

A) TRANSPACIFIC MIGRATION OF A TAGGED  
LOGGERHEAD, CARETTA CARETTA

B) TAG-RETURN RESULT OF LOGGERHEAD RELEASED  
FROM OKINAWA ISLANDS, JAPAN

by

Okinawa Expo-Aquarium

S. UCHIDA, H. TERUYA

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JULY 30 - AUGUST 3, 1988

## A) TRANSPACIFIC MIGRATION OF A TAGGED LOGGERHEAD, CARETTA CARETTA

Okinawa Expo-Aquarium  
S. Uchida, H. Teruya

A tagged Loggerhead was found dead in the gill net of a fishing vessel operating off San Diego, California, U.S.A. during the third week of November, 1987.

By its metal tag, No.488, sent to the authors, it could be concluded that this turtle was one of 100 tagged pups released by them Is. on July 22, 1985.

The data on this release and recapture, and the presumed migrating course are shown in Table 1. and Figure 1. The Distance of 10,600 km was taken from a map along the presumed course (not direct course between release and recapture sites). A day in the middle of the week informed, November 18, was adopted as the date of recapture to arrive at the interval of 850 days. The speed was calculated from the interval and distance, assuming immediate capture on arrival at the capture site.

This long distance migration may be a rather unusual one for Loggerhead turtles hatched in Okinawa Archipelago.

However, this transpacific turtle record suggests the possibility that Loggerheads born in the Japanese Archipelago can reach the west coast of the U.S.A. if they enter the Kuroshio current.

The informer, Dr. Fritzsche, reported additional interesting facts: a turtle without a tag was also entangled in the net at the time, and the next day 12 to 15 turtles were noticed in the area 70-80 km off San Diego. Where did they come from?

Table. 1

Fig. 2

## B) TAG-RETURN RESULT OF LOGGERHEAD RELEASED FROM OKINAWA IS., JAPAN

### Materials and Methods)

During 5 years from 1983 to 1987, 416 Loggerheads were tagged and released from Okinawa Is., Japan. They were mainly about 1 year old pups at that time which had been collected as eggs from laying sites in Okinawa Island, hatched in Okinawa Expo Aquarium and kept there (Table 2).

The release sites were the beach near the Aquarium on the west coast of the island, points off shore but outside the Kuroshio current, and point within the current.

Twice drift bottles were released together with the turtles to study the relationship between migration of the turtles and the currents concerned (Tables 7 and 8).

### Result)

Number of tag-returns for 416 released turtles was 24 and the recovery ratio was 5.8% (Table 3). All the tags returned were from the northern area of the release sites, that is, nothing from the south (Figure 1). The shortest interval and distance was 5 days and 45 km from Okinawa Archipelago, and the longest 850 days and 10,600 km from the U.S.A. reported in A) (Table 4).

Excluding the shortest case from the recapture site (far south of the turning point of Kuroshio and Tsushima currents near Tokara Is.) 7 turtles (30%) were recaptured in Kuroshio system and 16 turtles (70%) in Tsushima system.

The average speeds were 1.76 km/hr in the Kuroshio system and 0.63 km/hr in Tsushima system. They may reflect the difference in current speeds between the Kuroshio and Tsushima. The speed of the Kuroshio current in the main stream belt is 5.6 - 9.3 km an hour and that of the Tsushima current 1.8 km an hour (Table 5). Seventy-two turtles were released from the beach, 244 from points outside the Kuroshio and 100 from a point within it. No turtles released from the beach were recaptured in the Tsushima system (Table 6). Recovery numbers and ratios according to release points are shown in Table 6.

The turtles of drift bottle return in the first release together with of turtles are shown in Table 7. At this time all recaptures of turtles occurred north of the releasing site outside the Kuroshio; on the contrary 92% of the recovered bottles was from the south.



The bottles may have been carried away by the counter currents branching from the main stream of the Kuroshio and heading south, while turtles may have swum against these counter currents and head northward.

The drift bottles released from within the Kuroshio current showed movements different from the first release (Table 8).

In this second simultaneous releasing of turtles and bottles, behaviors were almost the same for both, and especially in the Tsushima system their behaviors were surprisingly similar in interval, distance and speed.

Discussion) Since the turtles tagged and released in this study were mainly ca. one year old pups reared in captivity, it is difficult for us to predict the behavior or migration of just-hatched turtles or pups grown in the wild from the results of this research.

We can conclude, however, that if we release ca. one year old pups kept in captivity from Okinawa, they head north or northwest, swimming actively at least until they reach Kuroshio current.

