing overall, but fish catches may also increase because we are protecting the places where fish breed, grow up, and rear young (thereby allowing fish populations to rebuild).
- Fish leave (disperse from) MPAs in two ways:
 1. As small adults (spillover). This has been demonstrated by the experience of "fishing the line" (the best place to fish is at the edge of a marine reserve).
 2. Eggs/larvae are carried away as plankton and start producing fish in surrounding areas.
- Within a marine reserve where nobody fishes, "you have more fish and bigger fish." This is because 10 fish each weighing 100kg will produce far more eggs than 100 fish each weighing 10 kg. Little fish are concerned with growth, not with producing eggs. Likewise, large fish can put more energy into egg production.
- Therefore MPAs are a tool for conserving biological diversity in which everybody can win. In the short term people may have to travel farther to fish and may have lower catches, however the global experience has demonstrated that in 3 to 5 years things begin to get better. MPAs are fairly recent (1970s) and only now are we beginning to understand that MPAs can work.

Question: Could you talk about fish-farming/aquaculture and MPAs? Could you also be more specific in what sort of discussions you have had with DFO?

- Not an expert on aquaculture, however he will try to provide a simple answer to a very complex problem/question. There are essentially two types of aquaculture:
 1. Aquaculture that feeds itself (eg. clams, mussels, oysters)
 2. Aquaculture that you have to feed (eg. Atlantic salmon)
- The first is not too problematic, but the second is particularly concerning because of the need for antibiotics, fish food, impacts of waste etc. There is also justified concern about wild and farmed salmon mixing following escape from pens due to storms or human error. One million farmed Atlantic salmon have escaped in the last ten years in BC and now there is evidence that they are reproducing in BC streams. Not only are they potentially competing for habitat, Atlantic salmon can also transfer diseases and possibly interbreed.

- The goal of MPAs is to conserve and sustainably manage the ocean (this is the highest priority). You can, however, use zoning in MPAs and aquaculture may or may not be a part of the mix—it is up to the communities to decide.
- As far as interactions with Canadian agencies/government—he is primarily involved in scientific symposia. He has had some discussions with Parks and DFO, but mainly communicates with the conservation sector and academics. He is most familiar with the United States system.

Question: Regarding MPAs and fishing—I have been involved with the BC Aboriginal Fisheries Commission and it seems quite clear that the main people affected by MPAs are local people. There are some local benefits from fisheries but it generally depends on what people fish. Here we fish salmon, herring and halibut—how will they be impacted? I can see the benefits of MPAs for rockfish and abalone, but what about other species? And tourism? Are there local benefits other than for fishing?

- Let me give an example—there is a tiny MPA (15 ha) near my home in Washington and divers come from all over to dive because the fish are more diverse and abundant within the reserve. The divers spend money to take pictures, on food and accommodation, and this, in turn, benefits the local economy.

Question: Can you comment on local management?

- Fish are managed by what we call the stock assessment paradigm (one-by-one)—this is a risky business and a weak tool. The best thing about MPAs is that you don't have to be a scientist to manage them. All you need is common sense and good eyes to ensure that people don't cheat. You also have to ensure that managers work with local people to follow the rules that everyone has agreed on.
- We are moving toward more comprehensive management (commonly referred to as "ecosystem management") but we aren't there yet. MPAs serve as comprehensive management without all the knowledge of ecosystem complexity.

Question: What about rockfish? Is there spillover? What about other species?

- The Marine Conservation Biology Institute's chief scientist, Lance Morgan, is working on rockfish biology—he is particularly interested in spillover and the dispersal of young (reproduction and movement). Fully protected marine reserves are ideal tools for rockfish population conservation on the west coast.

Comment: Let me tell a story about my nephew and friends waiting for the tide to come through Skidegate Narrows. They could hear orcas (Skana) and saw eight whales in a pod. In the bay by the narrows (where there was formerly a logging camp) the young whales were nearest to the beach, circled by the females, with the dominant male on the outside. The dominant male moved up against the boat to demonstrate that he was boss. And then there was the story last year about the whale that took the salmon from the reel of a sport fisherman down south. I think the whale must have been starving. This never used to happen. We need to be aware of what is happening up in the Arctic Circle and how it impacts the food chain and these islands. "Herring Storm" was a response to government-dictated fisheries management, and even though you can't catch herring now, the government continues to allow the fishery. If DFO opens a fishery, the fishermen go

because that is their bread and butter. They have to make a living. The oceans are being depleted left and right—look at the sport fishery, and people just keep coming and coming. While DFO and the Sport Fish Association say one thing, we say another. And it all comes down to an issue of money—big money controls everything. The Haida have a right to harvest food for our children but we must prove to ourselves first that it is not detrimental to the ocean. DFO keeps talking about 'biomass,' but what does that really mean? No one seems to really know. I am in agreement with MPAs as long as the Haida and commercial fisheries have involvement to work it in an effective way. Our people have a right to get our food from these islands as our ancestors did. Some people refer to Haida Gwaii as a 'rock'—it is not a rock, it is a beautiful place. But one of these days all it is going to be is a rock if we don't do anything.

