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SHIPS OF OPPORTUNITY: RELEASING SATELLITE-TAGGED LOGGERHEADS ON THE HIGH-SEAS TO STUDY THEIR PELAGIC ECOLOGY

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Life on the high seas is one of the last great frontiers for sea turtle exploration, inquiry, and discovery. In the Pacific Ocean, significant progress has begun in understanding the ecology and oceanic movements of juvenile pelagic loggerheads in northern and southern hemispheres comprising distinct genetic stocks derived from nesting beaches in Japan and New Caledonia/Australia respectively. Our advances in knowledge to date have been made possible by the availability of smaller satellite-linked tracking tags and the enhanced sensitivity of CLS Argos receivers on board orbiting satellites. We have overcome the immense challenge of directly capturing immature loggerheads on the high seas by substituting robust aquarium-reared turtles transported by ship for offshore release. Trained shipboard observers have also satellite-tagged and released pelagic long line by-catch turtles on the high seas. Turtles incidentally taken in offshore commercial pound nets targeting pelagic fish have also contributed to our international research partnership program. From 1997-2012, 523 loggerheads with satellite tags have been released, 374 of which were aquarium reared involving 14 deployments >2003 from eight different ships, including cargo vessels, fishery training ships, a passenger liner, a French Navy ship, a fishing vessel, and a whale-watching tour boat. Eighty-eight turtles from the New Caledonia Aquarium des Lagons were released south of the equator, and 286 from the Port of Nagoya Public Aquarium Japan were released in northern latitudes. Carapace lengths ranged from 23-75 cm. Deployment locations included: the Kuroshio Current off Japan (30-35°N, 131-141°E); the Sea of Japan (37°N, 136°E); midway between Japan and Hawaii (33°N, 176°E), midway between New Caledonia and New Zealand (30°S, 171°E); and 200nm southwest of New Caledonia (25°S, 163°E). Tracking lasted up to 1434 days in the northern hemisphere and 764 days in southern latitudes. Maximum distance traveled by a northern-stock turtle was 25,900 km and 15,290 km for a southern-stock turtle. Detailed findings to date of our pelagic loggerhead investigations are presented in 12 journal publications available at: . Three overall conclusions can be drawn from the success of our work: 1) International partnerships of mutual understanding, trust, and goodwill are essential to study sea turtle populations that span an ocean basin; 2) Aquarium-reared loggerheads released into appropriate high-seas habitats are acceptable replacements for the research of wild-captured turtles; and 3) Our voluminous archive of tracking data constitutes a significant resource for additional analytical approaches involving collaboration.