

## COMMEMORATIVE SPEECH

DR. KAREN BJORN DAL

Thank you very much Dr. Marquez. Before I begin my speech, I would like to thank the interpreters for the wonderful job that they have been doing interpreting for us today. And I would like to remind the speakers who are to follow me that we should all try to speak slowly so that the interpreters have time to keep up with their translation. When we become excited about our topic, it becomes very difficult for the interpreters to follow us.

This symposium represents the international approach that is necessary to solve the problems of sea turtles, because sea turtles are themselves an international resource. Some of the examples that I'll be using this morning are from the Atlantic system, and I hope that you will excuse my use of examples from a system with which I am more familiar at a conference which is concentrating on the Pacific region. But I know that my colleagues who will be following me today and tomorrow will have ample examples of the shared resource of sea turtles in the Pacific region. I would like to start with my slides now. Could we have the slide projector turned on?

This is Dr. Archie Carr, a man that many of you have had the opportunity to meet, and many more have heard of. He gave us some of our first and most basic information on the biology of green turtles, and on the degree to which they moved among countries, and were a shared resource. He is shown here with a female green turtle at Torchigo Beach in Costa Rica.

Over the past 30 years, we have tagged more than 30,000 green turtles as they came ashore to nest at Torchigo, and we have received reports from tagged returns on those animals. The tag had been returned from more than 18 countries throughout the Caribbean region. The arrows on this map point to all of the different countries involved. This is a VERY important point, because what it means is that each country is exploiting this resource without regard to what is going on in other countries; without knowing what is going on; without having any quantitative measure. So that in Costa Rica the eggs and the nesting females are harvested at the beach. Juvenile turtles and adult turtles are harvested from the feeding grounds in Nicaragua, Venezuela, Columbia, Mexico, Jamaica, Dominican Republic, and all of the other countries from which we have tag returns.

Each of these countries often feels that they are the only country exploiting this sea turtle resource. This leads them to over-exploitation because each country is taking a piece of the pie essentially, without having knowledge of what is going on in other countries.

This underscores the very important need for research and for comprehensive international management plans to manage these populations. Without this, we will inevitably over exploit sea turtle populations.

Dr. Uchida, in his talk earlier this morning, gave a very good example of this problem within a country when he discussed the differential protection of sea turtles among the different prefectures in Japan. Just as he pointed out that this is a serious problem in Japan, on an international scope, it is a serious problem as well.

It was also the work of Dr. Carr who pointed out that many of the sea turtles -- many of the loggerheads that hatch out from the nesting beaches in Florida enter these trans-oceanic waters and spend years of their lives growing to a larger size class. In this they enter not only international oceanic zones, but also the territorial waters of European and African nations. Again, this expansive movement of a single population underscores our need to work with this as a shared resource.

This problem is found all over the world. For many years, Mr. de Silva, one of our colleagues who will be speaking later, has lamented that all of his efforts to protect sea turtles in the waters around Sabah are for naught when those turtles leave the Sabah territory and enter the Philippine territory where they are harvested completely.

This symposium brings together representatives from many Pacific nations, the most important nations in terms of sharing the sea turtle resource, and I hope that within the next few days we will be able to make progress in our understanding of the degree to which this resource is a shared one.

The international nature of sea turtle means that we must have international solutions to the management of our sea turtle resources. There are many contentious issues in international conservation of sea turtles. The ranching and farming of sea turtles seen by some as a way to save turtles is viewed by others as a great danger to the survival of our world sea turtles.

Last February, a panel of experts including Dr. Uchida and Dr. Marquez and Tom Milligan and myself, met in Costa Rica to discuss the ranching and farming of sea turtles. One of the main conclusions of the Workshop that there is no proven benefit of ranching or farming for sea turtle conservation. And, equally, there is no proven benefit of the head-starting of sea turtles.

