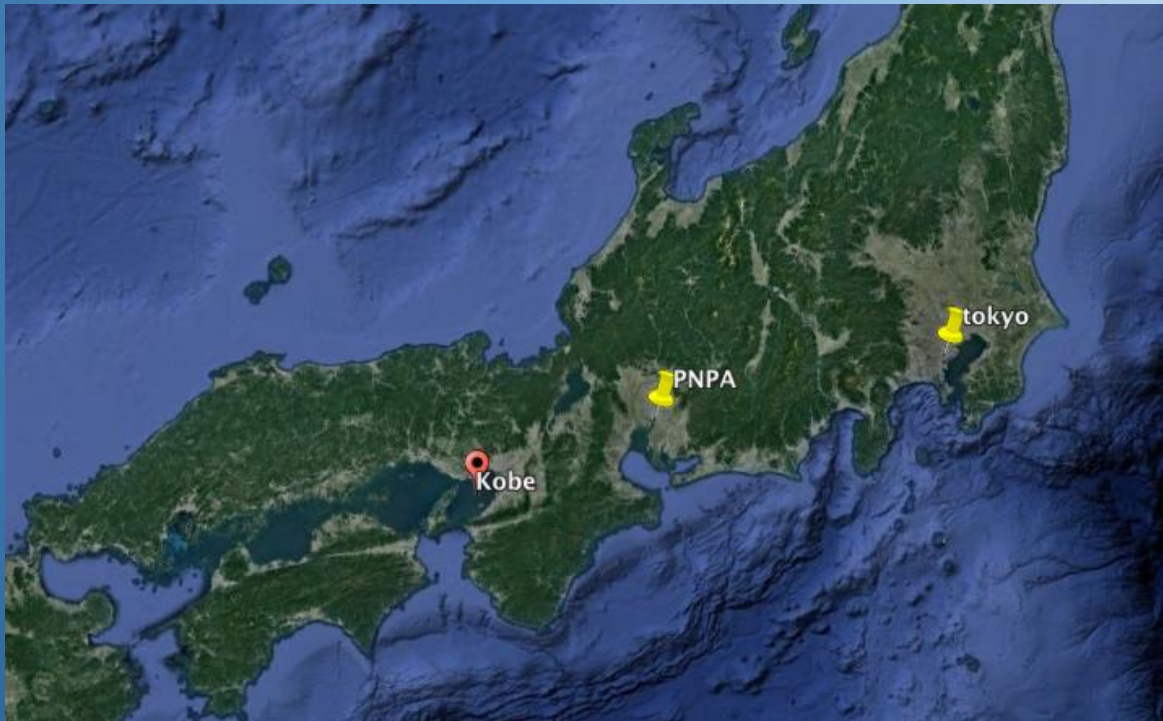


Studying North and South Pacific Juvenile Loggerhead Pelagic Phase Turtles



Obtaining Juvenile Loggerhead Study Animals

- North Pacific Population
 - Port of Nagoya Public Aquarium, Minoto-ku, Japan
 - Loggerhead hatchlings obtained from the aquarium's captive adult loggerheads were cared for and raised by the professional aquarium staff.



