

# Sampling Green Sea Turtles With Nets On The Island Of Hawaii

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## Introduction

In studying a marine reptile, such as the green sea turtle (Chelonia sp.) a major objective is to acquire a firm skill in sampling techniques. Though sea turtles can be captured by hand, improved and more efficient techniques should be utilized. These techniques not only must afford greater coverage of a sample area but also provide for the safety and protection of the sea turtle once captured. Thus by capturing and then tagging, measuring, and observing green sea turtle aggregations in their marine environment, basic biological data may be collected on this unique and valuable marine resource in the Hawaiian Archipelago. Data thus gathered can be useful in planning management programs to insure the survival of the sea turtle for the future benefit of the State of Hawaii for aesthetic purposes, scientific inquiry and as an exploitable food resource.

On May 5-8, 1977 I accompanied Mr. George H. Balazs (Hawaii Institute of Marine Biology) with MOP-support on a field trip to the Island of Hawaii to test the feasibility of using large-mesh nets as a method of obtaining samples of live, healthy green sea turtles. For the purpose of the field trials, areas were selected based on the experience and turtle-fishing knowledge of Mr. Arnold L. Howard, a resident of Punalu'u, Hawaii. His advice and comments provided insight into the turtle-fishing practices along Hawaii's shoreline. By showing us and explaining the various techniques in setting a large-mesh turtle net, I acquired an education

in handling and maintaining turtle nets.

#### Materials and Methods

The nets that were used were quite similar to local gill-fishing nets, except that the mesh or "eye" size were larger. Two nets were made of cotton twine, 62 feet long and 14 feet high with an "eye" of 26 inches. Two nets were made of nylon, 73 feet long and 12 feet high with an "eye" of 18 inches. By using the nets in varying manner, sampling could be conducted over a range of topographical conditions. The large mesh size allowed the swimming turtle to penetrate the net and become entangled within its folds. Large turtles captured in this manner were able to breathe even though their struggles gathered most of the net about their flailing flippers. There is a distinct danger from drowning, but with periodic checking of the nets, this problem can be kept to a minimum. Smaller turtles caught in nets have a greater difficulty in breathing because of their inability to pull the weight of the net to the surface to breathe. Thus by monitoring the nets, smaller turtles have a better chance of being noticed and subsequently removed from possible harm.

The nets were set by hand. First, by loading them onto a rubber innertube and then swimming perpendicular to the shore while releasing lengths of net. On shore the nets were attached to an anchor placed within the rocks of the beach. This is done to prevent the nets from becoming lost due to strong currents and rough weather conditions. By laying the net perpendicular to the shore, an area could be sampled of any turtles traveling along the coast feeding upon the algas of the reef.

The nets were left in the water overnight and any turtles caught were promptly removed the next morning. The captured turtles along with the section of net they were entangled in were loaded into the innertube and brought to shore. On the beach the sea turtles were disengaged from the folds of the net and measured. Photographs were taken and measurements recorded of data obtained: carapace length and width (straight and curved measurements), plastron length, tail length, and unusual body characteristics. Then the turtles were tagged on their front flippers using an Inconel tag. The turtles were released back to the area where they were caught after the measuring and tagging.

### Results

Between May 5-8, on the Island of Hawaii; in the Punalu'u and Ka'alu'alu areas, the use of nets accounted for the capture, tagging and release of 15 green sea turtles along with 1 recapture. The sea turtles ranged in size from 16 1/4 inches to 35 5/8 inches (straight line carapace length). All the turtles appeared to be in excellent health and full bodied. The one recapture occurred in the same area the turtle was originally caught in, three days later, with two of its tags missing. It was suggested that entanglement within the nets a second time could have possibly torn out the tags. The missing tags were replaced and the turtles released into the ocean.

It was noted that by using nets, both large and small turtles could be captured. The nets were moderately easy to handle and to set. It was also noted that the use of nets caused minimal harm upon the sea turtle, though anterior portions of its body- pri-

marily the neck and immediate foreflipper region did suffer from rope burns.

### Summary

As a method of obtaining healthy specimens of green sea turtles (Chelonia sp.) the use of nets proved to be highly effective. Nets provide the opportunity to restrict entry and exit of sea turtles through known feeding pastures, thus enabling for the capture of live and relatively unharmed specimen. The nets were designed specifically to capture sea turtles and excluded capture of other marine organisms, except possibly large rays or sharks. Nets are a good way to sample green sea turtle, but care must be exercised to lessen the chance of drowning of any turtles. Checking the nets a regular intervals is a good measure to insure the survival of any captured specimens.

To pursue further any attempts at studying the Hawaiian green sea turtle population, it is most beneficial to be able to employ capture methods designed to select specimens from their natural habitat. Known areas of green sea turtle aggregations can thus be sampled with nets and with the information obtained to supply data for management programs of this resource. By being allowed to use nets; capturing, tagging and release of sample populations in the Hawaiian Archipelago, migration and size ratios of the green sea turtle may be established for this Pacific area.