https://doi.org/10.25923/56xw-v666

NOAA Technical Memorandum NMFS

MARCH 2025

GREEN SEA TURTLE PHOTO-IDENTIFICATION CATALOG: SOUTHERN CALIFORNIA, 2023-2024

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NOAA-TM-NMFS-SWFSC-715

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center

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Recommended citation

Turner Tomaszewicz, Calandra N., Jason Askri, and David W. Weller. 2025. Green sea turtle photo-identification catalog: Southern California, 2023-2024. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-715. https://doi.org/10.25923/56xw-v666

Green Sea Turtle Photo-Identification Catalog: Southern California, 2023 – 2024

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Project Overview

Since 1990, scientists from Southwest Fisheries Science Center (SWFSC)[1] have monitored green sea turtles (*Chelonia mydas*), a federally listed and managed species, in coastal waters of Southern California, USA. The objective of this research program is focused on assessing the health, abundance, habitat use and population trends of green turtles in local waters. Between October 2023 and September 2024, under National Marine Fisheries Service (NMFS) Scientific Research Permit #18238, the Marine Turtle Ecology and Assessment Program at SWFSC conducted field operations at two foraging grounds in (1) San Diego Bay (SDB), San Diego, California, and (2) Seal Beach National Wildlife Refuge (SBNWR), Long Beach, California (Fig. 1).

During these monitoring efforts, individual turtles were captured using tangle net techniques (following NMFS Permit #18238) to measure, weigh, photograph and mark individual turtles using external Inconel[2] flipper tags and passive integrated transponder (PIT) tags. New animals (i.e., turtles without existing tags that had not been previously captured) received both an Inconel flipper tag and a PIT tag. All animals were photographed following a standard protocol, including collection of images of the head, body, and flippers. These images of individual turtles were used as the basis of the photo-identification project described in this report and are further used to augment ongoing research on habitat use, movement patterns, health/condition status and recovery from injuries.

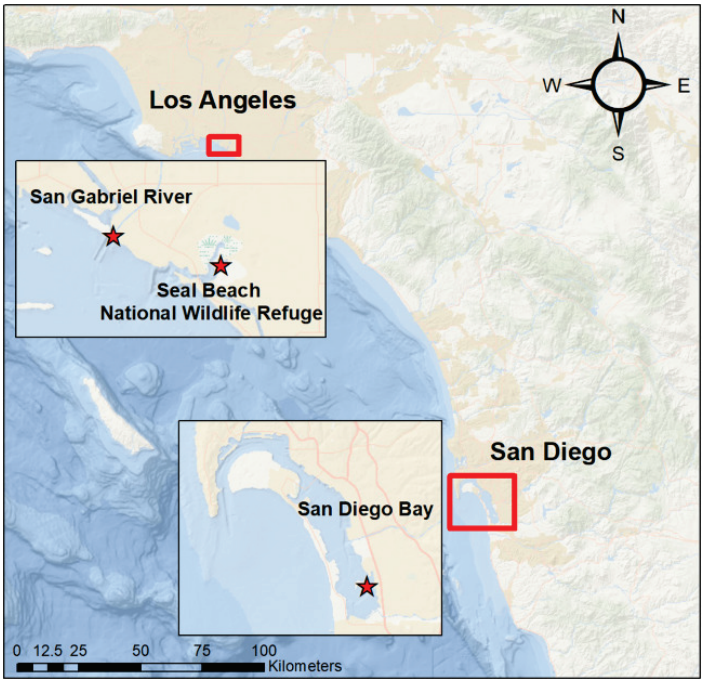

Fig. 1. Green sea turtle study locations where field efforts were conducted in October 2023 and September 2024. (Reproduced from Barraza et al. 2020).

[1] The Southwest Fisheries Science Center (SWFSC) is part of the National Marine Fisheries Service (NMFS) under the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce.

[2] Inconel is a metal alloy designed to be resistant to degradation in extreme environments, including the ocean.

Background

The green turtles encountered during fieldwork in Southern California are part of the Mexican breeding stock, classified as the "East Pacific Distinct Population Segment" (DPS) under the Endangered Species Act (ESA, Seminoff et al. 2015). All nesting activities for this DPS occur in Mexico and Central America (Fig. 2). Hatchlings rapidly grow into juveniles, and spend several years (1 to 10 years, mean = 6.6 years,) offshore in oceanic habitats (Turner Tomaszewicz et al. 2022, *in prep*). Eventually, at ~50 cm curved carapace length (CCL), these turtles settle into productive foraging grounds available throughout Mexico and into Southern California (Fig. 2). The photo-identification catalog provided here is designed to facilitate scientific exchange and further insights regarding the site and habitat use, intra- and inter-area movement patterns and survival of individual turtles within this DPS.

