designation as it serves as a favored honu basking area. In this study, we summarize Midway's basking data and report on turtle migration patterns (via flipper/passive integrated transponder tag/moto-tool # recoveries), sex ratios, and seasonality. Data collection efforts consist of weekly snapshot surveys, turtle processing censuses, incidental turtle counts, & game camera photos on Hale Honu beach. Results indicate highest basking densities occur on Midway Atoll during the winter season (December-February), with the largest count being 67 baskers at once. Peak basking hours for Midway's turtle population are approximately 12pm to 4pm, which is consistent with a 9-day basking study conducted in April 2010. Since 1967, 375 turtles have been tagged at Midway, with 238 tagged since 2019. Of known sex individuals, 79% have been female. Forty-six percent of Midway turtles tagged between 2019 and 2025 were not seen again after their initial year of sighting. In addition, only 13% of the tagged population was resighted on other islands, with 98% of them being female. Understanding the basking peaks in seasonality & time of day on Midway establishes a "tagging season", a period when efforts should be amplified to increase the number of tagged turtles prior to departing Midway. Further studies including satellite tagging and increased tagging events on both Midway and other Northwestern Hawaiian Islands are necessary to determine where the Midway population, particularly males, spends time away from the atoll, and to establish better connectivity between islands. By looking at Midway's basking trends & migration patterns, researchers can then develop a better understanding of the ecology, demography, and conservation needs of the threatened Hawaiian Honu.

EFFICACY OF SMALL MONEL FLIPPER TAGS IN A COASTAL GREEN TURTLE AGGREGATION

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Tagging of sea turtles and subsequent recapture of marked individuals allows researchers to better understand many aspects of population biology and dynamics, including site fidelity, distribution and migration patterns, reproductive output, growth rates, and changes in health. Externally-applied flipper tags have long been an important tool for large-scale marking of sea turtles because they are readily visible and relatively inexpensive compared to more permanent, intramuscular tagging using passive integrated transponder (PIT) tags. The earliest sea turtle tagging programs used copper, plastic, and Monel alloy tags adapted from livestock applications, and many programs now use either Inconel alloy or titanium self-piercing tags specifically designed for sea turtles. Current "standard tags" such as the Inconel 681IC style widely used in the United States are too large for use on dispersal stage and small coastal juvenile sea turtles (<30 cm straight carapace length, SCL), but smaller tags have been developed and permitted for use in recent years. During 2022-2025, the University of Central Florida Marine Turtle Research Group tagged 151 immature green turtles (*Chelonia mydas*; SCL: 28.2 +/- 2.5 cm SD) at Trident Basin, Port Canaveral, Florida, USA with style 1005-4 Monel tags on one or both front flippers, as well as PIT tagging each turtle. Our program subsequently recaptured 29 of the Monel-tagged green turtles, and two others were documented by other groups as live strandings, for a total of 31 recaptured individuals. In total, we recorded 43 recapture events (22 individuals recaptured once, 7 recaptured twice, 1 recaptured three times, and 1 recaptured four times) 47-762 days after Monel-tagging (mean: 297 +/- 159 SD). We observed that the small Monel tags were susceptible to biofouling and corrosion, becoming unreadable and/or brittle after as little as 1.5 to 6 months. We did not document any tag condition issues on Inconel-tagged green turtles recaptured during the same sampling sessions, and occasional biofouling was easily removed without damage to Inconel tags or impacting their readability. Based on our observations of recaptured green turtles at Trident Basin, we do not consider 1005-4 Monel tags to be a good option for marking these turtles because the tags can corrode quickly and can become pitted and unreadable after a short time in a marine

environment. We have also seen that repeated tagging (due to tag loss) may promote fibropapilloma growth in some individuals. These observations are at odds with conservation, given that the tags do not last very long and may cause harm to the turtles. As such, we have moved to PIT-tagging only for turtles 20-30 cm SCL, while also using Inconel tags on larger individuals. We recommend that other programs carefully consider the risks and benefits of using small Monel tags for monitoring immature sea turtles to ensure that an ethical balance is reached between identifying recaptures and responsible conservation research practices.

EVIDENCE IN THE EGG: SPERM DNA IN THE PERIVITELLINE MEMBRANE IDENTIFY INDIVIDUAL BREEDING MALES*

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Sex in marine turtles is determined by incubation conditions, raising concerns of population feminization and loss of genetic diversity due to warming temperatures. Demographic data on breeding males are limited due to their relative inaccessibility. Hatchling sampling can inform multiple paternity (MP) and breeding sex ratios (BSR) but is logistically intensive, limiting the number of nests and populations analyzed. Here, we present a novel approach to characterize successfully breeding males by genotyping sperm trapped in the perivitelline membrane (PVM) surrounding the yolk of a single egg per clutch. We compared maternal genotypes via eggshells with PVM extract genotypes from 27 loggerhead turtle (*Caretta caretta*) eggs and 13 green turtle (*Chelonia mydas*) eggs from Melbourne Beach, Florida, USA, at 16 and 13 microsatellite loci, respectively. Sampled offspring genotypes (620 loggerhead and 1,117 green turtle) provided ground-truthing of PVM sperm allele detections. Paternity analyses resolved 39 loggerhead and 29 green turtle sires, all but two of which were correctly inferred via PVM allele calls. All paternal alleles representing single paternity clutches and primary contributors of multiply sired clutches were detected in the PVM genotypes except in one case of maternal DNA swamping of the PVM. Seven of eight sires that contributed ≤ 11% of offspring were detected via PVM genotyping, consistent with or slightly outperforming inferences based on subsampling 20 hatchlings per nest. PVM-inferred paternal genotypes from single-paternity clutches were > 99% concordant with reconstructed sire genotypes in both species. Although destructive to a single egg per clutch, this method is non-invasive to nesting females and hatchlings. Its scalability across space and time enables long-term monitoring of MP and BSR, key demographic metrics for assessing population viability under climate change. Male genotypes generated from the PVM in single paternity nests may also inform population assignment, assessments of genetic connectivity, and relatedness analyses.

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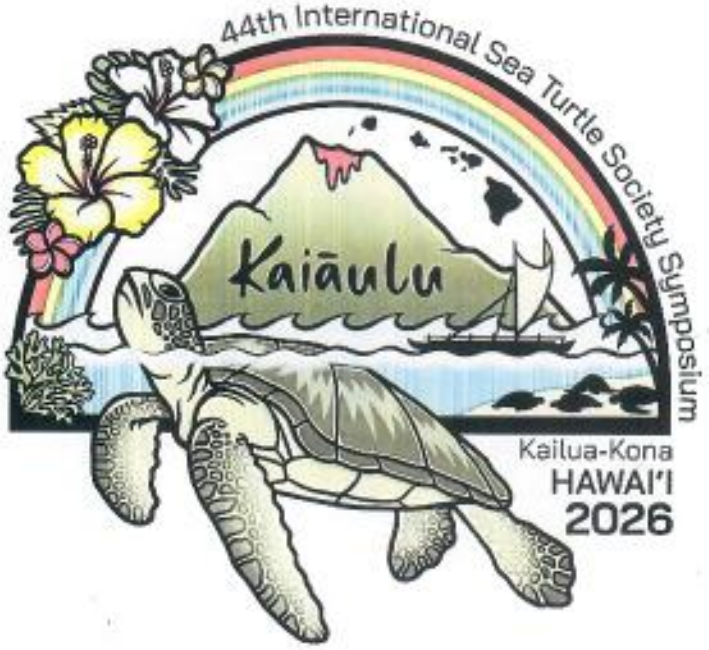

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