Comment: The killer whale that took the salmon from the reel was telling us something about the sport fisherman. I believe in MPAs, but if it is business as usual in the rest of the ocean then they will have little impact. We need to address commercialization outside of MPAs. MPAs are a starting point and we need to expand this concept. There is a fine line between progress and destruction, and we've gone beyond that line. DFO purports to have the best data, and even if that were true, the decision is turned over to the politicians. I think the time to talk is past, and now it is time for action.

Question: We can't do this alone—marine conservation is a global issue. The Archipelago Management Board is looking at marine consultation/conservation for Gwaii Haanas, but we really need to look at all of Haida Gwaii. Are we really that different from other places in the world?

- Every place is unique but all places have certain things in common. For example, species composition may be slightly different but the basic principles are the same—namely the human heart and our relationship to marine ecosystems. All over the world communities that are struggling to feed children with food from the ocean are starting to set up MPAs and it is beginning to work.
- Perhaps the time for *just* talk is over, because now we know enough to begin/prepare to act. It will take years to see the benefits—I suggest you start big and talk about all the waters of Haida Gwaii. You have to think about different places and how to deal with each place (eg. traditional use in front of villages that has occurred for thousands of years versus areas that have only recently been fished). You need to consider a mix of uses in different places—essentially a zoning approach. You can then return as a community and adjust/shift boundaries etc. as a result of research and monitoring.

Question: What do you do about a government that doesn't listen?

- Speak with one voice and people will listen. Let me tell a story. There was a father with five boys that constantly fought and were jealous of each other. One day the father tossed an arrow to the biggest and strongest boy and told him to break it. The boy did without any trouble. He then gave a whole pile of arrows to his son and told him to break them all at once. The boy could not. Others will listen if you can find a way to work together.

Question: If you zone a large MPA, don't you set up the possibility of people encroaching on the areas that have the highest protection?

- Think of a strawberry patch—if everyone agrees that the strawberries should be left alone, for the benefit of everybody, then you can achieve compliance. You can also invest what money you do have into making sure that people are watching each other's behaviour—whether you are dealing with a large or small area.

Question: Would you eat bait herring? Do you sport fish? Do you handle herring without gloves? Did you know that the main ingredient for preserving herring is arsenic? The arsenic is then fed to salmon, and the salmon are eaten by whales. There are no studies done on these things. How can lodges claim they are helping enhance fisheries? At the end of the day, all the unused bait is dumped. What is the possibility of getting a study off the ground?

- The Marine Conservation Biology Institute doesn't work on pollution or bait preservatives. The issue of arsenic, however, is very concerning—especially when entering the food chain. I suggest you contact the David Suzuki Foundation.

Question: Can you comment on the use of fish size limits for managing fisheries in Canada?

- On the Atlantic coast people fish for lobsters, and Maine is the only state where the lobster fishery isn't in trouble—why? For three reasons:
 1. There are a limited number of people in the fishery, and an agreed set of standards that are obeyed because most people in the fishery know each other.
 2. Fishermen have agreed to work with the government to set standards. They have agreed to (a) only retain lobsters that have reproduced once, (b) to set an upper size limit to ensure there are 'grandfathers/mothers' that can reproduce.
 3. Female breeders are marked (notched) and are returned to the ocean if they are caught. This strategy protects the smallest and the biggest lobsters.

Comment: Regarding the management process—it seems like we constantly wait for resources to collapse and then we react. On land we could look to the woodlot management approach whereby there is the requirement for a 15-year plan to get a 5-year license. Perhaps this concept should be expanded.