In the past three decades, the East Pacific green turtle population has demonstrated a significant recovery as shown by a steadily increasing number of turtles nesting at their rookeries (Bedolla-Ochoa et al. 2023), and also by increasing sightings off California (NMFS unpub.).

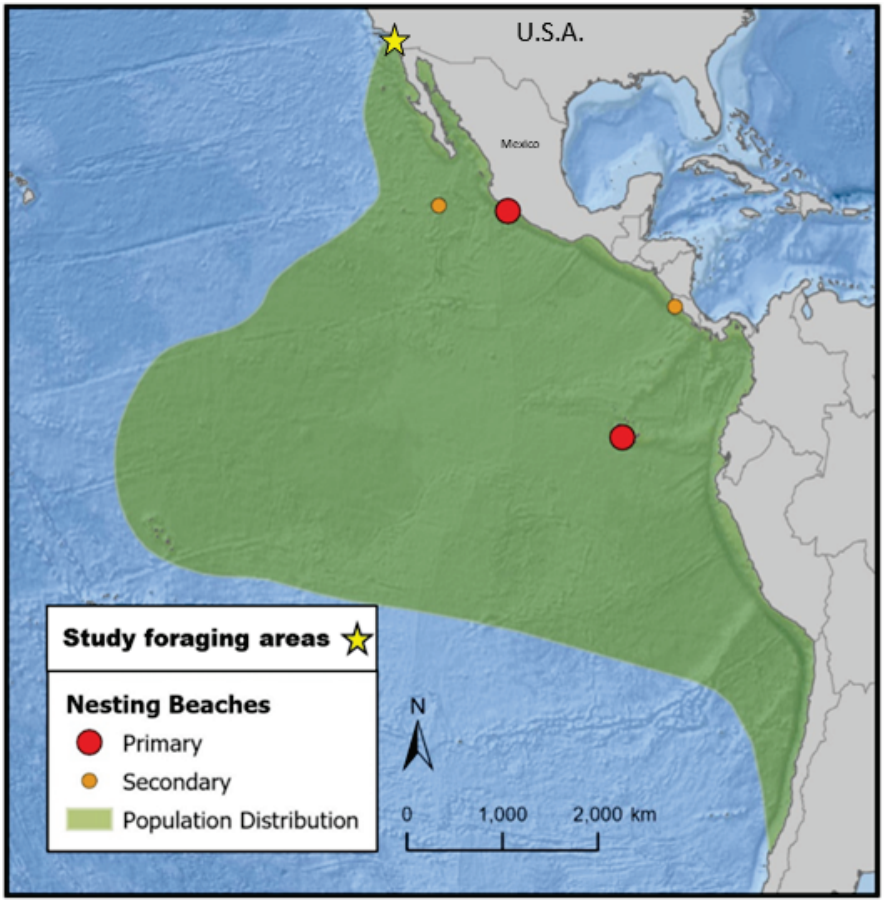

Fig. 2. Distribution of the East Pacific green sea turtle population. Foraging sites (yellow star) in California, U.S.A. Primary nesting beaches (red circles) in Michoacan, Mexico, and Galapagos, Ecuador. Secondary nesting beaches (yellow circles) at the Revillagigedo Islands, Mexico and Costa Rica.

Rationale

The East Pacific green turtles found off the Southern California coast inhabit diverse and urban coastal waterways, and are often viewable to the public while visiting beaches, harbors, bays, marinas, and estuaries. Recognizing an opportunity to collect sighting records and photographs from interested members of the public, in 2022 SWFSC developed an online reporting form for turtle sightings[3] and in 2024 initiated a complementary online photographic identification catalog of green turtles off Southern California. The development of these two resources is an example of SWFSC's commitment to facilitating the integration of data from multiple sources to best benefit scientific understanding whenever possible.

In addition to the catalog of individual turtles captured and photographed during efforts by the SWFSC provided here, images have also been uploaded to the Wild Me open software platform under the element named "Internet of Turtles" (https://iot.wildbook.org/). This publicly accessible platform utilizes machine learning programs and SIFT-based (scale-invariant feature transform) computer vision algorithms that work to connect data contributions (e.g., matches of photographically identifiable turtles) coming from a diversity of sources, both dedicated and opportunistic. There is precedent to use similar Wild Me platforms with NMFS work, particularly for large whales ("Fluke Book", https://www.flukebook.org/).

Finally, from a scientific perspective, the photo-identification catalog provided here will increase the understanding of habitat connectivity and survival of individual turtles within this federally managed DPS. With an increased number of image submissions, alongside those provided here and on the "Internet of Turtles", a better understanding of green sea turtle movement and habitat usage is possible. This benefit further transfers to an increased ability to track the progression of the condition of individual turtles, for example those observed with injuries, parasites (e.g., barnacles, leaches) or other physical conditions.