The result of simultaneous release of turtles and drift bottles showed similar behavior in migration.

This may mean the turtles migrated northward taking advantage of the currents, because the drift bottles are thought to reflect the currents in direction and speed.

The numbers of recapture of turtles and recover of bottles in the Tsushima system were much more than those in Kuroshio system. This does not signify that the number of those which entered the Tsushima system was more than the Kuroshio system, but signifies the difference in conditions for recoveries between the two currents.

If turtles or bottles come into the Tsushima current, they go through water with many islands off the west coast of Kyushu and the narrow Tsushima strait where they may be easily found, if they come into the Sea of Japan from autumn to winter, they will be swept away to the Japanese Archipelago to be washed ashore by the periodic winds northwest, and may finally die because of the cold winter climate.

However, if the turtles enter the Kuroshio, they go through the vast water off the south coast of Japan and will be driven away by the wind far to the open sea in winter season, to go out of sight.

#### Acknowledgements)

The author wish to express their sincere thanks to Dr. I. Uchida of Himeji City Aquarium who kindly gave them tags for the first and second release of this study and also gave valuable suggestion: we thank Kanazawa Aquarium; Sun Piazza Aquarium; Oga Aquarium; Suma Aquarium Park; Shirahama Aquarium Kyoto University; and Inubosaki Marine Park for their kind cooperation in receiving living tagged turtles, keeping and re-releasing them.

We acknowledge the cooperation of fishermen, ordinary citizens, fisheries experimental stations, and town and city offices concerned in informing us about recoveries of tagged turtles and drift bottles, and of our aquarium staffs in collecting eggs, keeping turtles and releasing them.

DATA ON TRANSPACIFIC MIGRATION OF A TAGGED LOGGERHEAD

Tab.1

- 1. Place of egg-Sampling : Okinawa Is., Japan
- 2. Data of hatching out : Aug 1-17, 1984
- 3. Data of release : Jul 22, 1985  
Released as one of 100 pups at the time
- 4. Place of release : 115km NW of Okinawa Is. 26°46'N, 126°50'E
- 5. Size at release : Carapace length 17.5cm  
Carapace width 15.2cm  
Body weight 1,200g
- 6. Data of recapture : Nov 15-21, 1987
- 7. Place of recapture : Off San Diego, Ca., U. S. A. 32°39'N, 117°58'W
- 8. Interval : 2 years 4 month (850 days)
- 9. Approximate distance : 10,600km
- 10. Average speed : 0.5km/h
- 11. Size at recapture : Not measured.  
Estimated carapace width 68.6cm
- 12. Method of recapture : Drift gill net with 56cm stretch mesh
- 13. Name of catcher : Christopher Golden, student Humboldt State University and fisherman
- 14. Name of informer : Dr. Ronald A. Fritzsche, Associate Professor, Humboldt State University



PRESUMED TRANSPACIFIC MIGRATION ROUTE OF TAGGED LOGGRHEAD

Fig. 2

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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.

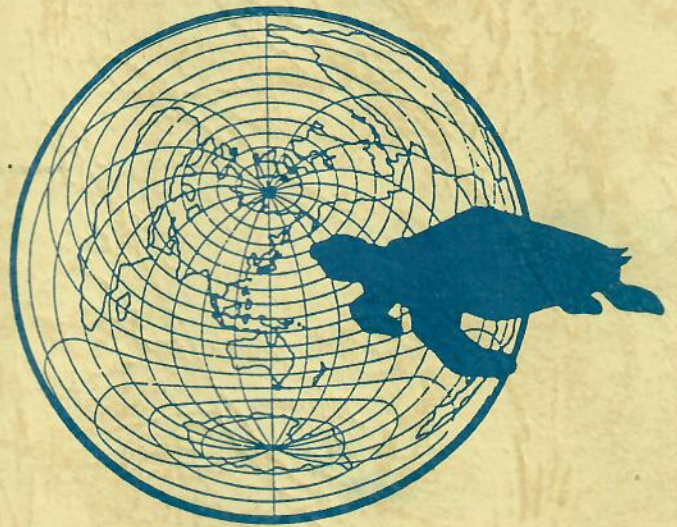
We feel great joy at the publication of these minutes, and would like to express our deepest appreciation to all those who have helped in preparing for the conference, its implementation.

Thank you

Conference Representative

Itaru Uchida





INTERNATIONAL SYMPOSIUM  
ON **SEA TURTLES** '88

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