Comment: Thanks to Lynn and Russ for bringing everyone together. I'd like to comment on local management—the AMB is the best example of local people being involved in management in all of Canada. We need to expand on this model. In 1988 there was a signed agreement to establish both a terrestrial and marine protected area. In the Gwaii Haanas Agreement (1993), the Government of Canada and the CHN committed to negotiating a future agreement for a marine conservation area. To date, a mineral assessment has been conducted, oil companies have relinquished their rights within the proposed area, and jurisdiction has been transferred from the province to the federal government. There are several reasons for the delay in establishing the marine conservation area:

1. MCA legislation is still moving through the senate (hopefully will be concluded by the end of June 2002).
2. Limited funding—need for awareness building to get people to put pressure on government to invest money into marine issues.

3. Building public support—need for consultation.

Question: When MPAs are established, will commercial fishing continue? Can you distinguish between different types of commercial fishing and their impacts on marine systems?

- The Marine Conservation Biology Institute is doing a study on 'collateral damage' of various types of fishing (ten to eleven different types) on species and habitat. It is clear that bottom trawling and dredging are most destructive due to the huge quantities of bycatch and the effect of tearing up bottom habitat (like clear-cutting on land). Handpicking and long-lining has less collateral damage. Similarly, purse seining may have more bycatch, but is generally less destructive than certain other fisheries.
- Zoning may be one approach to address managing for different fisheries—you could zone areas for the more destructive fisheries (or perhaps not), zone for fisheries that have less of an impact, and then zone some fully protected areas (and science can help identify these areas). The key is a mix of different zones (there may be up to ten different types of zones). You might want to consider areas for traditional harvest or areas for sport fishing (economic interest). And you could extend zones out to the 200-mile exclusive economic zone (EEZ) of Canada.

Comment: Thank you for your concern about Haida Gwaii. Let's make sure oil drilling doesn't come in. In Alaska, they are still feeling the effects of the spill ten years ago. All the talk of conservation will be for nothing if we have an oil spill out there.

Question: Regarding the herring in the inlet—the inlet is protected, but how do we protect herring from the gray whales? Haidas only use the thick spawn on the bottom, whereas the whales kick up the upper levels of the spawn. I am also concerned about the impact of trawling on spawning grounds.

- You know more about herring than I do, however I would add that gray whales have been here longer than people and are also a part of the ecosystem. This should also be respected.

Comment: Gray whales haven't been here long—and the impact of kicking up the top layer of the herring spawn should be considered.

Comment: We have to be careful with MPAs that we don't create a set of zoos that gives us a warm fuzzy feeling that we have done something good and carry on business-as-usual elsewhere. We also cannot take a splatter-paint approach and randomly designate MPAs. We must recognize the connectivity between marine and terrestrial ecosystems when considering biological diversity. There is also connectivity at an international level (eg. connections between the offshore and resident orcas that extend beyond Canadian government boundaries). We need to consider these broader linkages as well.

- John Farrell concluded the first half of the workshop and noted that the post-lunch discussion should focus on identifying values that we want to see considered in local marine conservation initiatives.

-----LUNCH BREAK-----

- Lynn Lee spoke of the increasing pressures around the islands including oil and gas and aquaculture. We should consider an island community marine-use plan in which we use mapping to identify values, concerns, and priority areas. There is a clear need for discussion and from this meeting we hope to identify issues and take direction from there. In the future we hope to bring in other speakers that are experts in their field so that both traditional/local knowledge and scientific knowledge can be utilized. Most important is that island communities get together.

Comment: We do need expertise outside our nation (eg. David Suzuki Foundation)—they can help us understand impacts based on scientific understanding. We need to adopt a cautionary approach and prove that new fisheries are not detrimental first (eg. mariculture). I think science can help to inform the Haida Nation.

Question: Regarding marine-terrestrial linkages—Gwaii Haanas has the potential to have a MPA surrounding a terrestrial protected area. These linkages have been studied by Tom Reimchen in his work on bear/salmon nitrogen cycling in the forest. We are talking about innovative processes—about creating a vision and making it happen. Whether it is based on science or not on science, it feels right. Are there other ideas or examples of this kind of situation in the world?

- The problems in many MPAs are directly due to the fact that protection is only in the sea. There are very few MPAs that have the protection of the adjacent coastline and watershed. The impacts of the condition of the watershed that drains into the ocean are immense. There is the additional problem about agency jurisdiction—often there are two different agencies managing the land and marine systems.
- For example, the coast of Louisiana (where the mouth of the Mississippi drains) suffers from huge nutrient discharge and phytoplankton growth that sucks oxygen from the water and species are suffocated. These nutrients come from the Mississippi watershed and, more specifically, from farmers in Iowa and Illinois.
- So you have to think about how to link marine and terrestrial agencies. The fact that these systems are connected is a very important principle to remember. There are opportunities on Haida Gwaii that many people and places don't have.