Obtaining Juvenile Loggerhead Study Animals

- North Pacific Population
 - Port of Nagoya Public Aquarium, Minoto-ku, Japan

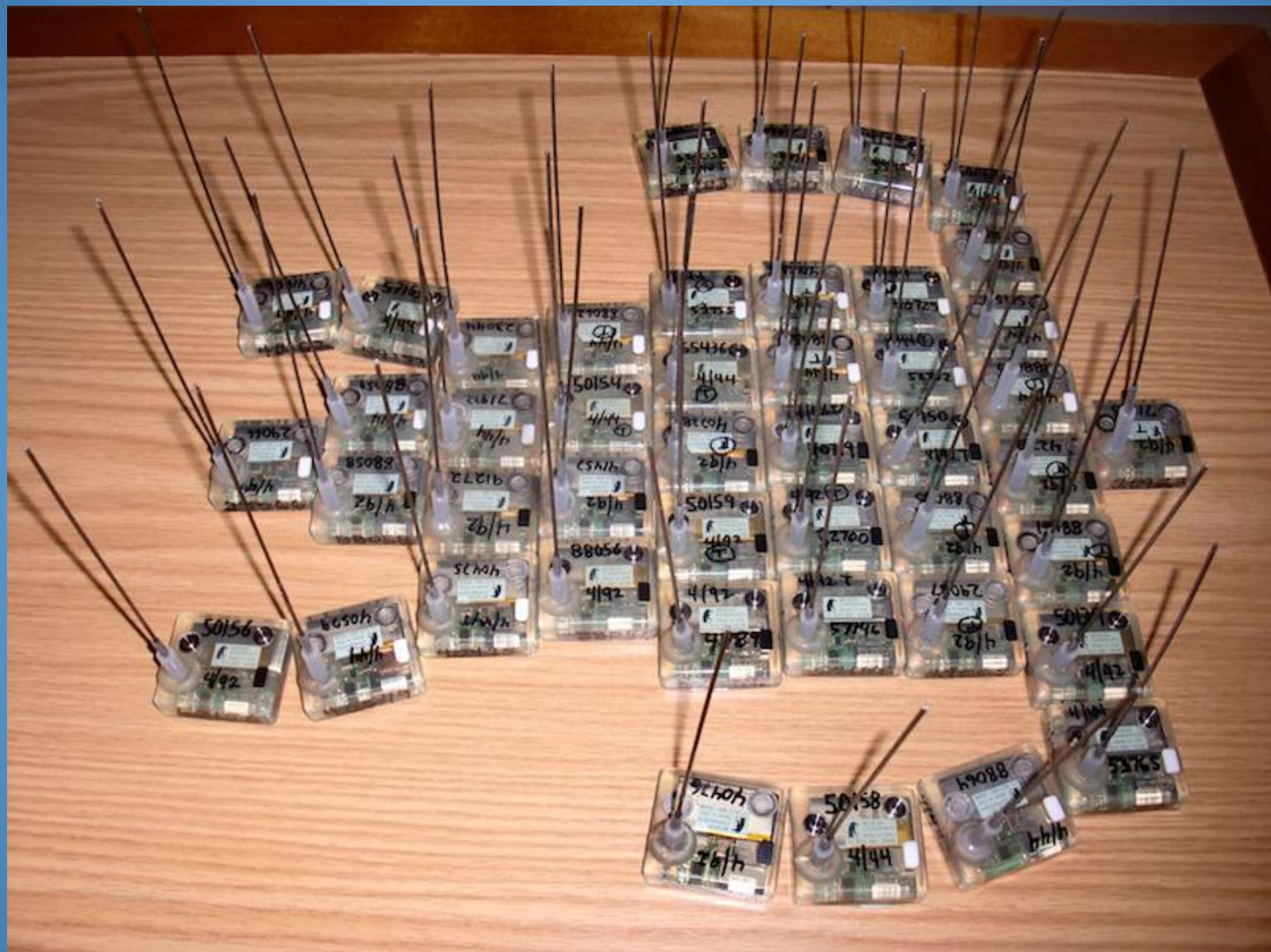












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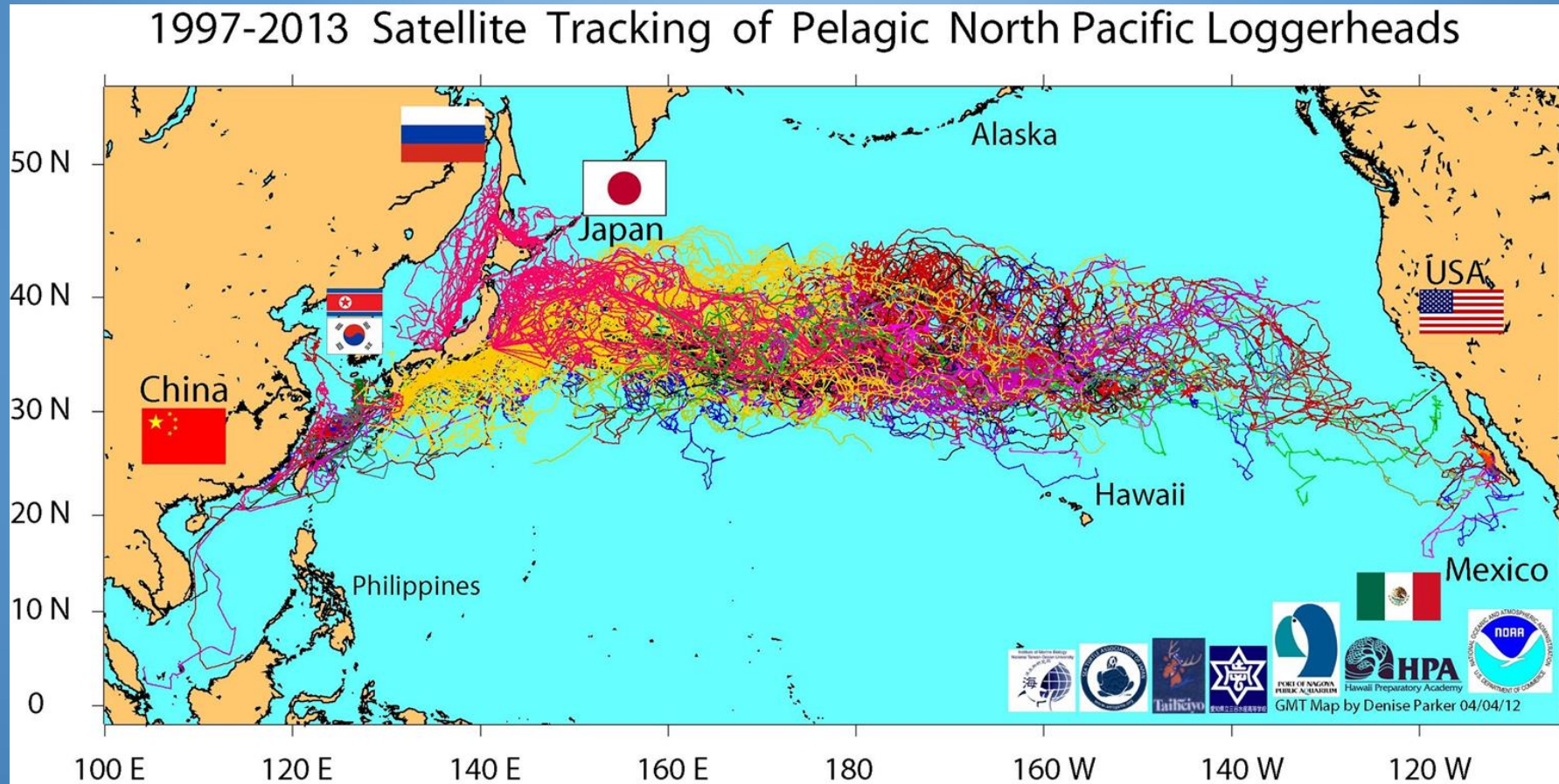
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NORTH PACIFIC LOGGERHEAD TRACKS 1997-2013



Obtaining Juvenile Loggerhead Study Animals

- South Pacific Loggerheads
 - Aquarium des Lagons – Nouvelle-Calédonie



- Loggerhead hatchlings collected from nesting beaches in NC were raised in the aquarium for a period of 18 months to 2 years (25+ cm SCL).
- Care of the turtles was supervised by aquarium staffers and volunteers from the community helped to carry out the daily routine of feeding, cleaning and observation.



