SHORT COMMUNICATIONS

RETURNS OF GREEN SEA TURTLES (*Chelonia mydas* Linnaeus) TAGGED AT BERMUDA*

A turtle tagging programme was started in Bermuda in 1969 and since that time 108 immature green sea turtles have been tagged. Eighty-nine were two-year-olds raised from eggs that had been transported to Bermuda from the Turtle Research Station of the Caribbean Conservation Corporation, Tortuguera, Costa Rica, between 1967 and 1971 as part of a restocking experiment. The remaining 19 were turned in by local fishermen for tagging because they were below the minimum legal size limit of 40 pounds (18 kg) set by the Bermuda Fisheries Regulations. In all cases monel poultry wing tags, supplied by Professor Archie Carr of the University of Florida, were fastened to the trailing edge of the fore flipper, near the body.

Seventy-nine tagged turtles were released from the north shore of Bermuda (bounded by a lagoon extending 8–10 miles (13–16 km) from shore) and 29 from the south shore (exposed to surf and with shallow reefs extending less than a mile (1·6 km) from shore). Recoveries of tagged turtles at Bermuda have been made only from the north shore releases with 16 being returned—two of these twice. The only recovery from a south shore release was in Venezuela, a minimum distance of 1,250 nautical miles (2,315 km) to the south south west, across the Atlantic, through the Mona Passage between Puerto Rico and the Dominican Republic and across the Caribbean Sea. This captive reared turtle was recovered by Annabelle De Santis at Adicora on the north-eastern side of Peninsula de Paraguana in Falcon State ten months after its release at Bermuda. At the time of release the turtle was two years old, weighed 3,860 g and had an overall straight-line carapace length of 304 mm. No measurements were made on recapture in Venezuela.

Growth Rates

Of the nine recaptured turtles accurately measured, only three made significant gains in size. Two were wild caught, the other captive reared. Together they had an average increase in carapace length of 3·7 mm per month. The remaining six grew less than 0·3 mm per month. However, members of this group had been at large for less than ten months while the members of the former group had been at liberty for 12, 17, and 27 months respectively. The significance of this lies in the fact that the turtles with little or no increase in length were at liberty when water temperatures were at their lowest. On the other hand even the best growth rate, that of a two- to three-year-old, was about one half that recorded by Caldwell (1962) for captive turtles in northeastern Florida. Witham & Carr (1968) recorded a weight increase of 183 g per month for a turtle at large for 30 months compared with 126 g per month over a 27-month period for the above Bermuda turtle.

Movement

The distance travelled by the tagged turtles from point of release to point of recapture (excluding the Venezuelan recovery) ranged from a few hundred metres to 13·9 km, and averaged 3·5 km. The distance travelled was not dependent on time at liberty since the turtle travelling 13·9 km was at large four days, while a turtle at large for the longest period (27 months) was recaptured 5·5 km from its point of release.

The two turtles recaptured twice both gave indications of 'homing'. One of these turtles was raised in captivity for two years, released at Gibbet Island on the north shore of Bermuda and recaptured after 17 months in Harrington Sound 2 km away. This turtle was again released at Gibbet Island and again recaptured at approximately the same location in Harrington Sound after a further two months. The second turtle was captured by a fisherman in Bailey's Bay, measured, tagged and released in Ferry Reach 1·8 km away. After twelve months this turtle was

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again captured (by the same fisherman) in Bailey's Bay and released in Ferry Reach. The same fisherman caught this turtle a third time in Bailey's Bay one month later.

Mowbray & Caldwell (1958) speculate that green turtles found at Bermuda form an itinerant population of juveniles derived from the West Indies, the coast of the Caribbean mainland or both regions. The dearth of mature animals in the commercial catch in Bermuda supports this; however, tagging results indicate that at least some of these wandering juveniles remain at Bermuda two or more years.

The locations of recapture of tagged turtles suggest that they disperse randomly from their points of release. Frick (in press), when visually tracking hatchling turtles released from Bermuda beaches, found a similar pattern of random dispersal from shore.

The recovery of a captive reared turtle in Venezuela 293 days after its release at Bermuda means this animal swam a minimum of 9·16 km (4·2 miles) per day, assuming a straight line course and capture on first arrival in Venezuela. This recovery adds evidence to that supplied by Witham & Carr (1968) and Carr & Sweat (1969) of the ability of captive-reared turtles to cope with their natural environment over long distances and extended periods of time.

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James Burnett-Herkes
Curator,
The Aquarium and Museum,
P.O. Box 145,
Smiths 3,
Bermuda.

Smithsonian Institution Center For Short-Lived Phenomena

A short-lived phenomenon, whether occurring naturally or resulting from man's interference with his environment, often presents an unusual research opportunity. A volcanic eruption, whale-beaching, or the birth of a new island can provide scientists with data about the nature of the earth and its inhabitants which cannot be obtained from a laboratory experiment. Yet, due to their brevity and the unpredictability of the time and place of occurrence, these events often go unstudied.

After the famous eruption of the volcano Surtsey in the mid-1960s, several national and international scientific organizations discussed the need for a world-wide communications network that would notify scientists of short-lived phenomena in the shortest possible time. Such a communications network, combined with advances in fast transportation, rapid communications technology, and development of reliable, portable field instrumentation, would enable scientists to travel to, observe, document, and study ongoing events.

In January 1968 the Smithsonian Institution established the Center for Short-Lived Phenomena to operate a global alert network and clearing-house designed to notify scientists of unexpected and brief environmental events. The Center was located in Cambridge, Massachusetts, in order to utilize the communications, publications, and computer facilities of the Smithsonian's Astrophysical Observatory.

To build its alert network, the Center invited hundreds of scientists in many disciplines and from many countries to become 'correspondents'. As a correspondent, an individual would report events occurring in his area, perhaps travel to the event sites to make follow-up reports, and, if possible, provide assistance to field research teams sent to study the events. In return, he would be notified of other short-lived events of scientific interest taking place elsewhere in the world.

The initial response by the international scientific community was overwhelming. Within a year the Center had 780 registered correspondents in 74 countries and had reported 70 short-lived events. Soon the Center was routinely reporting every major volcanic eruption, earthquake, and meteorite fall that occurred in the world.

Today over 2,000 correspondents in 138 countries serve one another through the Center by exchanging information and data on events. Once informed of an event, the Center attempts to contact eye-witnesses in the event area, collect photographic or cinematographic documentation, and assemble background information to be placed in a file that will expand as new material is sent to the Center. As soon as a reported event is verified, the Center prepares a postcard-sized event notification report which is sent by air mail to all the Center's correspondents in the