CLS Newsletter Nov. 89 #38

the animal harness triggered a physical separation. Both the PTTs provided location data, but only one was successfully retrieved, the other having been washed away by the strong, fast Kuroshio current. Data on the diving depth and interval was recorded by a self-recording sensor system attached to the PTT. Senior scientists at the Institute believe this type of system to be promising for marine animals, as it can reduce the size of the PTT which can sometimes be a handicap to use of the Argos system, as in the case of penguins.

These examples of animal tracking in Japan are thought to be valuable. The success of Crabeater seal tracking by US scientists in the Antarctic peninsular has also encouraged world seal scientists to continue the Japanese experiment to identify seal stocks. Japanese scientists will be requested to make a substantial contribution when the project becomes operational, and the eight-organization Japanese Argos user group will be among the most active in the world.

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SEA TURTLE TRACKING IN JAPAN

by Y. Naito (But File I. Uchida)

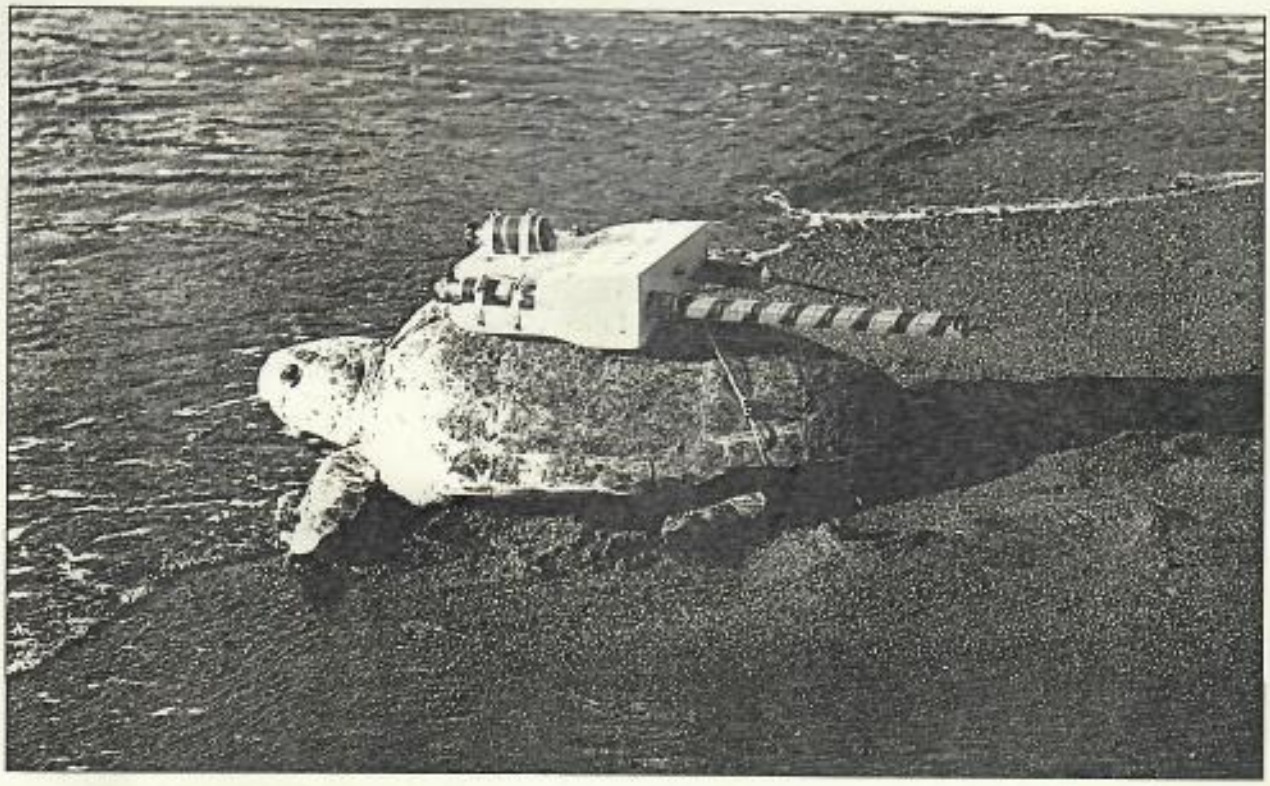
SPECIAL "FAR EAST" ISSUE

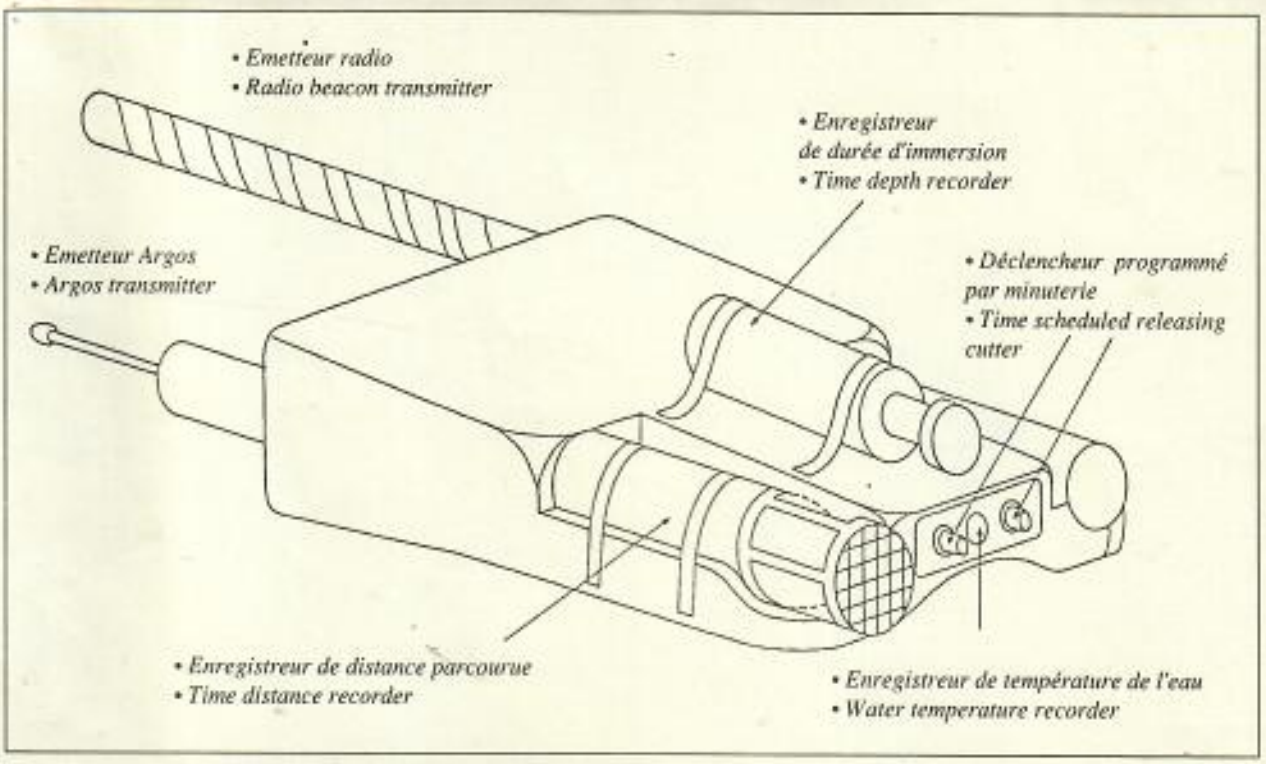
Introduction

Since 1984, we have studied the diving behaviour of loggerhead sea turtle *(Caretta caretta)* at Gamohda Point, Shikoku, south west Japan. Loggerhead sea turtle spawns its eggs 3 - 4 times at about two week intervals during its nesting season from early May to mid August. Diving behaviour of the loggerhead sea turtles had been studied using time depth recorders (TDR's), swimming velocity recorders and thermo recorders. We attached these recorders to the backs of turtles when they hauled out up to the nesting beach, and retrieved them at the following nesting. The turtles regularly return to the same beach during the nesting season and this behaviour assured us the high recovery rate of the instruments. We had almost succeeded in obtaining diving behaviour data during the nesting season. We simultaneously designed the recorder recovery system from the post-nesting turtles that migrate to remote pelagic ocean locations for a few years. We used the Argos satellite location system to recover the recorders once released from a turtle by a time- scheduled cutter.

Method

The purpose of this study is to build up the recorder recovery system from pelagic migrating animals using the releasing system and the Argos satellite location system. We developed the system and applied it to the loggerhead turtles in this study. The new system is composed of recorder parts, releaser parts, transmitter parts and a harness. One of the most significant and difficult aspects was to miniaturize the transmitter sufficiently to fit the animal. We had already developed the very small TDR, velocity recorder and thermo recorder, but we had to develop the small sized time-scheduled cutter and Argos transmitter particularly for this study. We also developed a harness made of new lightweight and strong material harness which rises to the surface once released from an animal in deep water. We used a kind of ballast system to diminish buoyancy of the



