

Captive breeding of hawksbill turtle and attempt to return them to wild

Masanori Kurita, Tomomi Saito, Hitoshi Okamoto, Makoto Soichi
(Port of Nagoya Public Aquarium)

Naoki Kamezaki (Sea Turtle Association of Japan; Suma Aqualife Park)

George Balazs (National Oceanic and Atmospheric Administration)

Introduction

Hawksbill turtle (*Eretmochelys imbricata*) is internationally acknowledged as an endangered species and listed as “critically endangered” on the IUCN Red List. Since 1992, our aquarium has improved the captive breeding of hawksbill turtle.

Breeding



We succeeded in the breeding of hawksbills in 1998 and almost biannually between 2003 and 2012 (Fig. 1, table 1). One particular turtle born in 1998 has grown to be a matured female of 76.1cm in standard carapace length (SCL) in 13 years (Fig. 2).

Table 1. Breeding success of hawksbill turtle at PNPA

Year	ID No. of Nesting females	Number of nests	Eggs	Hatchlings	Hatching success rate (%)
1998	EiW-19	5	597	1	0.2
2003	EiW-21	2	116	31	26.7
2005	EiW-21	5	513	106	20.7
2007	EiW-21	2	176	16	9.1
2009	EiW-21	5	541	139	25.7
2012	EiW-21	3	339	33	9.3
Total		22	2,282	326	14.3