Catalog Description

This catalog features identification photographs of 43 East Pacific green sea turtles encountered during monitoring by the SWFSC under NMFS Permit #18238. For photo-identification purposes, images of the head have been determined to be the most useful (Hanna et al. 2021), and therefore the catalogue consists of up to 3 images per turtle: left profile, right profile, and top.

Study Area and Methods

Between 1 October 2023 and 30 September 2024, during routine permitted capture activities at San Diego Bay (SDB) and Seal Beach National Wildlife Refuge (SBNWR), standardized photographs were collected and organized into an online collection. These images were placed into categories based on the date of collection, location, and turtle identification number. Each

[3] West Coast Sea Turtle Sighting Submission Form can be found here: https://survey123.arcgis.com/share/ddb6e7a3f2f94d85b7391e4d537ca57b?portalUrl=https://maps.fisheries.noaa.gov/portal

individual turtle in the catalog had top, right, and left profile images of the head showcasing their unique facial scute patterns, useful for cross-referencing and recognizing recurrent individuals in future encounters.

To ensure consistency and readiness for photo-identification purposes, the images underwent a detailed formatting process using Adobe Photoshop. Any background elements that could distract from identification were removed. The top, right, and left head profiles were centered against a completely black background to highlight the scale configuration without external interference. Additionally, lighting adjustments were employed to minimize glare on facial scales. This organization and formatting process ensures that each photograph is standardized for future research and catalog utility. Further, for tracking purposes, NMFS Permit #18238 was also added to every photograph collected under that permit.

Terms and Definitions

Examples of how to interpret the text box associated with each individual image in the catalog are as follows:

Example 1:

NMFS.SWFSC.Cm.SDB.ID257761.20Jun2024.(T/R/L)

NMFS = National Marine Fisheries Service

SWFSC = Southwest Fisheries Science Center

CM = *Chelonia mydas* (sea turtle species)

SDB = San Diego Bay (location)

SBNWR = Seal Beach National Wildlife Refuge

ID(#) = Identification Number

> 257761 = The number is assigned to an individual green sea turtle represents the unique identification data for each turtle in the Southwest Fisheries Science Center's research database.

20Jun2024 = The date (dd/mmm/yyyy) when photographs of the individual turtle were taken.

(T/R/L) = The perspective of each head image of the turtle: top (T), right profile (R), and left profile (L).

Field Site and Turtle Capture Information

San Diego Bay

During the period 1 October 2023 to 30 September 2024, field operations were conducted in San Diego Bay during 7 days, resulting in 36 green turtle encounters (captures), 30 of which were unique turtles. Among the 30 unique turtles identified, 15 (50%) had been captured in prior years, and the remaining turtles were "new", having never been previously captured by the SWFSC team (Appendix 1). Long-term recaptures are essential in demonstrating that San Diego Bay serves as a well-established foraging ground for juvenile to adult stages. Recaptures are assigned a recurrence value based on their frequency of appearance during the current permit period as well as in previous capture years (Appendix 1). Additionally, photographs of recaptured animals are useful for testing the SIFT-based computer vision algorithms used by Wild Me, each of which are still in development and refinement stages.

Seal Beach National Wildlife Refuge

During the period 1 October 2023 to 30 September 2024, field operations were conducted in Seal Beach National Wildlife Refuge during 4 days, resulting in 7 green turtle encounters (captures). Among the 7 unique turtles identified, 2 (28%) had been captured in prior years (Appendix 2).

Catalog Curator

Jason Askri formatted and cataloged all images during a summer NOAA IN FISH internship. Cali Turner Tomaszewicz cali.turner@noaa.gov is the NOAA SWFSC contact for questions about this catalog and/or to request images. This product is dedicated to the memory of Jason Askri, whose hard work, creativity, and dedication were instrumental in creating this Catalog and establishing the methods for curating the SWFSC's new Sea Turtle Photo Identification project.

Acknowledgements

NOAA's SWFSC Marine Turtle Ecology & Assessment Program's in-water research project and all activities including photo identification are permitted under NMFS Permit # 18238. Research activities were overseen by permit Primary Investigators J. Seminoff, and R. LeRoux. Research was also conducted by J. Seminoff, R. LeRoux, T. Eguchi, G. Lemons, C. Turner Tomaszewicz, E. LaCasella, A. Maurer, P. Dutton, A. Frey, S. Roden, A. Mena, B. Hancock-Hanser, E. Wurster, K. Sherman, A. Harmon, K. Stewart, D. Weller. From the NMFS West Coast Regional Office, J. Greenman, L. Massey were integral to the SBNWR fieldwork. From the US Navy, M. Hannah, E. Pollard, J. Curran, and B. Saunders were also key primary investigators at both field sites. Collaborating researchers and students at both field sites include T. Tempest, A. Reissman, R. Driskell, L. Stasiac, K. LeRoy, E. Neibaur, B. Scharnhorst, O. Gibbs, A. Cahill, A. Anuszczyk, H. Lovich, C. Mulaney, A. Lavelle, R. Hill, and H. Shaikh. We also thank J. Seminoff and E. LaCasella for reviewing this document.