Comment: I was just in the DFO office regarding rockfish protection areas (eg. Frederick Island). As soon as we touched Langara Island, everybody backed off. We want to protect an area around Langara to see if rockfish populations respond. But if we designate protected areas, we then increase fishing pressure elsewhere, so we also need to limit the number of people fishing.

- Reducing effort in combination with MPAs is a very important tool for marine conservation. Monitoring and enforcement is also key.

Comment: There has been some focus on groundfish (eg. National Geographic article on Georgia Strait lingcod). DFO, however, is not monitoring the way they should be due to lack of funding. The only reason DFO knows what is happening to groundfish is because people are not able to catch fish. There is huge political pressure to continue depletion and, despite the fleet buy-back, the fisheries continue to be depleted. Panic buttons are hit

constantly. The sport fishermen (estimated 20 million in BC) continue to have a huge impact while commercial fisheries are being shut down.

Comment: There are a huge number of groundfish that the sport fishery does not have to retain. This non-retention policy on groundfish has to be changed. You exhaust fish and those with swim bladders die when brought to the surface. We have to stop sport fishing from catch and release and non-retention—especially of rockfish.

Comment: Perhaps we should change the rules to be non species-specific—keep your four fish and go home.

Comment: Yes, regardless of the weight or size, or if you catch four spring or four rockfish—that's it, you go home.

Comment: Last year the House of Assembly passed a resolution restricting the use of bait. We have to be wary of science—academics can put anything on paper. We need to be careful what we choose to listen to (actual facts versus theoretical assumptions). With respect to mariculture, I am concerned about the impact of non-indigenous species.

- What you are talking about is what we call 'reversing the burden of proof.' What this means is that if I want to do something then it is up to me to prove that it is non-detrimental. Err on the side of the resource.

Question: Maybe we should consider local licenses held by communities and delegated from there. This ensures local responsibility as a first level of governing—effectively resulting in area licensing with community control. That way the community becomes the long-term benefactor. Is there an actual number in the US being tossed around as the percentage of area that needs to be set aside?

- We think it would take a minimum of 20% fully protected MPAs. The number is larger if you begin to talk about achieving maximum fishery benefits.
- Another way to consider it is to think about protecting very large areas and very carefully selecting a small portion of the area for different fisheries. This would mean that the areas where people fish would be very hard hit but, in theory, would be replenished by the spillover effect from adjacent protected areas. The fishing areas would be oriented in strips to ensure maximum contact for spillover. This is a very radical idea that no one has really tried—but it could be a very good and effective approach.
- I am talking 20% of the whole—you must think comprehensively, as if you have jurisdiction over all the real estate. The bigger you think, the more options you have. Also, the stronger the management outside the MPAs, the fewer MPAs you need (if you manage MPAs well, then there is a need for fewer overall).

Comment: It seems to me we are talking about sustainability and self-sufficiency. First we must get local control of resources, and then identify our priorities.

- There is no fixed area for the best MPA—the smaller the area, the more politically palatable and easier it is to designate but the harder and longer it takes to see the

results. I suggest you start big so that you can make changes if necessary. If you start small and then prove it is insufficient, then it might be too late to do something about it.

Comment: We are really talking about two basic concepts:

1. Burden of proof/Precautionary Approach: This is very important globally and it essentially means we err on the side of caution when we don't know enough about a resource. This influences most conservation thinking these days.
2. Adaptive Management: This means we treat resource management as an experiment and determine if your decision/approach is working and then make whatever changes necessary based on the results of your monitoring. This is effectively iterative and flexible management.

Question: There are good examples of marine conservation initiatives on these islands—Gwaii Haanas, rockfish protection areas, abalone MPAs. With abalone we have conducted public consultation through the years and communicated what we want to do and how. This has taken a great deal of time but we recognize that compliance is key. There are a number of things that can be learned from existing initiatives on-island. The idea that marine reserves have to include places where no one fishes is a big issue for First Nations because food and ceremonial fisheries have priority. Why can't you have (large) areas that are lightly exploited, and then smaller areas that are open to commercial fisheries?

- In the past this was possible because people who were here for a long time developed ways not to harm fish populations (otherwise they would starve). Not all indigenous people were successful—look at Easter Island where the inhabitants effectively starved themselves. The bottom line is: if you have effective mechanisms you don't need MPAs.
- But the world has changed. We now have (1) more people, (2) who don't necessarily live in traditional ways, and (3) technology has changed such that we can catch far more fish than ever before (eg. using GPS). We have changed the game. We have to constrain ourselves intentionally because we have more effective tools.