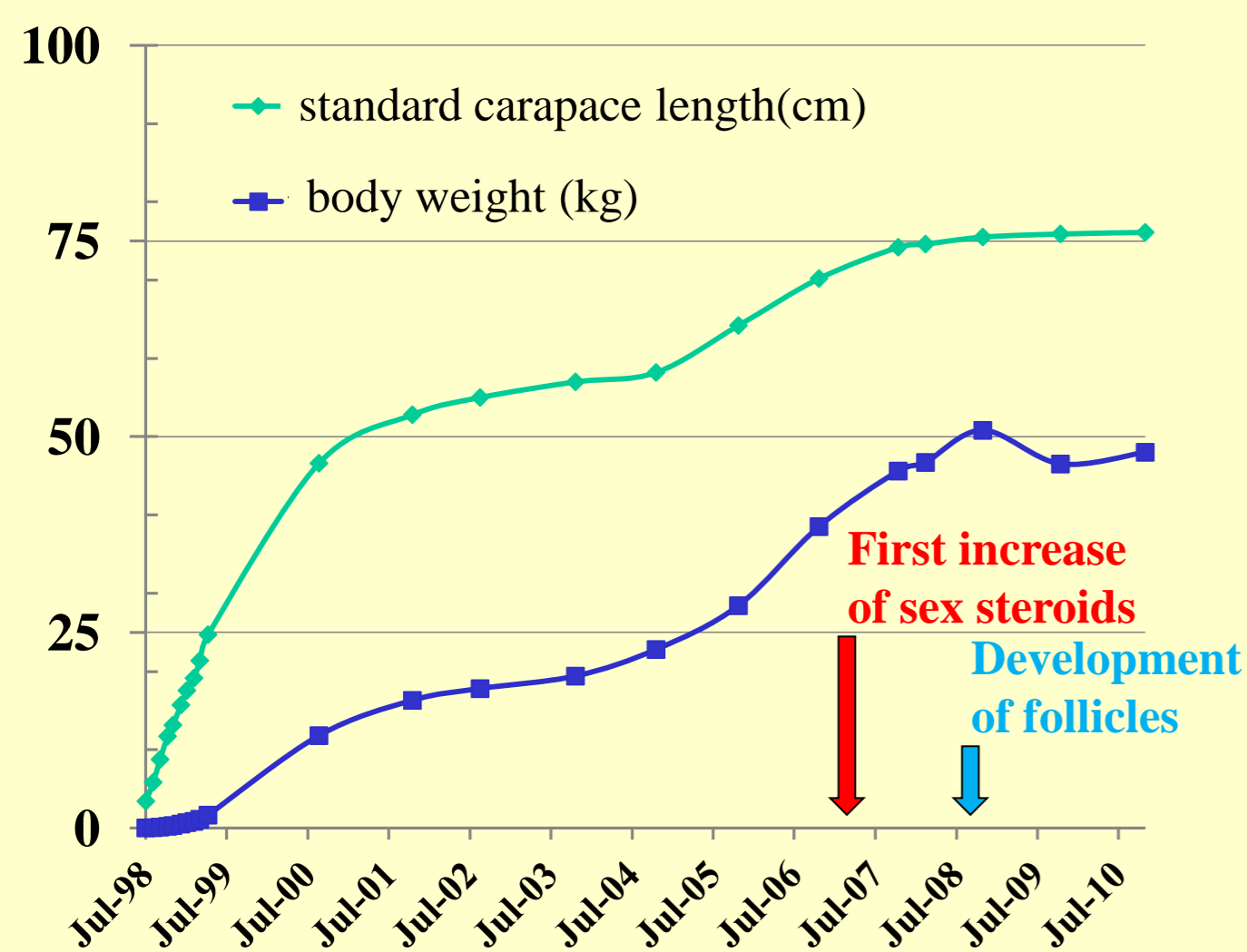


Fig. 2 Pattern of growth in female Hawksbill turtle born in 1998 at PNPA.

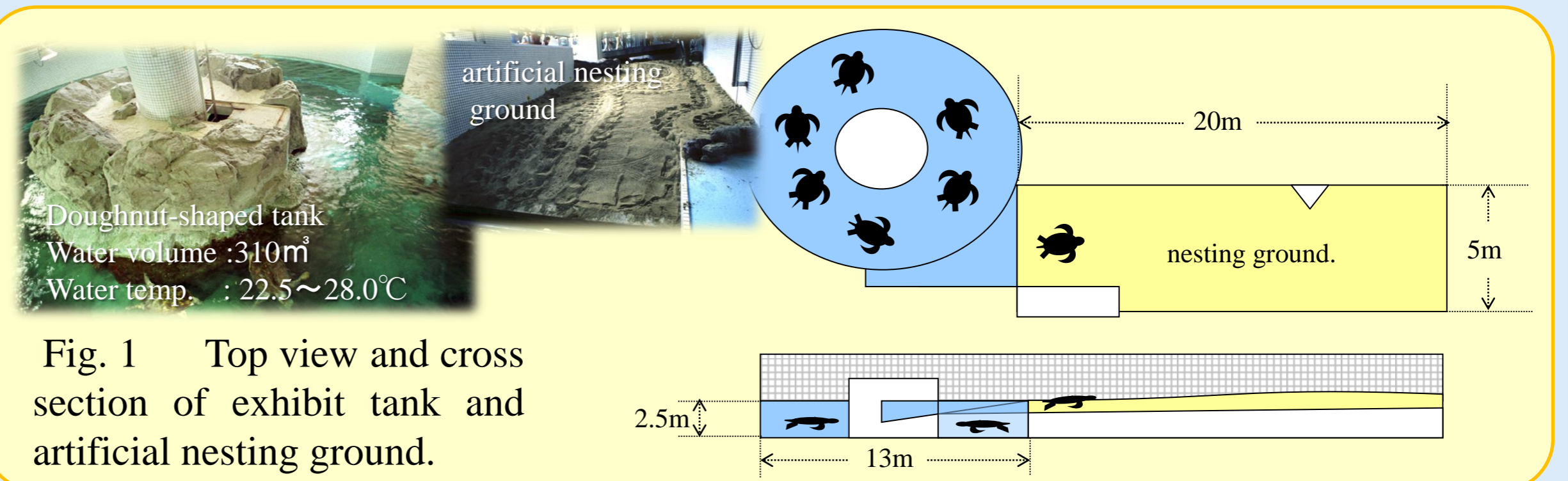


Fig. 1 Top view and cross section of exhibit tank and artificial nesting ground.



Although the technique for breeding has sustained satisfactory progress towards the population recovery of the species, improvement in the hatching success rate remains an obdurate problem to be addressed for stable captive breeding.

Release



The turtles were released with plastic and metal tags.

In August, 2011, twenty hawksbills bred at our aquarium in 2009 were released from Kuro-shima Island. Two turtles were released with satellite transmitters to plot their migration (Fig. 3). Before we had planned to release our hawksbills, we analyzed control region of mtDNA and micro satellite DNA of their parents and of the native hawksbills of Japan. Though the origins of the parents were Singapore, we could not find difference between them.

