

MARINE MAMMAL & TURTLE DIVISION, SWFSC BIWEEKLY REPORT ON FIELDWORK, PUBLICATIONS, RESEARCH RESULTS, AND EVENTS

5 July 2024

I. Fieldwork:

Green Turtle Ecological Research in Southern California, 20 June 2024 – The SWFSC marine turtle team was back in San Diego Bay conducting field capture efforts based at the old South Bay Power Plant site in Chula Vista, CA. Once again, the team hosted numerous visitors, including a NOAA Hollings Scholar (Christian Boudreaux, working with the MTGP) and some junior sea turtle biologists (the kids of team members Robin LeRoux, Erin LaCasella and Cali Turner Tomaszewicz). During the day, the team captured a total of 7 turtles making for another busy field day. They included 4 new turtles (sizes ranged from 55.1 to 71.4 cm curved carapace length, CCL), and three recaptures including one captive-born turtle that had previously been at SeaWorld and the Living Coast Discovery center before being released offshore back in ~2016. For more information contact [Garrett Lemons](#) or [Cali Turner Tomaszewicz](#).



"Junior Turtlers" watching the team bring in one of the seven turtles

Green Turtle Ecological Research in Southern California, 26 June 2024 – The SWFSC turtle team was also at the Seal Beach National Wildlife Refuge conducting in-water capture with partners from the West Coast Regional Office and the Navy. In new record time, a total of 3 large turtles (83 to 95.6 cm CCL) were captured before the net was even fully deployed from the boat! A first for the team! The field site was unusually busy with turtles - with the onshore observation team spotting approximately 8 turtles of varying sizes in the water before the net was deployed - and the net was pulled in for the day after the initial 3 turtles were captured. For more information contact [Garrett Lemons](#) or [Cali Turner Tomaszewicz](#).



Garrett Lemons and Cali Turner Tomaszewicz pulling in turtle #2 out of 3

Pinniped monitoring, San Clemente Island, California

MMTD and ESD biologists will conduct annual field work on California sea lions at San Clemente Island in July. Alex Curtis (MMTD/CMAP) and Jaelyn Leslie (ESD/AMLRP) will visit San Clemente Island 12-15 July to conduct a ground count of sea lion pups and camp maintenance at Mail Point Research Station. If time permits, they will also collect scats to extend the Sea Lion Diet for Ecosystem Remote Sampling (SLiDERS) Survey, MMTD's long-term ecological time series of Southern California Bight forage sampled via California sea lion diet at two key Channel Island rookeries. We are grateful for the support from SWFSC and Navy staff that makes these trips possible. Contact [Alex Curtis](#) for more information.

II. Manuscripts accepted for publication:

Ishihara, T., Kamezaki, N., Hirai, S., Matsuzawa, Y., Hamabata, T., Asuka Ishizaki, A., & **Dutton, P.H.** (*In press*). Genetic characteristics of loggerhead turtles in the coastal corridor of the North West Pacific, around the Cape Muroto, Japan. *Frontiers in Marine Science*.

Abstract – Genetic characteristics of North Pacific loggerhead turtles captured as bycatch in pound nets operating in Muroto, Kochi, Japan were sampled to identify and estimate stock structure of coastal foraging aggregations. Tissue samples were obtained from juvenile, subadult and adult turtles from 2005–2006 and 2008–2010. For each of the years, 100 samples were processed and approximately 820 bp of mitochondrial DNA control region were sequenced. Straight carapace length of the turtles ranged from 56.3–99.1 cm and their life stages were identified based on previous estimates of the size at puberty (66.0cm) and maturity (82.1cm). A total of 487 out of the 500 samples yielded sequences of sufficient quality to identify five different haplotypes. We conducted mixed stock analysis (MSA) using Bayesian approaches to estimate the contributions of three potential source nesting Management Units (MU) to the Muroto foraging aggregation. There were no significant differences between haplotype frequencies among the different size classes and life stages, nor among the different years, thus the haplotype frequencies were combined for the MSA. The MSA was run with and without consideration of MU size and distance, which resulted in similar MSA estimates. A >50% contribution was estimated from the Yakushima MU, and 40% from the Mainland MU, with only minor contribution from the Ryukyu MU. The estimated contribution from Mainland MU and Yakushima MU were disproportionately larger than the relative abundance of nesting at these MUs compared with Ryukyu MU, demonstrating that closer MUs had a greater contribution than those from further away. The lack of differences found in haplotype frequency among life stages, suggests that both juvenile and mature loggerhead turtles that remigrate to Japanese waters have the tendency to utilize foraging grounds and migration routes near their natal waters.

III. Papers published:

Van Cise, A. M., Switzer, A. D., Apprill, A., Champagne, C. D., Chittaro, P. M., Dudek, N. K., **Gavery, M. R.**, **Hancock-Hanser, B. L.**, **Harmon, A. C.**, Jaffe, A. L., **Kellar, N. M.**, Miller, C. A., **Morin, P. A.**, Nelms, S. E., **Robertson, K. M.**, Schultz, I. R., Timmins-Schiffman, E., Unal, E., & **Parsons, K. M.** (2024). Best practices for collecting and preserving marine mammal biological samples in the 'omics era. *Marine Mammal Science*, e13148. <https://doi.org/10.1111/mms.13148>

Abstract – The recent rise of ‘omics and other molecular research technologies alongside improved techniques for tissue preservation have broadened the scope of marine mammal research. Collecting biological samples from wild marine mammals is both logistically challenging and expensive. To enhance the power of marine mammal research, great effort has been made in both the field and the laboratory to ensure the scientific integrity of samples from collection through processing, supporting the long-term use of precious samples across a broad range of studies. However, identifying the best methods of sample preservation can be challenging, especially as this technological toolkit continues to evolve and expand. Standardizing best practices could maximize the scientific value of biological samples, foster multi-institutional collaborative efforts across fields, and improve the quality of individual studies by removing potential sources of error from the collection, handling, and preservation processes. With these aims in mind, we summarize relevant literature, share current expert knowledge, and suggest best practices for sample collection and preservation. This manuscript is intended as a reference resource for scientists interested in exploring collaborative studies and preserving samples in a suitable manner for a broad spectrum of analyses, emphasizing support for ‘omics technologies.