Headstarting sea turtles is the practice of raising hatchlings for six months to a one year period, and then releasing them into the wild. This practice is done in the belief that these larger sea turtles are better able to avoid predation. However, we know

nothing about the future breeding success of these headstarted turtles. There is unanimous agreement among the experts at the panel in San Jose, Costa Rica, that headstarting has not been proven to be a benefit to wild populations, and should not be used as a conservation measure to offset exploitation. This is a very IMPORTANT point. We cannot justify the harvest of sea turtles by replacing them with headstarted turtles shown here. These are tanks in which green turtles are raised, and there's a small green turtle held in the foreground.

These turtles are often held in tanks as I showed and fed artificial pelleted diets. Because we do not know the effectiveness of headstarting; because we do not know if these headstarted turtles will join the population and breed successfully, I want to underscore the idea that we should not be using the release of these turtles as a justification for harvest. This is still very much an experimental technique; one that may be able to help turtles, to conserve turtles. We just do not know at this time.

Another contentious issue is international trade in sea turtle products, particularly in Bekko. We will be discussing this trade in greater detail at the Symposium in Himeji in a few days. Once again, please allow me to divert to the Atlantic system and share with you our very grave concern about the Atlantic Hawksbill. This species (one is shown here) is being hunted to extinction for Bekko trade. We are very concerned in the Caribbean because the nesting populations, whether they be in Costa Rica, Panama, Mexico, Dominican Republic, Cuba, Haiti, are all reported to have suffered grave declines. And it is getting to the point that unless something is done rapidly, there will be no hope for the Atlantic population of Hawksbills.

The population concentration in Indonesia is still great. We still have time to work to preserve that population. In the Caribbean, we are rapidly running out of time. We had once thought that the Hawksbills in the Caribbean would be saved by the time they reached what is known as the "point of economic extinction." That is that point when it is no longer worthwhile for the fishermen and turtles to hunt the sea turtles. When they become so rare that they are caught less frequently and therefore cannot support a man who makes his livelihood hunting them.

This hope of ours has proven to be false for two reasons: First, the price for Bekko has continued to raise as the population of Hawksbills in the Caribbean had continued to drop. In many areas of the Caribbean, the shell of a grown Hawksbill is equal in value to an annual salary for a fisherman. That means that it is worthwhile for a man to invest an entire year hunting for one turtle. And if he can catch that one turtle, he will have made a year's salary. So it begins to seem that the point of

economic extinction will never be reached because the price keeps going up.

The other reason that we now feel that the Hawksbill will be literally hunted to extinction in the Caribbean is because of the crawfish, or spiny lobster trade in the Caribbean. This is a very valuable animal, as I know you are all aware, and it shares the habitat of coral reefs with the Hawksbill. Throughout the Caribbean there is intensive hunting by divers for the spiny lobster. And these hunters, while they are hunting spiny lobsters will always take any Hawksbill they come across. Therefore, it does not have to pay that fisherman to be out just looking for turtles. He can be out making most of his money from hunting spiny lobsters, and then take the occasional Hawksbill that he comes across. Again, this will allow the fisherman, and encourage the fisherman to hunt the Hawksbill to extinction.

Leaving these more contentious topics, I would like to discuss today two aspects of international sea turtle conservation on which I believe all sea turtle biologists can agree. These are the need to control marine pollution and the need to control incidental catch.

Marine pollution is comprised of a vast array of items, oil and tar, plastics, discarded fishing gear, and can only be controlled through international treaties to stop the dumping of refuse into our oceans, and to prohibit fisheries from abandoning lines and nets that will continue to catch and kill sea turtles and other marine organisms for long periods of time.