References

Barraza A.D., LM Komoroske, C Allen, T Eguchi, R Gossett, E Holland, D D. Lawson, RA. LeRoux, A Long, JA. Seminoff, CG. Lowe. (2020). Trace metals in green sea turtles (*Chelonia mydas*) inhabiting two southern California coastal estuaries. Chemosphere, Volume 223.

Bedolla-Ochoa C., Reyes-López, M.A., Rodríguez-González, H., Delgado-Trejo, C. (2023). Black sea turtle (*Chelonia mydas agassizii*) life history in the sanctuary of Colola Beach, Michoacan, Mexico. Animals. 13(3):406.

Hanna, M.E., Chandler, E.M., Semmens, B.X., Eguchi, T., Lemons, G.E. & Seminoff, J.A. (2021). Citizen-sourced sightings and underwater photography reveal novel insights about green sea turtle distribution and ecology in Southern California. Frontiers in Marine Science, 8, 671061.

Seminoff, J.A., Allen, C.D., Balazs, G.H., Dutton, P.H., Eguchi, T., Haas, H., Hargrove, S.A., Jensen, M.P., Klemm, D.L., Lauritsen, A.M. (2015). Status Review of the Green Turtle (*Chelonia mydas*) under the Endangered Species Act, vol. 599.

Turner Tomaszewicz, C.N., Avens, L., LaCasella, E.L., Eguchi, T., Dutton, P.H., LeRoux, R.A., Seminoff, J.A. (2022). Mixed-stock aging analysis reveals variable sea turtle maturity rates in a recovering population. The Journal of Wildlife Management, 86(4), e22217.

Turner Tomaszewicz, C.N., Seminoff, J.A. (*in prep*). Geochemical signatures in bones reveal key life history patterns of green sea turtles (*Chelonia mydas*) in Southern California, USA.

Table 1

Summary of green turtle interactions in the San Diego Bay

Photo.ID	Location	Year	Month	Day	CCL (cm)	FY Capture #
NMFS.SWFSC.Cm.SDB.ID257458.26Oct2023.	San Diego Bay	2023	Oct	26	75.3	1
NMFS.SWFSC.Cm.SDB.ID257459.26Oct2023	San Diego Bay	2023	Oct	26	93.5	1
NMFS.SWFSC.Cm.SDB.ID4545.26Oct2023	San Diego Bay	2023	Oct	26	98.9	1
NMFS.SWFSC.Cm.SDB.ID122950.26Oct2023	San Diego Bay	2023	Oct	26	98.5	1
NMFS.SWFSC.Cm.SDB.ID257465.30Nov2023	San Diego Bay	2023	Nov	30	59.2	1
NMFS.SWFSC.Cm.SDB.ID257466.30Nov2023	San Diego Bay	2023	Nov	30	59.9	1
NMFS.SWFSC.Cm.SDB.ID255364.30Nov2023	San Diego Bay	2023	Nov	30	73.2	1
NMFS.SWFSC.Cm.SDB.ID257467.30Nov2023	San Diego Bay	2023	Nov	30	69.3	1
NMFS.SWFSC.Cm.SDB.ID257468.30Nov2023	San Diego Bay	2023	Nov	30	80.1	1
NMFS.SWFSC.Cm.SDB.ID171107.30Nov2023	San Diego Bay	2023	Nov	30	93	1
NMFS.SWFSC.Cm.SDB.ID257531.12Mar2024	San Diego Bay	2024	Mar	12	63.8	1
NMFS.SWFSC.Cm.SDB.ID257461.12Mar2024	San Diego Bay	2024	Mar	12	89.1	1
NMFS.SWFSC.Cm.SDB.ID125969.12Mar2024	San Diego Bay	2024	Mar	12	101.3	1
NMFS.SWFSC.Cm.SDB.ID251200.12Mar2024	San Diego Bay	2024	Mar	12	60.5	1
NMFS.SWFSC.Cm.SDB.ID257467.12Mar2024	San Diego Bay	2024	Mar	12	69.3	2
NMFS.SWFSC.Cm.SDB.ID13582.12Mar2024	San Diego Bay	2024	Mar	12	112.5	1
NMFS.SWFSC.Cm.SDB.ID177024.12Mar2024	San Diego Bay	2024	Mar	12	71.5	1
NMFS.SWFSC.Cm.SDB.ID257532.12Mar2024	San Diego Bay	2024	Mar	12	87	1
NMFS.SWFSC.Cm.SDB.ID257755.07May2024	San Diego Bay	2024	May	7	75.3	1
NMFS.SWFSC.Cm.SDB.ID257468.07May2024	San Diego Bay	2024	May	7	80.2	2
NMFS.SWFSC.Cm.SDB.ID257756.07May2024	San Diego Bay	2024	May	7	67	1
NMFS.SWFSC.Cm.SDB.ID255281.07May2024	San Diego Bay	2024	May	7	60.5	1
NMFS.SWFSC.Cm.SDB.ID2070.07May2024	San Diego Bay	2024	May	7	108.6	1
NMFS.SWFSC.Cm.SDB.ID257757.07May2024	San Diego Bay	2024	May	7	53	1
NMFS.SWFSC.Cm.SDB.ID171107.08May2024	San Diego Bay	2024	May	8	93.3	2
NMFS.SWFSC.Cm.SDB.ID257758.08May2024	San Diego Bay	2024	May	8	85.4	1
NMFS.SWFSC.Cm.SDB.ID257759.08May2024	San Diego Bay	2024	May	8	73.8	1
NMFS.SWFSC.Cm.SDB.ID173156.09May2024	San Diego Bay	2024	May	9	98.1	1
NMFS.SWFSC.Cm.SDB.ID257760.09May2024	San Diego Bay	2024	May	9	93.6	1
NMFS.SWFSC.Cm.SDB.ID257761.20Jun2024	San Diego Bay	2024	Jun	20	71	1
NMFS.SWFSC.Cm.SDB.ID257762.20Jun2024	San Diego Bay	2024	Jun	20	55.1	1
NMFS.SWFSC.Cm.SDB.ID257757.20Jun2024	San Diego Bay	2024	Jun	20	53.2	2
NMFS.SWFSC.Cm.SDB.ID257756.20Jun2024	San Diego Bay	2024	Jun	20	67.8	2
NMFS.SWFSC.Cm.SDB.ID257468.20Jun2024	San Diego Bay	2024	Jun	20	79.3	3
NMFS.SWFSC.Cm.SDB.ID257763.20Jun2024	San Diego Bay	2024	Jun	20	70.6	1
NMFS.SWFSC.Cm.SDB.ID257764.20Jun2024	San Diego Bay	2024	Jun	20	71.4	1