Comment: But the focus should be on commercial and high-tech fisheries, not on the Haida people.

- But the places where no one fishes provide our baselines. There should be a mix, yes, but even traditional fisheries techniques have an impact on populations. And now there are global impacts to consider. Haida Gwaii is integrated into the rest of the world (for example, the price of sea urchin gonads in China has an impact on the marine ecosystems of Haida Gwaii).

Question: Imagine there is unanimity on the islands—imagine that the quiver of arrows in your story is intact. Imagine that there is the confidence to develop a conservation plan for the islands and confidence to take control of our resources—what would that piece of work look like? What resources are necessary?

- There are tools now available that the Chief Scientist of the Marine Conservation Biology Institute, Lance Morgan, could speak about much better than I can. Geographic Information Systems (GIS) provide a very powerful tool in that they produce maps that can answer questions. GIS allows you to compare one set of information with another—

for example, you can ask 'where are the places we see gray whales in the spring?' and 'where do we see herring spawn?' and then compare them.

- You should also consider what information is at your disposal:
 1. There are huge data sets of information gathered by scientists.
 2. There are data gathered from traditional/local knowledge holders in the area. Like scientific data, traditional knowledge has to be verified, but is equally as important.
- You put these together and you start to see patterns that can direct your approach to zoning.

Comment: With respect to local information, a group of people have been working on a Heritage Tourism Strategy that defines local values. It identifies what is important to local and Haida people. A lot of work has been done on-island that needs to be brought together. Perhaps the Heritage Tourism Strategy could be used as a foundation or template.

- John Farrell suggested that a copy of the Heritage Tourism Strategy be added to the minutes of this workshop.

Comment: DFO uses terms like the 'precautionary principle' in the herring fishery yet they make decisions based on 'projections' rather than on-the-ground assessments—this is what they call 'scientific management.' The whole concept of science is not respected here. Many Haidas have knowledge about stocks, but we also know that we're not angels either. At the moment we are embarking on a land-use planning process with the provincial government and I think we've got to go ahead and do marine planning ourselves. The people of these islands have to get together (there must be community support) and the key is to use both science and common sense. It is interesting to note that in New Zealand where fishermen were violently opposed to MPAs in the beginning, they are now their greatest supporters. The bottom line is we need to get busy and move forward.

Comment: Regarding the size of MPAs—thinking big in government is 'daring.' The marine area of Gwaii Haanas is 3400 square kilometers. Movement on the marine side of Gwaii Haanas has been a tedious and slow process, however there have been some important steps and hurdles are being cleared. I suggest we start with Gwaii Haanas and move out from there—to use Gwaii Haanas as a starting point and then expand to all of Haida Gwaii. I hope you are not suggesting to throw the baby out with the bathwater.

- I have been hearing a desire to address all the islands comprehensively—but this is an island decision. If you take a gamble you will earn the attention and respect of many, as well as the opposition of some. But look at New Zealand—opposition can turn to support. So there is no right answer. I would emphasize, however, that the larger the management unit, the more flexibility you have. This is clear when you consider protecting representative ecosystems (if you have big and numerous units of representative ecosystems, then if you screw up with one then you still have other options).

Question: I would like to know more about the relative damage caused by draggers versus sport fishermen—what scientific information is available on the levels of impact?

- A large study in the US examining the impacts of sport fishing is being initiated. With respect to commercial fisheries, the damage is highly variable. The Marine Conservation Biology Institute is particularly interested in the impacts of trawling. As far as sport fishermen are concerned, they highly visible targets—they tend not to be locals, often do not operate respectfully, and are generally arrogant. There may be a way to deal with them directly on Haida Gwaii. Focus on taking control of your own islands.

Comment: If we speak strongly and boldly, we pass that on to future generations. The phrase 'risk-adverse management' is a great buzzword given to us by a corrupt government. We need to recognize that words are only as good as the leadership they come from.

Question: Can you speak more about global approaches to MPAs?