Our concern is great for the small post-hatchling turtles. These small turtles inhabit drift line habitats, which is the slide that I show there. These drift lines are areas of convergence where two opposing currents meet each other, or where continuous winds form wind rows. In these areas of drift line, all floating matter in the ocean is congregated. The major component of these lines in the Atlantic is the algae sargassim (phonetic). Small turtles of several species have been reported from these drift lines. Here is a small loggerhead. And this is a picture of small green turtle. This picture is from the North Atlantic, and the winds and currents were so strong that what you're seeing here is the sargassim having been pushed up and piled up above the water, so this small green turtle in the center of the picture is literally walking across the top of a dry algae mat.

Unfortunately, all floating objects in the ocean are congregated in these drift lines by the same physical forces that congregate sea turtles here. This includes floating garbage, which can be seen in this slide: pieces of plastic, bottles, wood, glass. Sometimes garbage forms the main component of these drift lines. There have been many reports from the Atlantic of entire drift lines formed from

the thaloom lights, or the chemical lights that are used as fish attracting on long line and gear.

Pollution impacts turtles in many ways. Turtles are killed when they are coated with tar, as shown in this slide here. This is a small Hawksbill that washed ashore dead on the coast of Florida after he had become totally coated with tar. This is an increasingly common sight along the United States seaboard, and these turtles are now nicknamed "tar babies."

Small sea turtles are indiscriminate feeders. They'll try to eat just about anything that can fit their mouths around. And often this gets them into serious trouble when they try to ingest either tar balls or other plastic debris. This is the esophogous and stomach removed from a small green turtle that washed ashore dead in Florida. Its esophogous was totally occluded with the tar ball that you see there.

The next three slides were kindly provided to me by Mr. George Balazs, and they represent turtle mortality in the Hawaiian Islands. As I said, ingestion of garbage is a big problem with sea turtles. This is nearly one kilogram of plastic that was removed from a dead Hawksbill that washed ashore in the Hawaiian Islands.

Entanglement in debris is also a serious problem. This is a picture of a green turtle that washed ashore dead with a plastic band around its neck. These are fairly common scenes. Sea turtles hopelessly entangled in monofilament lines, in other kinds of garbage, plastic packing bands are particularly bad, and lengths of rope. This final slide is of a Hawaiian sea turtle that washed ashore dead totally enwrapped in leftover netting. Netting that had been abandoned by a fishery. As Dr. Uchida mentioned earlier, this is a tremendous problem, and throughout the world this is a tremendous problem.

We must all press our governments to join and sign the Treaties that are now being enacted to control marine pollution. One in particular is the MAR POL Convention with Annex 5, that prohibits the at-sea dumping by ocean going vessels.

We must also press our governments to create treaties that control the abandonment of fishing gear. These senseless losses of sea turtles with no benefit to man must be stopped.

The other problem that I want to address today is that of incidental catch. Incidental catch of sea turtles is defined as the taking of sea turtles by a fishery that is directing its catch effort at other species of organisms. There are many examples of this problem around the world. Dr. Uchida discussed this problem in his talk earlier today. Another member of the Marine Turtle Specialist Group, Jean Mayal from the Mediterranean is work-

ing with the Incidental Catch of Small Loggerheads on the shark long line fishery in the Mediterranean.

Ms. Tan Yan Xiang has published a very valuable account of the disastrous results of the taking of adult leatherbacks in the shrimp trawlers in Malaysia.

Mike McCoy and George Balazs, two of my colleagues who will be speaking later, have both been involved in the incidental take of turtles by long line fisheries in the Pacific, and I hope that they will have an opportunity to address this problem this afternoon.

In the United States we have problems with gill nets, long lines, and driftnet fisheries, but our major problem in the Atlantic is with shrimp trawlers. This is an example of a fairly small shrimp boat. There are 14,000 ships in the U.S. fleet alone. Often when these trawlers bring up their nets, bring them over the side, and dump the contents onto the deck, a sea turtle, like the loggerhead shown here is included in the catch.

In fact in some areas of Florida, sea turtles are caught by shrimp trawlers in such abundance that it is an efficient way to sample marine turtle populations in those areas. This is a slide of one trawler, of one trawl net that is totally full of loggerheads. Each one of these layers here is an individual loggerhead. This was a trawl only after 45 minutes this many turtles were caught.