Table 2

Summary of green turtle interactions at the Seal Beach National Wildlife Refuge

Photo.ID	Location	Year	Month	Day	CCL (cm)	FY Capture #
NMFS.SWFSC.Cm.SBNWR.ID159552.02Nov2023	Seal Beach NWR	2023	Nov	2	80.2	1
NMFS.SWFSC.Cm.SBNWR.ID257464.02Nov2023	Seal Beach NWR	2023	Nov	2	70.3	1
NMFS.SWFSC.Cm.SBNWR.ID251708.21Feb2024	Seal Beach NWR	2024	Feb	21	69.7	1
NMFS.SWFSC.Cm.SBNWR.ID257530.24Apr2024	Seal Beach NWR	2024	Apr	24	63.9	1
NMFS.SWFSC.Cm.SBNWR.ID257765.26Jun2024	Seal Beach NWR	2024	Jun	26	83	1
NMFS.SWFSC.Cm.SBNWR.ID162434.26Jun2024	Seal Beach NWR	2024	Jun	26	84.5	1
NMFS.SWFSC.Cm.SBNWR.ID257776.26Jun2024	Seal Beach NWR	2024	Jun	26	95.6	1

Photo Identification Files

Formatted photographs from the 43 green turtles documented during 2023-24 permitting period. Photos include up to three images per individuals, per encounter, documenting the view of the top of the head (T), the right profile of the head (R), and the left profile of the head (L).

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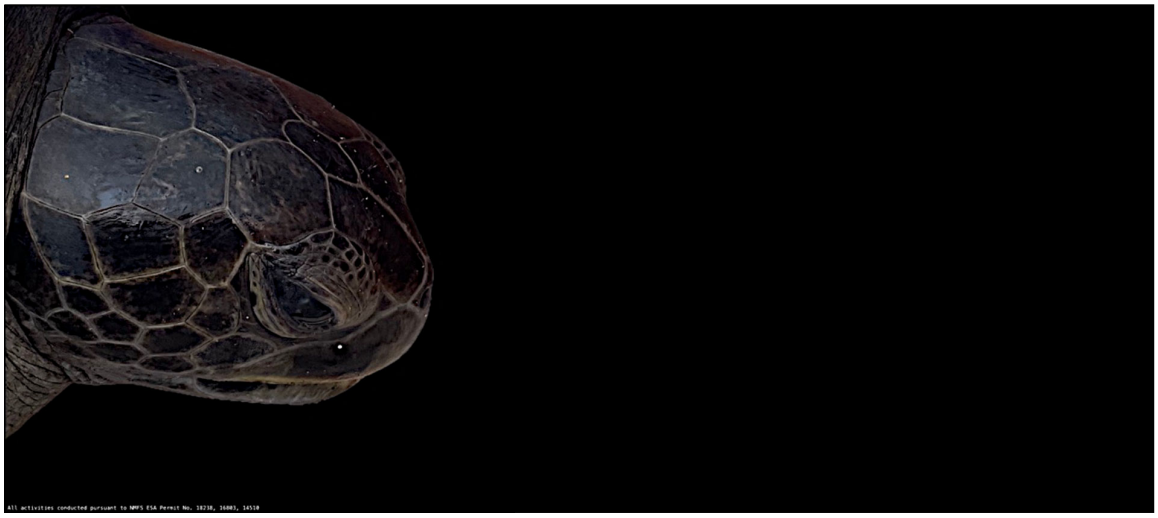

