Turtle Foundation works in partnership with multiple community groups, government agencies, university researchers, and individual volunteers to mitigate the effects of these issues on sea turtle populations. Our volunteers are part of a Sea Turtle Stranding Response Team, which assists state park rangers in responding to stranding calls when we have high stranding rates. We work collaboratively with conservation groups such as the Magnetic Island Network for Turtles, James Cook University, Cairns Turtle Rehabilitation Centre, and Reef HQ's Turtle Hospital to rehabilitate turtles. In Bowen, Queensland, where there is a high rate of fibropapilloma in the green turtle population, groups including STF, James Cook University, Gudjuda and Girringun Traditional Owners, Queens Beach Action Group, and WWF are working together to monitor turtle health and gather data to research the disease. Our volunteers also conduct beach clean-ups and send our marine debris data to Tangaroa Blue, who keep a national marine debris database and work to find solutions with manufacturers and retailers before their products end up in the ocean. In addition, STF works with Reef Guardian schools to educate students about sea turtles and train them to know what to do with a stranded turtle. Thanks to the efforts of all these groups working together, we have seen an increase in the general public's knowledge about sea turtles and the threats facing them. A particular challenge for north Queensland is that we do have so much remote beach that is difficult to patrol without expensive flyovers; these collaborations between community groups and efforts from our volunteers are making a real difference in spreading the word about sea turtles and what we can all do to protect them.

Population Biology and Monitoring

ASSESSMENT OF SEX RATIO AND REPRODUCTIVE STATUS OF A FORAGING GREEN TURTLE POPULATION IN SAN DIEGO BAY, CALIFORNIA

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There has been increased interest in demographic modeling of marine turtle populations to provide context about conservation priorities. Though, such studies are commonly limited by lack of information on key demographic parameters of most populations. Few research projects have examined the population sex ratio or reproductive status of adult turtles at foraging grounds, particularly males, as the majority of studies examining turtle reproduction occur at the nesting beach where females are easy to access. The green sea turtle (*Chelonia mydas*) nesting populations in Pacific Mexico are considered Endangered under the U.S. Endangered Species Act and IUCN Red List. The San Diego Bay (SDB) is home to a foraging population of adult and juvenile green turtles that are believed to be primarily of Mexican stock origin. However, population sex ratio and reproductive state of adult turtles have not been examined and this information could be influential for the management of this local foraging aggregation in a broad regional context. In the early 90s, Dutton and colleagues used a previously published technique to determine the sex ratio of the SDB green turtle population through quantifying the testosterone concentration in blood serum and used adults of known sex (identified through physical characteristics, i.e. tail length) as the controls. A 6:10 male to female sex ratio was found for the 1990-1993 field seasons. Following up on this research, we utilized a commercially available enzyme immunoassay to quantify the population sex ratio through analysis of testosterone concentration of archived serum samples obtained during field seasons since 1993, many of which have physical confirmations of sex in more recent capture years. In addition, we compared the sex ratio of the SDB green turtles to those known for other foraging populations in the Pacific. We also

incorporated information on adult reproductive status through ultrasound of gonads and body fat (body condition), female cloacal cytology, male plastron softness, and confirmation of spermatozoa presence in urine (from opportunistic collection). The reproductive assessments provide a more holistic approach to assessing reproductive ecology of the SDB green turtle foraging aggregation and establishes a convenient tool for the rapid assessment of sex ratios.

AN EFFECTIVE AND SAFE TECHNIQUE TO PIT TAG HATCHLING GREEN TURTLES CAPTIVE BRED AT SEA LIFE PARK HAWAII

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An effective, safe, and humane technique has been developed, evaluated, approved, and utilized to microchip hatchling green turtles born and released into the wild by Sea Life Park Hawaii. Since 1976, Sea Life Park has released over 13,000 hatchling Hawaiian-stock green turtles as a conservation and research effort secondary to the Park's principal objective of educational outreach focused on their captive breeding display lagoon and nesting beach. From 2010-2012, 866 hatchlings born at Sea Life Park have been PIT tagged with the Destron Sterilized TX1460L 11 x 2 mm microchip, using the one-time use applicator system. Fifteen hatchlings each year have been retained for captive rearing comparative evaluation of health, growth rates, tag retention, and any movement of the microchip as shown through x-ray imaging. Turtles have been reared up to 40 cm for 2.5 years with no negative effects. PIT tags are inserted into soft proximal tissue of the dorsal left hind flipper after injecting 1% Lidocaine HCL USP pain block. The puncture at the tag injection site is sealed using a drop of Vetbond 3M Tissue Adhesive. The hind flipper PIT tagging of juvenile through adult wild-captured green turtles in the Hawaiian Islands has been carried out since 1995 with significant success and safety, extremely low tag loss, and no movement of the tag within the flipper. Photographic illustrations with step-by-step descriptions of the hatchling PIT tagging technique are presented in this poster.

GLOBAL PHYLOGEOGRAPHY OF HAWKSBILL TURTLES, *ERETMOCHELYS IMBRICATA* BASED ON MTDNA

Karla G. Barrientos Munoz and Cristian Ramirez Gallego

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Of the seven species of sea turtles, the hawksbill is the one presented by the most anthropogenic pressures. Many studies have determined the genetic structure of populations of *Eretmochelys imbricata* throughout the world. However, to date, there has been no study analyzing the abundance of mitochondrial DNA haplotypes of nesting populations worldwide, to estimate both their genetic interactions and their possible dispersal patterns over time. This meta-analysis, used fragments of 891 bp of the mitochondrial control region, for a total of 125 haplotypes represented in 22 publications, which were grouped into 2 regions by origin. We constructed a tree using Bayesian analysis, which revealed multiple sources of regional populations, for which we identified two independent clades: Atlantic and Indo-Pacific, with a divergence time of ca. 4.3 MYA and showing that lifting Isthmus of Panama makes 3.6 MYA is one of the forces that

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