

琉球大学学術リポジトリ

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メタデータ	言語: 出版者: 琉球大学資料館 (風樹館) 公開日: 2018-09-18 キーワード (Ja): キーワード (En): 作成者: 河津, 勲, 井ノ口, 栄美, 真栄田, 賢, 深田, 晋悟, 小俣, 万里子 メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/42409



Long-distance movement of a tag-released hawksbill turtle from Japan to Yapen Island, Papua Province, Indonesia

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Abstract. An immature male hawksbill turtle, rescued and retained in Okinawa Churaumi Aquarium for at least 14 years, was tagged with plastic tags and released near Okinawa Island (26°12'N, 127°40'E) on July 13, 2016, at which time its straight carapace length was 74.9 cm. On December 2, 2016, the turtle was recaptured at Yapen Island, Papua Province, Indonesia (approximately 1°50'S, 136°10'E), over 3,200 km in a straight-line distance from the release position. This is the first report on the long-distance movement of hawksbill turtles in East Asia.

Record

The hawksbill turtle (*Eretmochelys imbricata*) is distributed worldwide around tropical and subtropical coral reefs. This species is classified as critically endangered by the International Union for Conservation of Nature (IUCN) due to the loss of their nesting grounds, the accidental capture of turtles in fishing gear (bycatch), and their intentional capture for the tortoiseshell trade (Mortimer & Donnelly 2008).

The nesting grounds of hawksbill turtles are distributed on the coasts of Japan, the Philippines, Vietnam, Malaysia, Thailand, Indonesia, and Papua New Guinea in East Asia (Mortimer & Donnelly 2008). Indonesia and nearby countries provide particularly important nesting grounds for these turtles in the eastern Pacific (Meylan & Donnelly 1999; Mortimer & Donnelly 2008). In Japan, although there are few hawksbill nesting sites (Hirate & Kawazu 2017), coastal areas including Okinawa Island serve as foraging grounds for hawksbill turtles. MtDNA analyses in the East Asia region have shown that hawksbill turtles in Japan have a variety of mitochondrial DNA (mtDNA) haplotypes, and the haplotype found near the Yaeyama Islands, Japan, corresponds with that found in Indonesia (Okayama

et al. 1999; Nishizawa et al. 2010; 2012).

Data from flipper tags on recaptured turtles revealed that hawksbill turtles migrate during several life-history stages (i.e., as subadults and adults). These journeys take them hundreds to thousands of kilometers across the sea, through the South Pacific Ocean (Miller et al. 1998), Indian Ocean (Whiting & Koch 2006; Whiting et al. 2010; von Brandis et al. 2017), Atlantic Ocean (Bellini et al. 2000; Marcovaldi & Filippini 2001; Grossman et al. 2007), and Caribbean Sea (Meylan 1999). Therefore, hawksbills in East Asia might also engage in long-distance migration (e.g., between Japan and Indonesia). Nevertheless, with the exception of a few sporadic observations of hawksbills released in the Republic of Palau and recovered in the Philippines, Guam, and Indonesia (Sone, 1989; Klain et al. 2007), there has been no direct evidence from flipper tag data that hawksbills migrate such long distances in East Asia.

At Okinawa Churaumi Aquarium (Ocean Expo Park, Okinawa, Japan), a flipper tag-recovery program for breeding and rescued sea turtles has been underway since 1985. As part of the program, an immature hawksbill turtle rescued near Okinawa Island and retained for at least 14 years in captivity was tagged with plastic tags through the axillary front and right flippers. Although we do not know the year that the turtle was rescued, in 2002, its straight carapace length was 46.3 cm and body mass was 11.9 kg. Tail elongation of the turtle during rearing confirmed that it was male. On July 13, 2016, the turtle was released from a beach on Okinawa Island (26°12'N, 127°40'E), at which time its straight carapace length was 74.9 cm and its body mass was 47.9 kg.

On December 2, 2016, 142 days later, the turtle was recaptured at Yapen Island, Papua Province, Indonesia (approximately 1°50'S, 136°10'E), over 3,200 km in a straight-line distance from the release

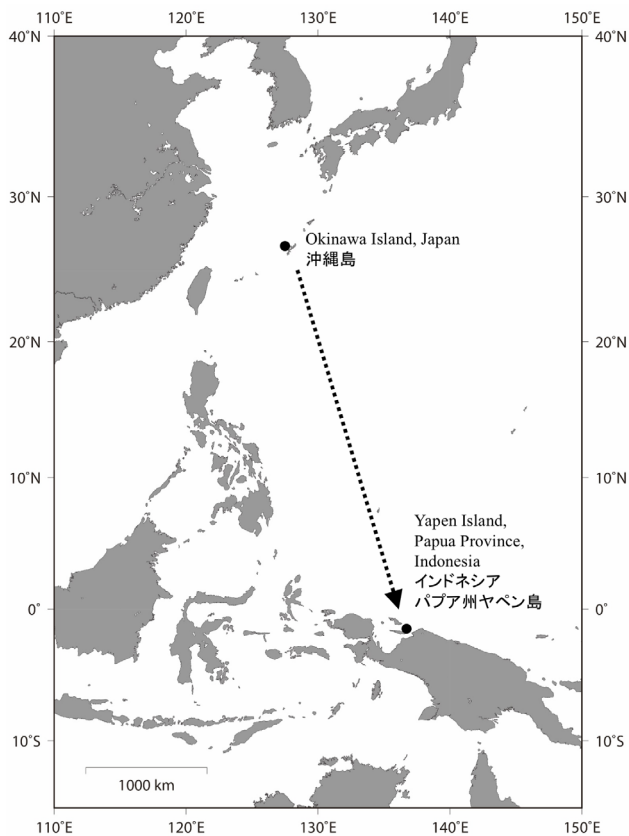


Fig. 1. Long-distance movement of a male hawksbill turtle from Okinawa Island, Japan, to Yapen Island, Papua Province, Indonesia, based on tag recovery.

図1. 標識放流した雄タイマイの沖縄島（日本）からヤペン島（インドネシアパプア州）への移動。

point (Fig. 1). These data indicate that hawksbill turtles might be highly migratory in East Asia, probably crossing international boundaries during migration. To our knowledge, this is the first report of long-distance movement of a hawksbill turtle in East Asia. Further studies that use the satellite tracking of hawksbill turtles near Okinawa, as well as additional data from the tag-recovery program, are required to clarify the migratory habits of the hawksbill turtles in East Asian waters.

Acknowledgments

We thank Mr. Agus and the members of Indonesia Sea Turtle Foundation for providing the recapture record of the released turtle. We also thank the Sea Turtle Association of Japan for assisting with our tag-recovery program and the staff responsible for the captive sea turtles at the Okinawa Churashima Foundation for providing assistance with the rescue and rearing of the hawksbill turtle.

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標識放流した雄タイマイの日本からインドネシアへの長距離移動

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要旨 . 沖縄島で未成熟時に緊急保護し 14 年以上飼育したタイマイを, 2016 年 7 月 13 日に沖縄島から標識放流した (標準直甲長 749mm, 体重 47.9kg, 雄). 放流から 142 日後にあたる 2016 年 12 月 2 日にインドネシアパプア州ヤペン島で再発見され, 直線の移動距離は約 3200km であった. このタイマイの長距離移動は東アジアにおいて初めての確認である.

投稿日: 2018 年 3 月 28 日

受理日: 2018 年 8 月 21 日

発行日: 2018 年 9 月 10 日