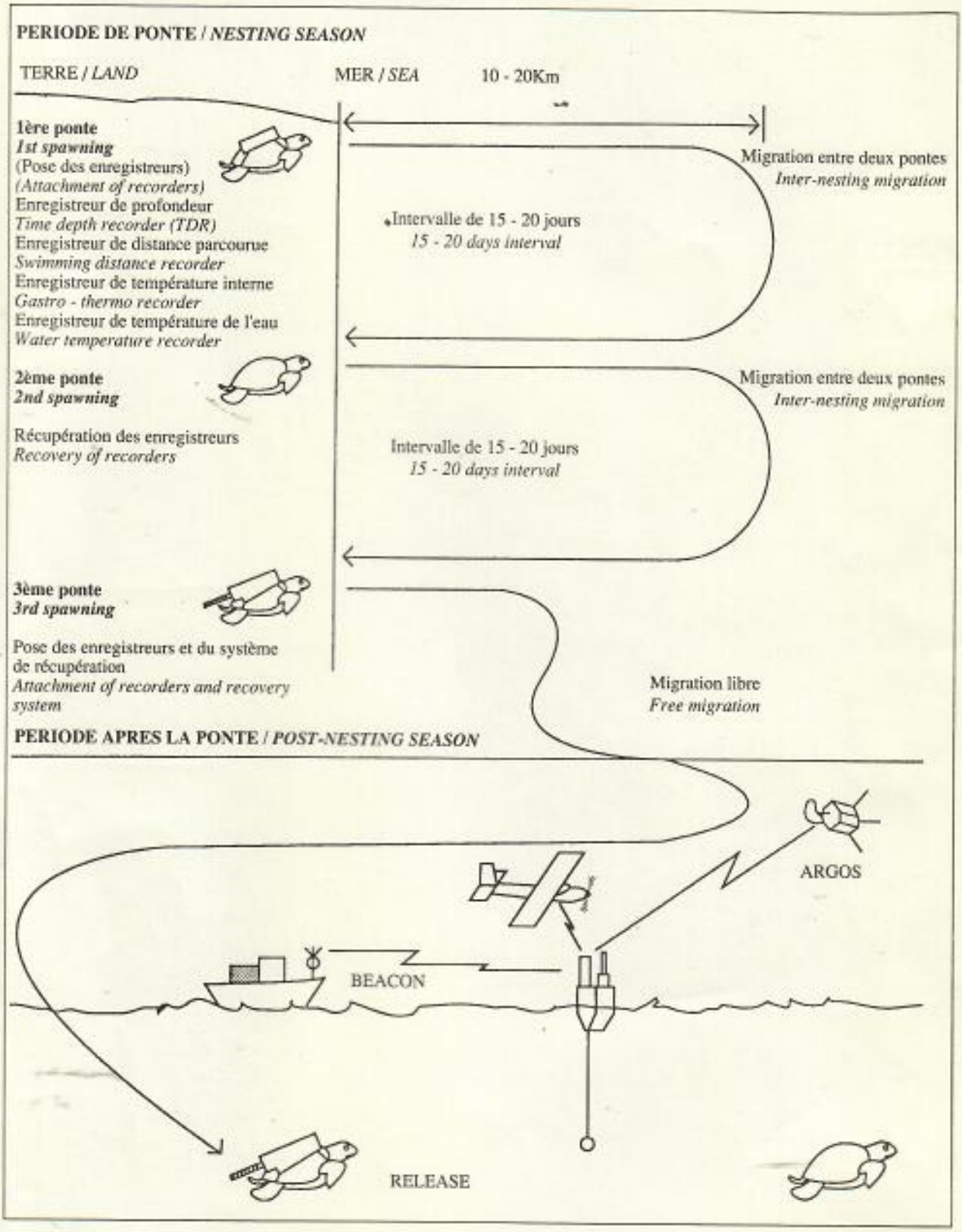


harness and an upright antenna control system. Preliminary experiments were carried out several times at Himeji City Aquarium and at sea. To detect and recover the system we used a ship and an aircraft equipped with a radio beacon direction finder.

Results

We attached two systems to the turtles at Gamohda Point on 22 and 26 July 1988. The systems were scheduled to be released by the cutter 10 days after attachment and both systems were released successfully from the turtles. On the 1st of August, the first system was found very easily in the sea 20km south of the coastal nesting site. It was located by the aircraft using the radio beacon direction finder, i.e. without using the Argos satellite location system. The ship, led by the aircraft, then had no trouble in recovering the equipment but the second system was only recovered when Argos had provided the location. The Argos position was, in fact, far from the coastal nesting site. It indicated that the system had drifted several hundred miles from the nesting coast along the mid stream of the Kuroshio current which follows the Pacific coast of Japan. It was impossible to recover the system by the small ship.

Dr Yasuhito Naito



1er août, grâce au détecteur d'émission radio et sans recourir au système Argos, l'avion a aisément repéré la première balise qui dérivait à 20 km au sud de la zone de ponte. Le bateau a ensuite récupéré la balise d'après les indications fournies par l'avion. Il a fallu attendre les données du sytème Argos pour localiser le deuxième système. La localisation indiquée était très éloignée du rivage de ponte. Le système dérivait à des centaines de kilomètres de la zone de ponte aux abords du courant Kuroshio qui est prédominant sur le littoral Pacifique du Japon. Le petit bateau n'a pas pu récupérer la balise.

Dr Yasuhito Naito