Prager, K.C., Danil, K., Wurster, E., Colegrove, K.M., Galloway, R., Kettler, N., Mani, R., McDonough, R.F., Sahl, J.W., Stone, N.E., Wagner, D.M. & Lloyd-Smoth, J.O. (2024). Detection of *Leptospira kirschneri* in a short-beaked common dolphin (*Delphinus delphis delphis*) stranded off the coast of southern California, USA. *BMC Veterinary Research* **20**, 266. <https://doi.org/10.1186/s12917-024-04111-x>

Abstract – **Background:** Pathogenic *Leptospira* species are globally important zoonotic pathogens capable of infecting a wide range of host species. In marine mammals, reports of *Leptospira* have predominantly been in pinnipeds, with isolated reports of infections in cetaceans. **Case presentation:** On 28 June 2021, a 150.5 cm long female, short-beaked common dolphin (*Delphinus delphis delphis*) stranded alive on the coast of southern California and subsequently died. Gross necropsy revealed multifocal cortical pallor within the reniculi of the kidney, and lymphoplasmacytic tubulointerstitial nephritis was observed histologically. Immunohistochemistry confirmed *Leptospira* infection, and PCR followed by *lfb1* gene amplicon sequencing suggested that the infecting organism was *L.kirschneri*. *Leptospira* DNA capture and enrichment allowed for whole-genome sequencing to be conducted. Phylogenetic analyses confirmed the causative agent was a previously undescribed, divergent lineage of *L.kirschneri*. **Conclusions:** We report the first detection of pathogenic *Leptospira* in a short-beaked common dolphin, and the first detection in any cetacean in the northeastern Pacific Ocean. Renal lesions were consistent with leptospirosis in other host species, including marine mammals, and were the most significant lesions detected overall, suggesting leptospirosis as the likely cause of death. We identified the cause of the infection as *L.kirschneri*, a species detected only once before in a marine mammal – a northern elephant seal (*Mirounga angustirostris*) of the northeastern Pacific. These findings raise questions about the mechanism of transmission, given the obligate marine lifestyle of cetaceans (in contrast to pinnipeds, which spend time on land) and the commonly accepted view that *Leptospira* are quickly killed by salt water. They also raise important questions regarding the source of infection, and whether it arose from transmission among marine mammals or from terrestrial-to-marine spillover. Moving forward, surveillance and sampling must be expanded to better

understand the extent to which *Leptospira* infections occur in the marine ecosystem and possible epidemiological linkages between and among marine and terrestrial host species. Generating *Leptospira* genomes from different host species will yield crucial information about possible transmission links, and our study highlights the power of new techniques such as DNA enrichment to illuminate the complex ecology of this important zoonotic pathogen.

IV. Research findings:

V. Press:

Cameras reveal the social lives of urban sea turtles – Cameron Mullaney –
<https://wildlife.org/cameras-reveal-the-social-lives-of-urban-sea-turtles/> – Prompted by a recently published paper led by UCSD student and first author Cameron Mullaney ([Mullaney et al. 2024](#)), MTEAP scientists received media attention for their work deploying a multi-sensor pop-off camera on green turtles in San Diego Bay. The news article, published on the Wildlife Society's news site, details interesting natural history findings revealed by camera deployments, notably that turtles appear to frequently interact both with each other and with anthropogenic metal structures within the relatively urban setting of South Bay.

VI. Local events - meetings or events hosted in-person or virtually:

Ocean Leader Bridge Program, 20 June, SWFSC, La Jolla, CA – Trevor Joyce, Keiko Sherman, Andrew Thompson, Bill Watson, Jenna Barret, and Eric Archer hosted 6 staff members and 21 students from [Ocean Discovery Institute](#) as part of their 21-day Ocean Leader Bridge Program. The students learned about using UASs for photogrammetry of whales, identification of ichthyoplankton and how marine mammal stranding responses and necropsies are conducted.

VII. Travel - meetings attended in-person or virtually:

VIII. Awards, grants, and recognition:

IX. Other of note:

Stranding summary for the weeks of 18 June –1 July 2024

Cetaceans: 4

- On 25 June, Kerri Danil and Zoe Prescott responded to a 140 cm male bottlenose dolphin stranded on Carlsbad State Beach in advanced decomposition. Level A data, teeth, and a genetics sample were collected.
- On 27 June, an adult female and neonate long-beaked common dolphin stranded together alive in southern San Diego Bay. The female died onsite and the calf is being rehabilitated at SeaWorld. Christian Boudreaux (Hollings Scholar), Kerri Danil, Lexi Mena, Jesse Pierce, Jessica Ruth, and Keiko Sherman participated in the response and/or necropsy. Necropsy observations included thin body condition, milk present in the mammarys, areas of pallor in the kidney and liver, icterus, pleural effusion, ascites, and congestion in the adrenals, spleen, thyroid and brain.

- On 28 June, Rory Driscoll responded to a Delphinus perinate in advanced decomposition at Silver Strand Training Complex- South, Coronado. Level A data and a biopsy were collected.

Pinnipeds: 5 (no response)

Turtles: 0

X. Where-about of Division Director:

In La Jolla