In this research, the satellite tracking provided some temporal data about their movement, but it was not capable of pursuing the status of individual turtles, with regard to such activities as feeding, growth, diving action, and so on. We have to consider developing equipment and methodology which can handle their behavioral traits more effectively.

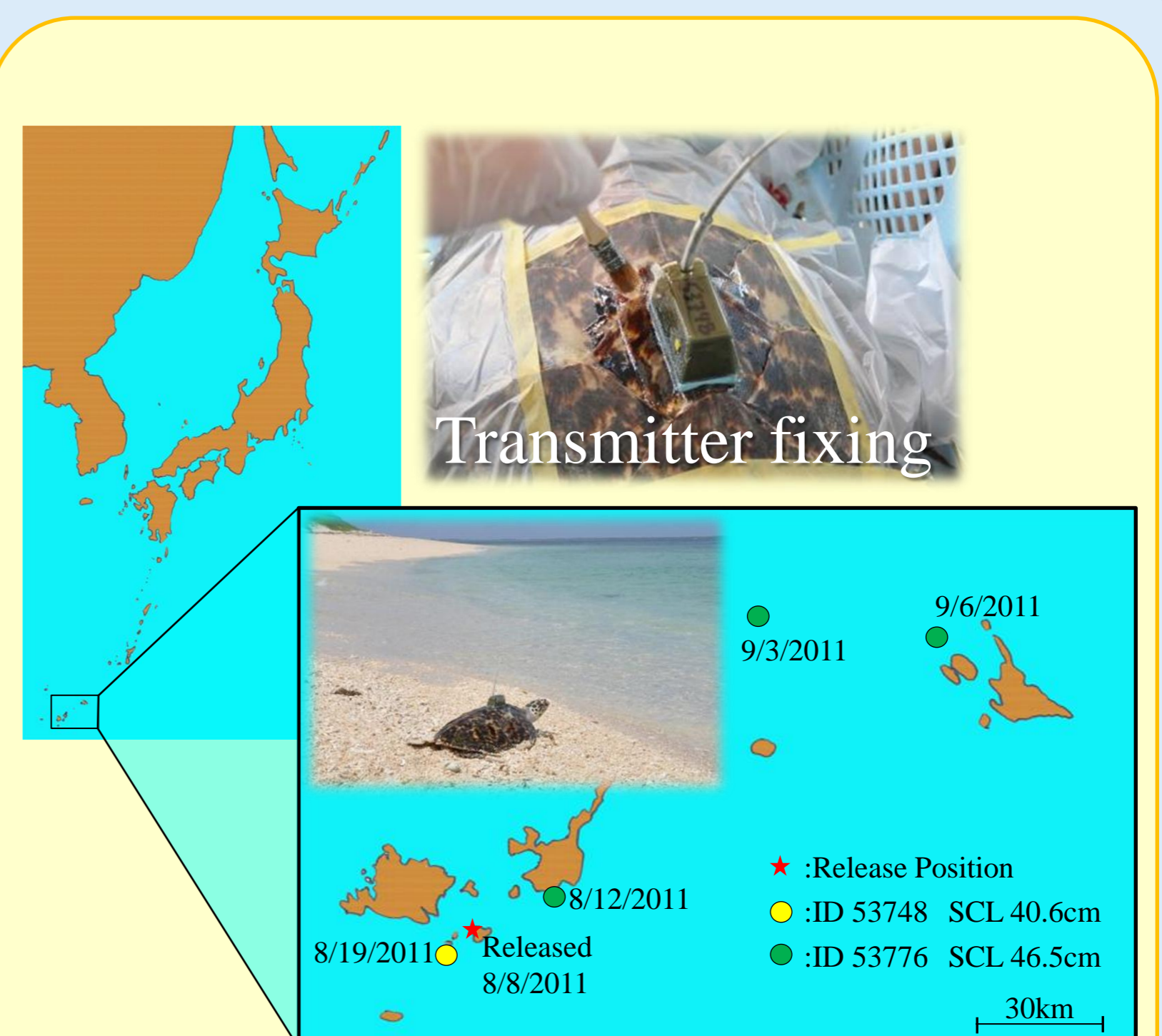


Fig. 3 Two of 20 turtles were released with satellite transmitters from Nishi-no-hama Beach, Kuro-shima Island. The dates and colored dots in the map indicate locations for the two turtles.