I am shown here with two of my graduate students, measuring a loggerhead that was brought up from the Cape Canaveral Florida population, a population that we have been monitoring for over 10 years, using shrimp trawlers. Some of you may recognize Kazu Horokoshi, shown here on your right. He is one of my graduate students, and has worked with several of you in the Ogasawara Islands.

Each year approximately 45,000 turtles are caught by shrimp trawlers in the United States waters. Of these, between 12,000 and 13,000 turtles are killed. We have these figures from observers who have been put onboard shrimp trawlers and who monitor the catch; from tag returns that shrimp trawler captains have sent to us of tagged turtles that they capture, and also from counting the number of carcasses that float ashore following the trawler fishery conducted offshore.

Most of the turtles that are caught and killed are loggerheads, like the one shown here. But many of them are Kemps Riddleys. This is a small Kemps Ridley. This is a common size for being caught in a shrimp trawler. It's being held by Dr. Archie Carr just after it had been brought up from the Florida Coast in a shrimp trawler. Kemps Riddleys are the most endangered species of sea turtle in the world.

It's the species of greatest concern to sea turtle conservationists, and we all are unanimous in feeling that unless the incidental capture of this species is stopped, there will be no hope for the recovery of this species.

Now one would think that a sea turtle could easily escape a fairly slow moving net. Shrimp trawls typically move at less than 2.5 miles per hour, and turtles can certainly swim more rapidly than that. Divers, working under water, have observed turtles being caught in nets and it's a very familiar pattern that happens over and over again.

First of all a sea turtle is taken back about this far in front of the net. It sees the doors on either side of the net, and it will swim rapidly to escape the net. Unfortunately, often the turtles will not turn to the side or go up to get out of the net's way. They will just swim straight forward. Then they will start swimming more slowly again; the net will catch up with the turtles, the turtle will speed up and then slow down, the net will catch up, in a very long cycle until the turtle is just exhausted and falls back into the shrimp net and is trapped, because many of these shrimp trawlers hold their nets underwater for 3 hours and longer, most of the turtles are drowned.

For the past 10 years the U.S. National Marine Fisheries Service has worked to develop a device that will exclude turtles from shrimp trawl nets. The resulting turtle excluding device, which is nicknamed TED cost over 1 million dollars to design, and is effective in keeping out 97 per cent of the turtles that would otherwise be captured. It also does not decrease the shrimp catch.

An early design is shown here, a very large flexible mesh in front of the net. This was discarded in favour of this design which is a trap door device that is inserted into the net just in front of the caught end of net. As shown here by this diver, when the turtle comes back and hits against the trap door, this upper trap door will open and the turtle is excluded from the net. These devices are also popular in areas of the United States that have tremendous problems with large sharks and rays, or very large jelly fish that tend to clog their nets very rapidly. These excluder devices also exclude those other large unwanted species.

Shrimpers have complained that the device is heavy and awkward and dangerous to use onboard a shifting vessel. The primary problem really has been that shrimpers are a very independent group of people who do not like to be told by anyone what they should or should not do. After trying for several years to educate the shrimpers in the importance of the voluntary use of the TED device in their nets, the National Marine Fisheries Service has found it necessary to enact Federal regulations requiring the use of TED in all nets. After a very long process of

review and of judicial challenges, these regulations are now in effect, and starting next year all shrimp trawlers will have to use TED or limit their tow times to less than 90 minutes in U.S. waters.

When the shrimpers finally decided they were going to have to be required to use TED, they began to use their own ingenuity in designing TED. Most of the TEDS that the shrimpers have designed themselves are called "Soft TEDS." They're called "soft TEDS" because rather than having the hard parts that the TED of the National Marine Fisheries Service has, these TEDS are comprised of soft nets and baffles, as shown here, and shown more clearly in the next slide.