Aquarium Director: Richard Farman



AQUARIUM DES LAGONS Nouvelle-Calédonie



AQUARIUM DES LAGONS Nouvelle-Calédonie



Recently Completed Sea Turtle Display and Nesting Area







Loggerhead turtles raised from hatchlings to 30 cm SCL



Loggerhead turtles raised from hatchlings to 30 cm SCL



Loggerhead turtles raised from hatchlings to 30 cm SCL





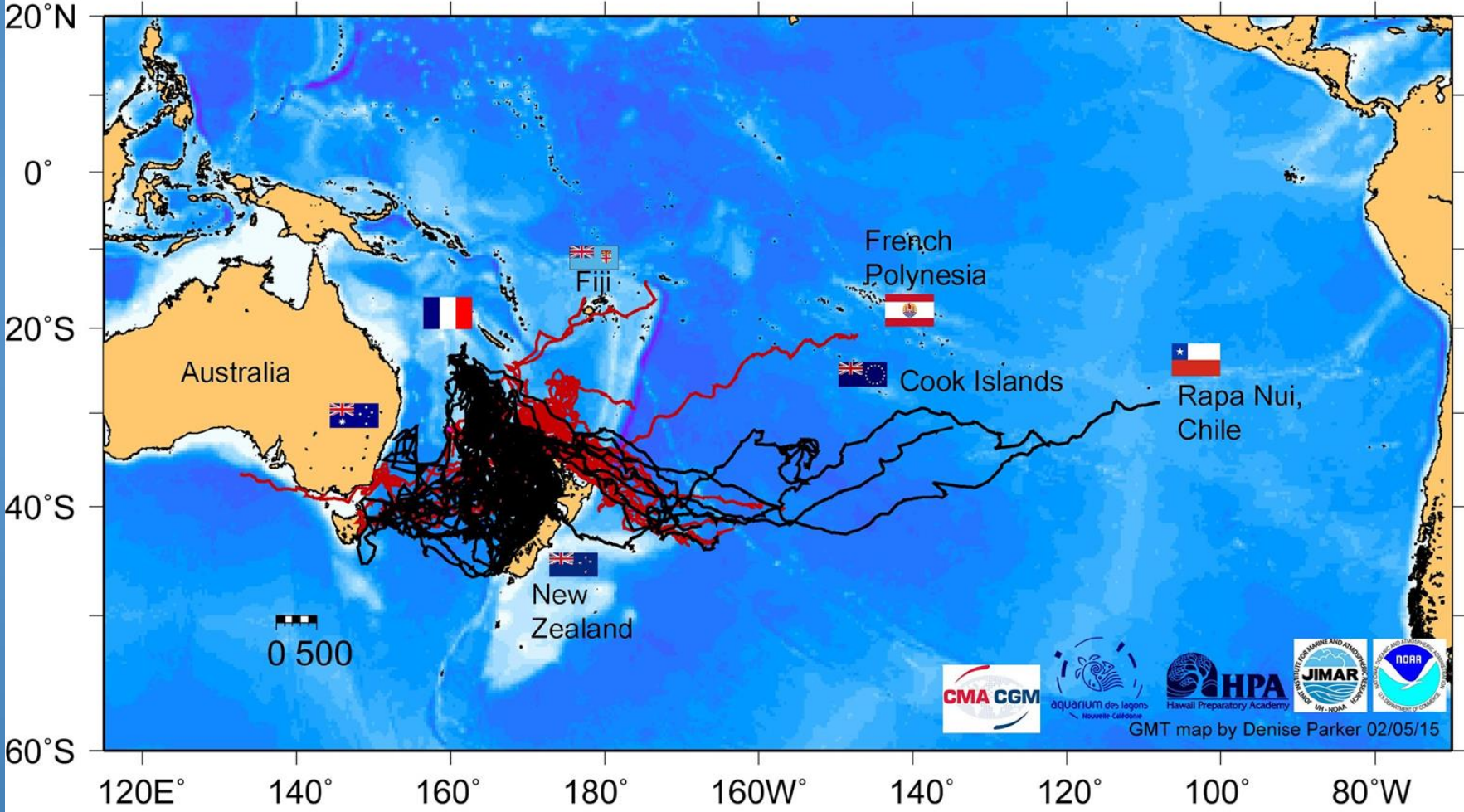


SPOT5 Tags attached and ready to deploy

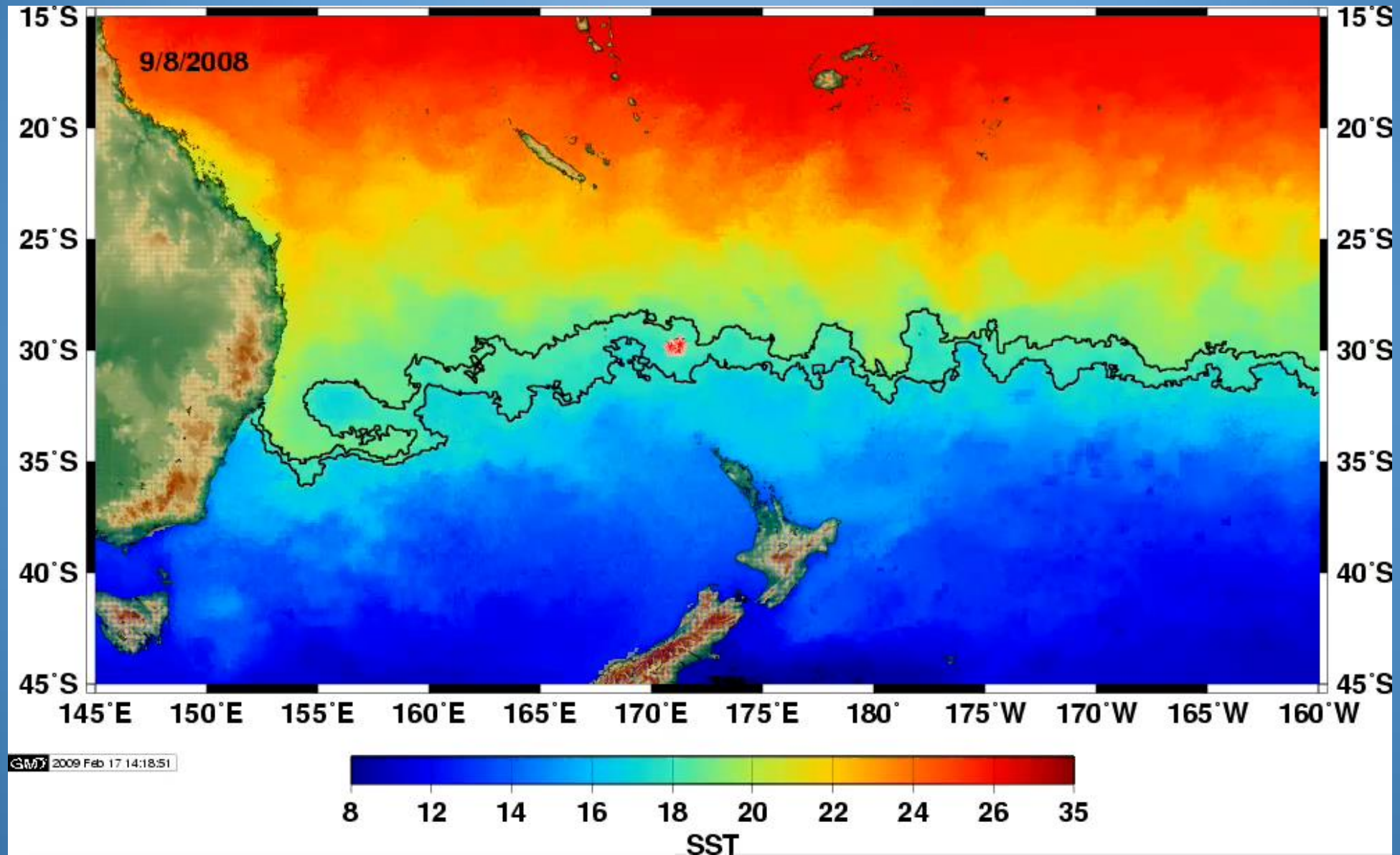


South Pacific Tracks

2008-2014 Satellite tracks for loggerhead turtles released in the South Pacific



Animation by Donald Kobayashi



Ships of Opportunity: Releasing Satellite-tagged Loggerheads on the High-seas to Study their Pelagic Ecology

George H. Balazs¹, Marc R. Rice², Denise Parker³ and Jeffrey Polovina¹

1. National Oceanic and Atmospheric Administration, Inouye Regional Center, National Marine Fisheries Service, Pacific Islands Fisheries Science Center, 1845 WASP Boulevard, Building 176, Honolulu, Hawaii 96818 USA

2. Hawaii Preparatory Academy, 65-1692 Kohala Mountain Road, Kamuela, Hawaii 96743

3. Joint Institute for Marine and Atmospheric Research, National Oceanic and Atmospheric Administration, 2032 Southeast Oregon State University Drive, Newport, Oregon 97365 USA

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 loggerhead 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 robustaquarium-reared turtles transported by ship for offshore release. We have also utilized turtles taken as pelagic long line by-catch then satellite-tagged and released by trained shipboard observers. Turtles incidentally taken off-shore commercial pound nets targeting pelagic fish have also contributed to our international research partnership program.