NMFS.SWFSC.Cm.SDB.ID257761.20Jun2024.R

NMFS.SWFSC.Cm.SDB.ID257761.20Jun2024.L

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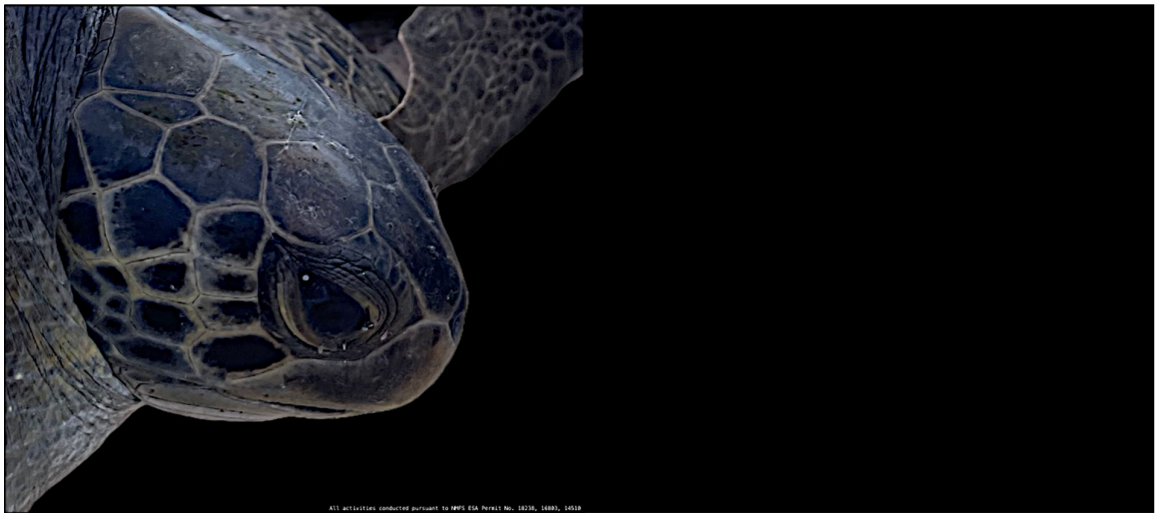

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NMFS.SWFSC.Cm.SDB.ID257757.20Jun2024.R