This loop, this opening or loop of netting hanging down from the front of the net is the exit part for sea turtles caught in shrimp trawls. The National Marine Fisheries Service has a certification program which all TEDS must pass before they are approved for use by shrimp trawlers. However, this certification process only ensures that the TEDS are effective in releasing turtles. They do not test whether the TED is effective in catching shrimp. This is left up to the shrimpers for them to test, and determine whether they wish to use these TEDS.

We now have the technology required to prevent the loss of sea turtles in shrimp trawlers. We need to ensure that the necessary technology reaches those countries where it can be used. The National Marine Fisheries Service of the United States has already sent technical advisers to Mexico, Indonesia, Panama and Surinam to give technical assistance. We know that the problem in Malaysia is a serious one. We know in Honduras there is a growing problem of a number of adult female green turtles that nest in Costa Rica being caught in the shrimp fleet there.

Recent reports from Thailand indicate that the Thai fishing fleet is catching many turtles, and having disastrous results on the turtle populations there.

We have the technology to solve this problem. Now we must act to implement it.

Only through international cooperation can we ensure that the survival of sea turtles as part of the natural heritage will exist for future generations. If we act wisely, sea turtles will continue to provide an important source of protein for local coastal people, and will continue to provide all of us with the source of beauty and wonder, as do the loggerheads nesting here in lovely Hiwasa.

Thank you very much.

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## Regarding the Publication of the International Sea Turtle Conference Minutes

The minutes of the International Sea Turtle Conference held from July 30, 1988, to August 3, 1988, in Hiwasa-cho, Tokushima Prefecture, and in Himeji City were completed.

At the conference, the preservation of sea turtles was discussed in Hiwasa-cho with the Sea Turtle Museum playing a central role in the discussions. Activities of the Municipal Aquarium served as the core of discussions in Himeji, which focused on the uses and conservation of sea turtles, with talks mainly centered on the hawksbill turtle.

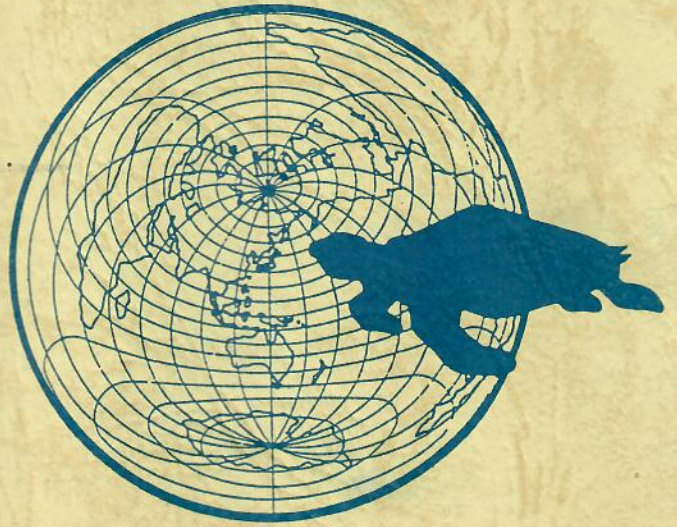
The conference was characterized by attendance and active discussions by researchers, government officials, representatives of the Bekko industry, natural preservation organizations, and the general public. This is the first time that such a conference focussing on sea turtles has been held anywhere in the world. Therefore, it was necessary that the minutes should be published.

We feel great joy at the publication of these minutes, and would like to express our deepest appreciation to all those who have helped in preparing for the conference, its implementation.

Thank you

Conference Representative

Itaru Uchida



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ON **SEA TURTLES** '88

HIMEJI CITY  
HIWASA TOWN

菅沼 行雄  
Hiroyuki Suganuma

山藤 康男  
Yasuo Konno Japan  
Hiwasa

中根 隆博  
Nakane Takahiro

Shimizu  
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