- The Great Barrier Reef Marine Park (GBRMP) in Australia is very big, involved a national process for designation (with legislation), and includes the local participation of coastal communities. Preceding designation there was recognition that local resources were very important and were being lost (eg. tourism and aboriginal use were being impacted). The GBRMP is a zoned park 2000 km long whereby different areas have been designated for different uses. There are areas zoned for recreation, low-impact fisheries, and high-impact fisheries. There is no oil and gas development, sand or gravel mining. It is zoned throughout with varying degrees of protection (weak/medium/strong).
- There are also examples throughout the world where government designated MPAs without local community support. These areas are often wrought with problems. While the central government has a role to play, local people should decide how to do it best. For example, in St. Lucia Dr. Callum Roberts looked at a local coastal zoning plan developed by local fishermen. The result was that fish catches increased and fishermen are strong supporters of the areas zoned for protection. The bottom line is that it happens differently in different places.
- An example of failure might be the case of Congressman Leon Panetta's pledge to keep oil and gas out of Monterey Bay. While oil and gas development was restricted, the promise was made at the expense of providing no restrictions on fisheries (which have the primary impact on the bay's marine ecosystem). This promise has come back to haunt the ability to effectively protect Monterey Bay—and it is not what you want to see here.

Comment: Ten thousand years ago the population of Haida Gwaii was much greater than today, but today we have to consider the impacts of the global population. Considerable changes have occurred that we need to recognize. There are some very positive things happening—for example, the Heritage Tourism Strategy is an excellent document that should be ratified by the CHN. In the herring fishery, DFO assured us that they would utilize the precautionary principle but their projections turned out to be wrong. We need to use common sense. Decisions are being made by money and industry—we need to continue this discussion with island communities.

Comment: The Tlell LRUP began with a Tlell map and local people putting their local knowledge down on paper as a starting point for management.

Comment: It is clear we are all concerned about the waters of Haida Gwaii—now we need to consider what areas we want to protect. The Gwaii Haanas Agreement signed by the Hereditary Chiefs and the President of the CHN is a unique agreement in all of Canada that sets out the boundaries for a marine conservation area. There was also an accord signed in Tlell that stated that all islanders would work together. Similarly, the Haida and coastal First Nations have an agreement to work together. In the marine conservation area outlined in the Gwaii Haanas Agreement, the Haida Nation will continue to do what they have done for thousands of years. There will be opposition but an MPA such as this gives more local control. The oceans are in a very serious situation and people need to know this. Marine conservation is for the benefit of the whole coast and this needs to be communicated. Strong rules and regulations also need to be enforced.

Comment: With a larger management area there is the increased chance that information can become misinformation. The larger the management area becomes, the more chance there is for misinformation.

Comment: I am particularly concerned about the damage done by the sport fishery. Commercial fishers know that the fish are exhausted by the time they get to the surface and that they have very little chance of escaping whatever comes after them following their release. Sport fishermen, on the other hand, can play ten fish before they take the one they want. DFO say the death rate of catch and release is 15% (85% survival) but that rate is calculated when salmon are put in a holding tank to recover. If they are returned directly to the ocean, then the death rate is likely to be much higher. There was also a bounty on seals but not sea lions—why? Sea lions eat more fish. But in the early 1900s the Chamberlain Commission said that this hadn't been "proven." It took until 1938 for Canadian Fisheries to admit that sea lions eat salmon and halibut (they had only ever found a rock in the stomach of a sea lion before). Why did it take 48 years after they were first told to "prove" or admit this? This is what we have to deal with. I know that when a sport fisherman plays a salmon almost to its death, it won't return to its spawning river.

Comment: I'd like to speak on the role of science. Science is only one tool in the tool bag. There is also common sense, experiential knowledge, traditional knowledge, ethics, and values. Science can help to reduce uncertainty. The ethical foundation of the precautionary principle is sound, even though it is not in practice all the time and can be misused. Science is really only one type of knowledge.

- It is important to recognize that the precautionary principle can be misused and misinformation can be disseminated. If empirical data is not being respected, this is not precautionary management—this is nothing but stupid and bad management.

Comment: We need to manage adequately given the level of resources we have. My concern about zoning is that it can create confusion and that people can be unclear about what to do and where to do it.

- Unfortunately, there are not many examples in the ocean of zoning for conservation purposes. However, anything you do creates problems and solves problems. People *need* to know what they can do and where. One strategy is to phase in zones—you can't achieve 100% success from nothing. You must learn by doing and making modifications

where necessary. People will begin to understand when you start to separate uses spatially. But everyone absolutely must know what the fundamental principles are—not everyone will get it and there will be mistakes, but you can fix them along the way.

Comment: Innovation is about intuition and doing things from the heart. We need to have a vision—this is where the new leaders come from.

- John Farrell wrapped things up by commenting that the discussion must continue and that we need to start putting things down on paper/maps (next step).
- Elliott Norse thanked the group for 'putting up with an outsider and for listening and being patient—thank you for welcoming me into your home.'