

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

15 March 2024

I. Fieldwork:

Green Turtle Ecological Research in Southern California, 12 March 2024 – The SWFSC marine turtle team launched the 2024 San Diego Bay Green Turtle Research Season, conducting field capture efforts based at the old South Bay Power Plant site in Chula Vista, CA. The team hosted numerous visitors, including three high school interns from San Diego as well as a University of Florida spring break field course, *Marine Conservation In Practice* (the students toured SWC the day prior). The team captured 8 turtles in 1 hour 13 minutes (09:35-10:48 am)!! They included 2 adult females, 1 adult male, and 5 juvenile green turtles (2 first-time captures). Their curved carapace lengths ranged from 60.5 cm to 112.5 cm and weights from 26 kg to 158 kg. The largest female was first captured in 2004; this was the 8th time she has been captured. Looking ahead, the next Southern California green turtle capture efforts will occur on 24 April 2024 in Seal Beach National Wildlife Refuge and 7-9 May 2024 in San Diego Bay. For more information contact [Garrett Lemons](#) or [Cali Turner-Tomaszewicz](#).

II. Manuscripts accepted for publication:

III. Papers published:

Bukhman, Y.V., **Morin, P.A.**, Meyer, S., Chu, L.-F., Jacobsen, J.K., Antosiewicz-Bourget, J., Mamott, D., Gonzales, M., Argus, C., Bolin, J., Berres, M.E., Fedrigo, O., Steill, J., Swanson, S.A., Jiang, P., Rhie, A., Formenti, G., Phillippy, A.M., Harris, R.S., Wood, J., Howe, K., Kirilenko, B.M., Munegowda, C., Hiller, M., Jain, A., Kihara, D., Johnston, J.S., Ionkov, A., Raja, K., Toh, H., **Lang, A.**, Wolf, M., Jarvis, E.D., Thomson, J.A., Chaisson, M.J.P., & Stewart, R. (2024). A high-quality blue whale genome, segmental duplications, and historical demography. *Molecular Biology and Evolution*, 41, msae036.

<https://doi.org/10.1093/molbev/msae036>

Abstract – The blue whale, *Balaenoptera musculus*, is the largest animal known to have ever existed, making it an important case study in longevity and resistance to cancer. To further this and other blue whale-related research, we report a reference-quality, long-read-based genome assembly of this fascinating species. We sequenced genomic DNA using PacBio long-read, Illumina short-read, and 10X Genomics synthetic long-read technologies. We also obtained long-range mapping information using Bionano optical mapping and Dovetail Hi-C. Additionally, we sequenced the transcriptome of blue whale fibroblasts using Illumina RNA-seq and PacBio Iso-seq technologies. We also measured genome size using a flow cytometry technique. We report on: (1) segmental duplications within the blue whale genome, which have resulted in dramatic amplifications of several genes; (2) sites in IGF1 gene correlated to body size in cetaceans; and (3) heterozygosity and historical demography of Pacific and Atlantic blue whale populations. A high quality, annotated blue whale genome will serve as an important resource for biology, evolution, and conservation research.

IV. Research findings:

V. Press:

VI. Local events - meetings or events hosted virtually:

Oregon State Parks Spring 2024 Whale Watch Volunteers Training, 2 March 2024 –The Oregon Parks and Recreation Department organizes training sessions for volunteers who work at multiple whale watching sites along the Oregon coast. The volunteers help visitors see and learn about migrating and resident gray whales. For this year's training, Aimée Lang and Michael Milstein virtually presented an overview of MMTD's shore-based surveys which assess abundance and calf production in eastern North Pacific gray whales and included an update on the gray whale Unusual Mortality Event.

PAM-IRA Meetings, La Jolla, CA, 18-22 March 2024 – Southwest Acoustic Ecology Lab (SAEL) will host two meetings related to the Passive Acoustic Monitoring (PAM) Strategic Initiative, funded by the Inflation Reduction Act (IRA). Collaborators from the PAM and UxS Strategic Initiatives will meet on March 18-19 for a PAM Glider Summit; collaborators from SWFSC, PIFSC, and Oregon State University will attend. On March 20-22, SAEL will host teams from each Science Center, as well as the Office of Science and Technology and the National Center for Environmental Information to discuss projects related to the IRA funded PAM-Strategic Initiative. This will be the first of three annual collaborative meetings. Contact shannon.rankin@noaa.gov for more information.

Sunset Hills Elementary School, San Diego, CA – Erin LaCasella with the Marine Turtle Genetics Program will present “Sea turtle traits and adaptations” in person to the third grade classes at Sunset Hills Elementary School, San Diego, CA. The talk will focus on the sea turtle life cycle, adaptations, migration patterns and highlight Southwest Fisheries turtle research in CA.

VII. Travel - meetings attended virtually:

VIII. Awards, grants, and recognition:

IX. Other of note:

Stranding summary for the weeks of 28 February – 12 March 2024

Cetaceans: 3

- On 1 March, a juvenile male long-beaked common dolphin stranded alive in La Jolla and died during transport to a rehabilitation facility. Jesse Pierce, Jessica Ruth, Keiko Sherman, and Art Smart performed a necropsy the following day and observed congestion or hemorrhage in the lungs, adrenals, and kidneys. Histopathology is pending.
- On 2 March, skeletal remains of an approximately 335 cm bottlenose dolphin were observed at Santa Margarita River mouth, Camp Pendleton. The carcass could not be found after the report was received; however, photos from the reporting party were received.

- On 3 March, a freshly dead juvenile (1187.9 cm) female fin whale was observed floating at Naval Base San Diego pier. Response to this whale occurred over the course of 4 days, via pier observations, small boat sampling, and finally a necropsy on land. Response was facilitated by multiple organizations (US Navy, Scripps Institute of Oceanography, San Diego State University, Pacific Marine Mammal Center, SWFSC). The SWFSC team included Beth Besom (volunteer), Amanda Brooks (volunteer), Kerri Danil, Alaina Harmon, Ariane Huddleston, Trevor Joyce, Nick Kellar, Jesse Pierce, Keiko Sherman, and Elyse Wurster. External lesions, a large volume of abdominal fluid/blood, macerated muscle, broken ribs, and shattered vertebrae indicated the cause of death to be from a ship strike.



Photo: The juvenile fin whale was craned out of the water and onto a flatbed truck for transport to the necropsy site.

Pinnipeds: 3 (no response)

Turtles: 1

- On 12 March, SWFSC received a report of a dead sea turtle found 1 week prior on the beach in Camp Pendleton. The carcass was very decomposed and no response occurred.

X. Where-about of Division Director:

La Jolla, CA