NMFS.SWFSC.Cm.SDB.ID257757.20Jun2024.L

*NMFS.SWFSC.Cm.SDB.ID257756.20Jun2024.T**

*NMFS.SWFSC.Cm.SDB.ID257756.20Jun2024.R**

*NMFS.SWFSC.Cm.SDB.ID257756.20Jun2024.L**

*NMFS.SWFSC.Cm.SDB.ID257468.20Jun2024.T**

*NMFS.SWFSC.Cm.SDB.ID257468.20Jun2024.R**

*NMFS.SWFSC.Cm.SDB.ID257468.20Jun2024.L**

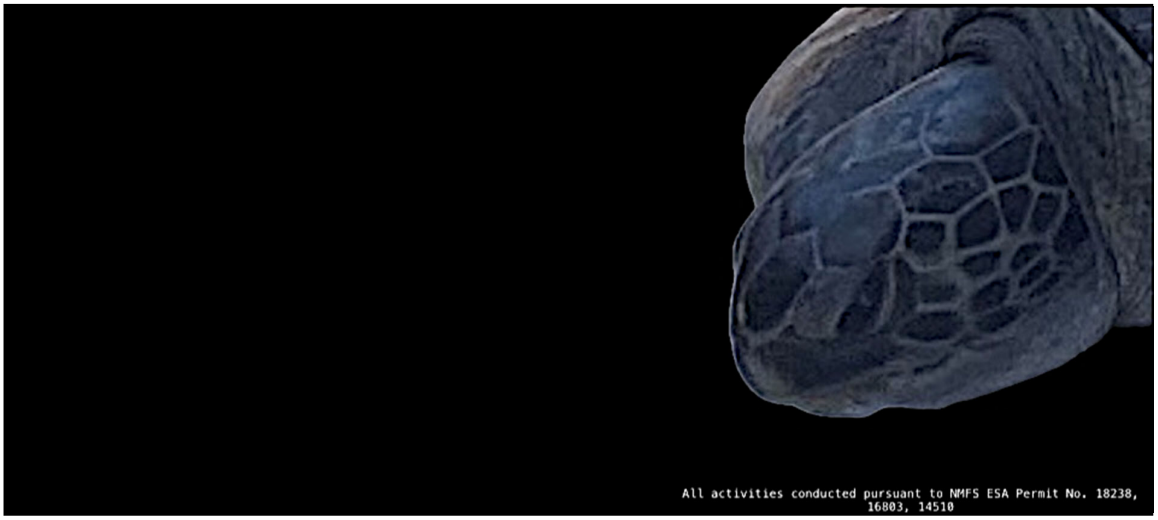
NMFS.SWFSC.Cm.SDB.ID257763.20Jun2024.T

NMFS.SWFSC.Cm.SDB.ID257763.20Jun2024.R

NMFS.SWFSC.Cm.SDB.ID257763.20Jun2024.L

No (T) photo taken.

No (R) photo taken.



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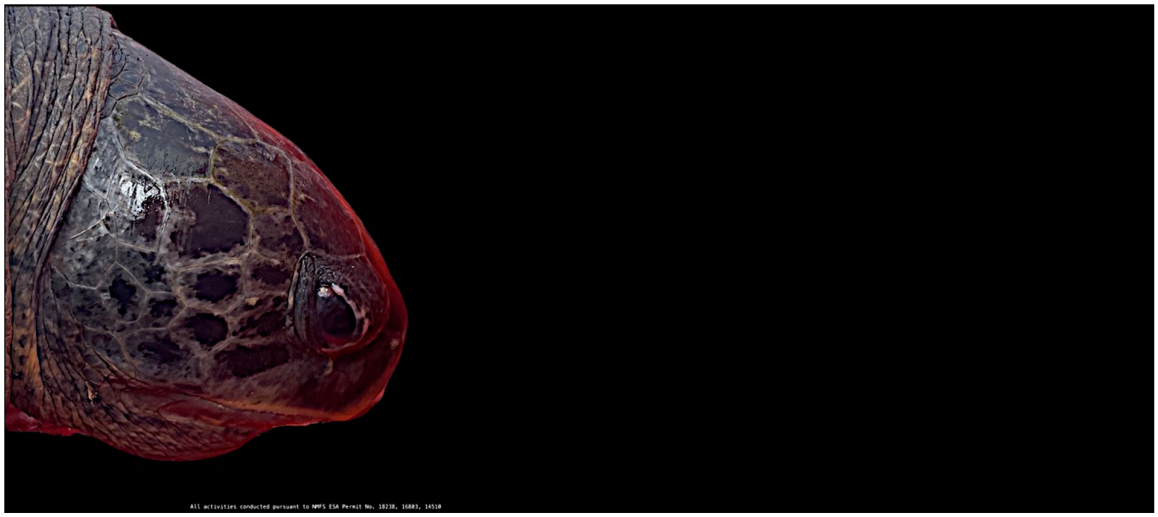

NMFS.SWFSC.Cm.SDB.ID257760.09May2024.R

NMFS.SWFSC.Cm.SDB.ID257760.09May2024.L

*NMFS.SWFSC.Cm.SDB.ID171107.08May2024.T**

*NMFS.SWFSC.Cm.SDB.ID171107.08May2024.R**

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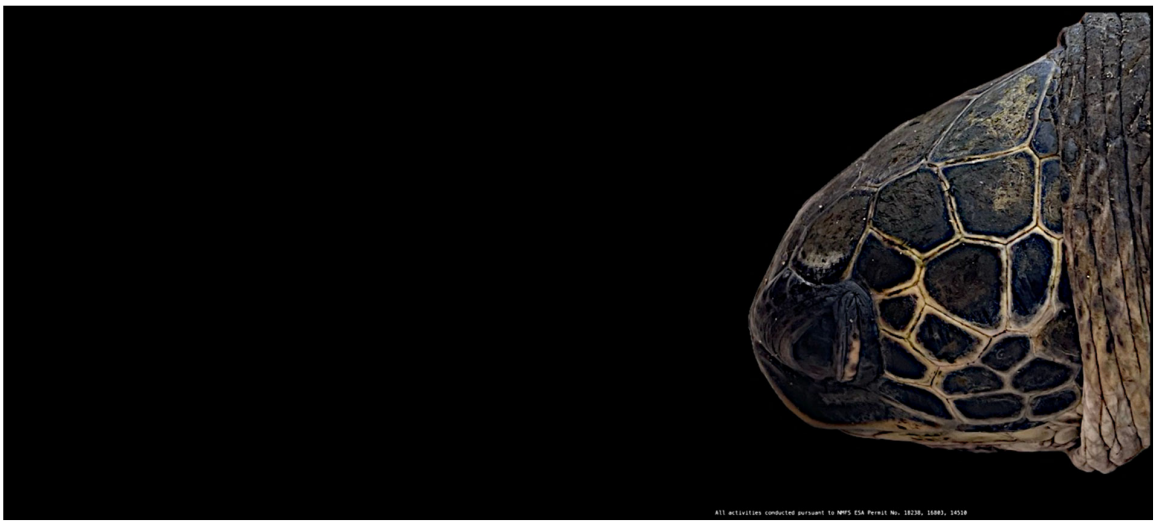