Above is the Port of Nagoya Public Aquarium and below is Aquarium des Lagons where loggerhead turtles have been raised and used in these satellite tracking studies.



An array of SPOT5 satellite tags prior to their attachment to juvenile loggerhead turtles at Aquarium des Lagons, Nouvelle Caledonie.

From 1997-2012, 523 loggerheads with satellite tags have been released, 374 of which were aquarium reared involving 14 deployments after 2003 from eight different ships, including fishery training vessels, cargo vessels, a passenger liner, a French Navy ship 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 (30-35N, 131-141E); the Sea of Japan (37N, 136E); midway between Japan and Hawaii (33N, 176E); midway between New Caledonia and New Zealand (30S, 171E); and 200 nm southeast of New Caledonia (25S, 163E). 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: <http://akepa.hpa.edu/~mrice/sop/Pelagic.html>.



Above are four of the ships that we have used to deploy some of the 374 juvenile loggerheads raised at the Port of Nagoya Public Aquarium, Japan and the Aquarium des Lagons, Nouvelle Caledonie-. From left to right/top to bottom, French cargo ship (New Caledonia), Japanese Fisheries training vessel, Japanese whale watching vessel and a Japanese Taiheiyō Ferry. Additional vessels that have been used are a French Navy vessel, Japanese deep sea crab fishing vessel, and a Singapore cargo ship.



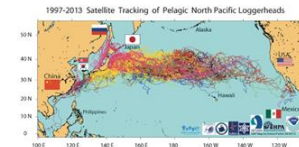
Six satellite tagged juvenile loggerheads are ready for transport to one of our Ships of Opportunity and release into the open ocean.

Three overall conclusions can be drawn from the success of our work:

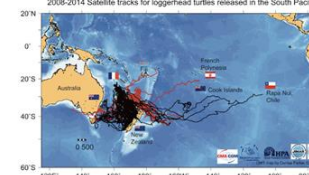
- 1) International partnerships of mutual understanding, trust and goodwill are essential to study sea turtle populations that span an ocean basin;
- 2) Aquarium-reared loggerheads released into appropriate high-seas habitats are acceptable replacements for the research of wild-captured turtles; and
- 3) our voluminous archive of tracking data constitutes a significant resource for new analytical approaches involving collaboration.



Two of the ways we released satellite tagged juvenile loggerheads: on the left 48 juveniles are released from a cargo ship southwest of New Caledonia and on the right juveniles are released off the west coast of Japan.



Satellite tracks of juvenile loggerheads raised at the Port of Nagoya Public Aquarium, Japan and released into the North Pacific Ocean.



Satellite tracks of juvenile loggerheads raised at Aquarium des Lagons, Nouvelle Caledonie and released into the South Pacific Ocean.



Taiheiyō Ferry



A note about releasing these turtles

- Releasing Juveniles into an environment where they would normally be located-pelagic- (not from shore)
- Need some way to safely and humanely transport the juveniles to an offshore location
- Select a method of releasing them safely
- At what cost? Finding cooperating partners that will donate ship space and time to the release

French Navy Ship









In Japan we used an array of vessels



11

名古屋 仙台 苫小牧

TOMAKOMAI

ゆとり・優雅・安い船旅

SENDAI

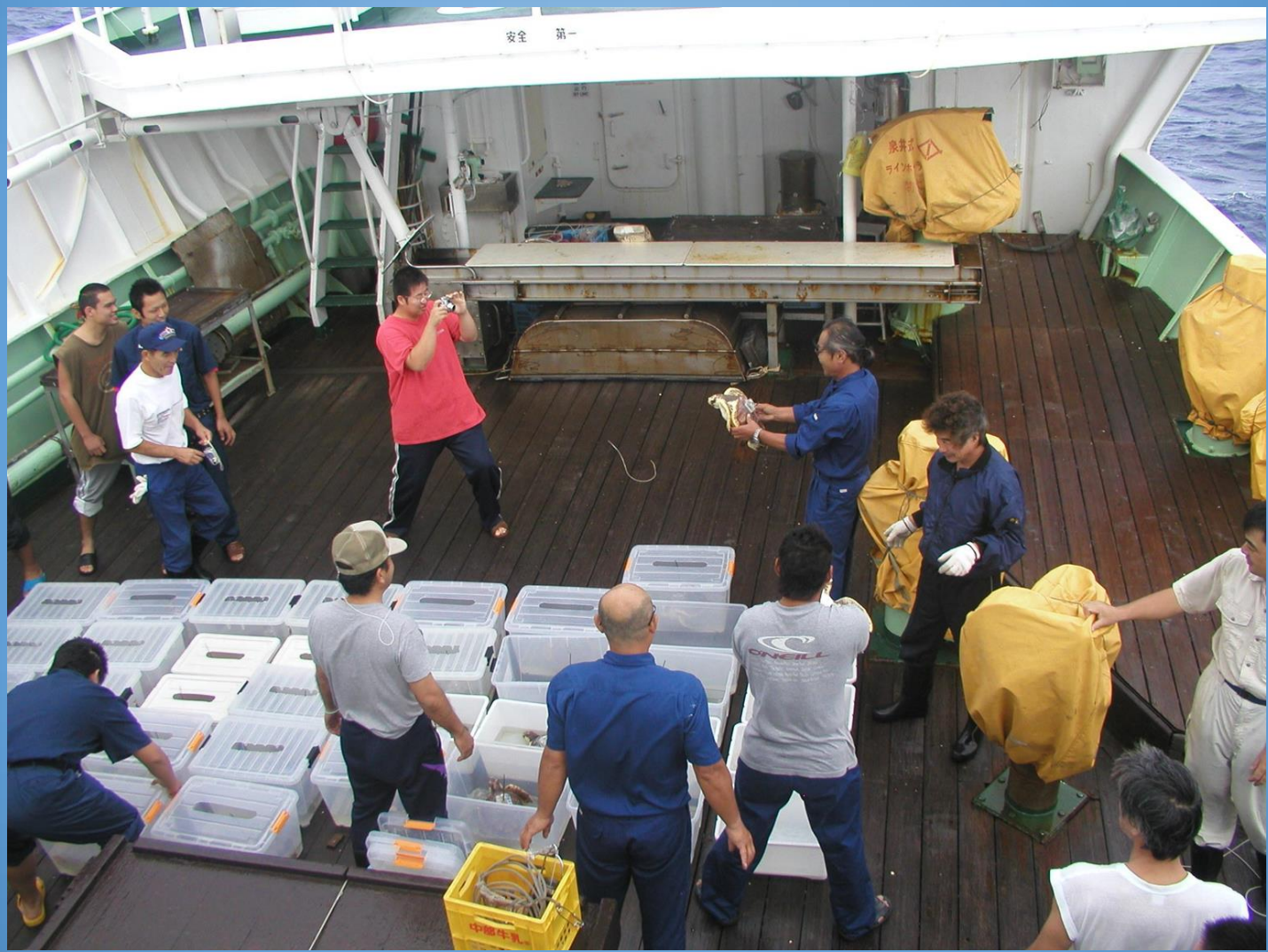
NAGOYA

運賃 平成15年4月1日～7月17日/8月25日～平成16年3月31日 (ご予約は2ヶ月前から)

名古屋	仙台	苫小牧
毎日運航 20:00発	毎日運航 17:00発	毎日運航 20:00発
12:00着	10:45着	13:00着

Japanese Fisheries School Training Vessel







Deep Sea Crab Fishing Boat – Sea of Japan









Taihyo Ferry – Tokyo to Sendai







Whale Watching Tourist Boat

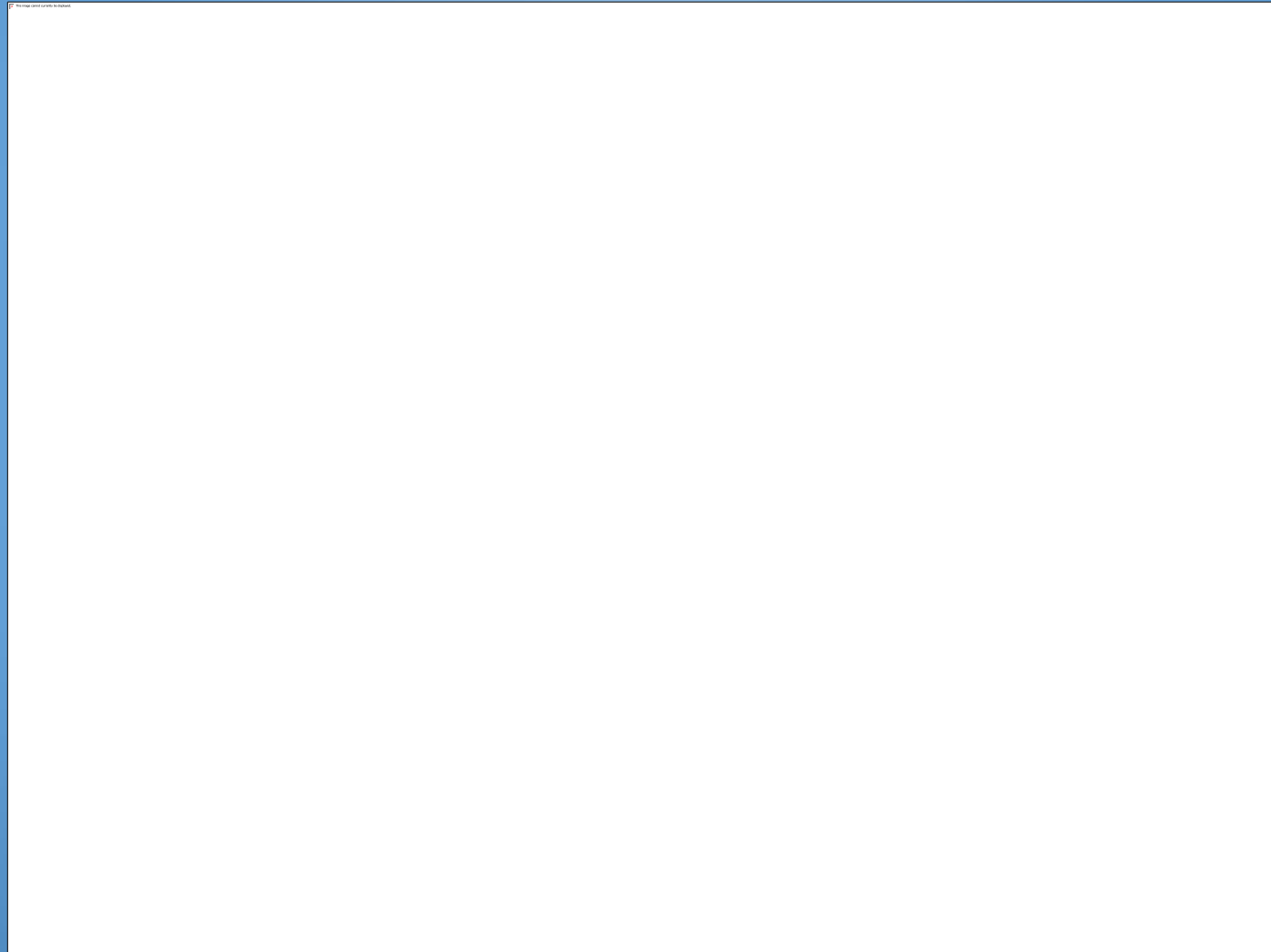


Whale Watching Tourist Boat





Whale Watching Tourist Boat



17 PUBLICATIONS RESULTING FROM THE PELAGIC
LOGGERHEAD TRACKING PROJECT-and counting

Cooperating Entities