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*NMFS.SWFSC.Cm.SDB.ID2070.07May2024.L**

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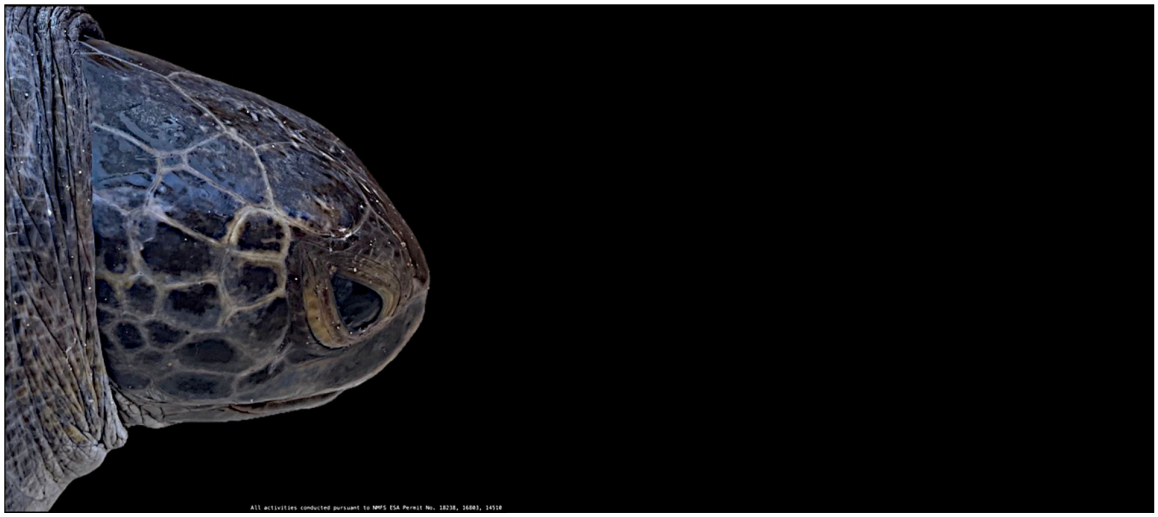

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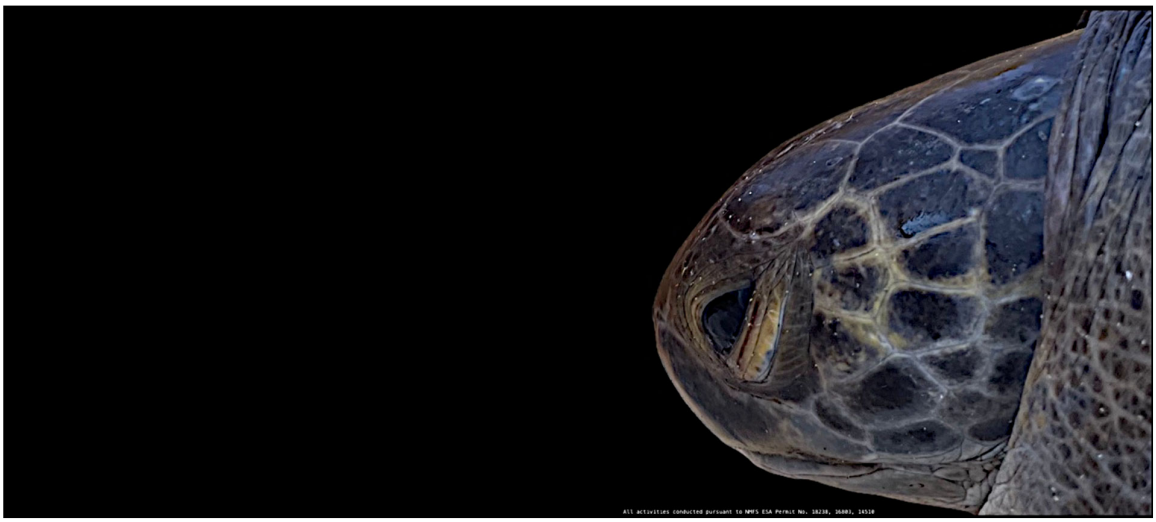

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*NMFS.SWFSC.Cm.SDB.ID125969.12Mar2024.T**

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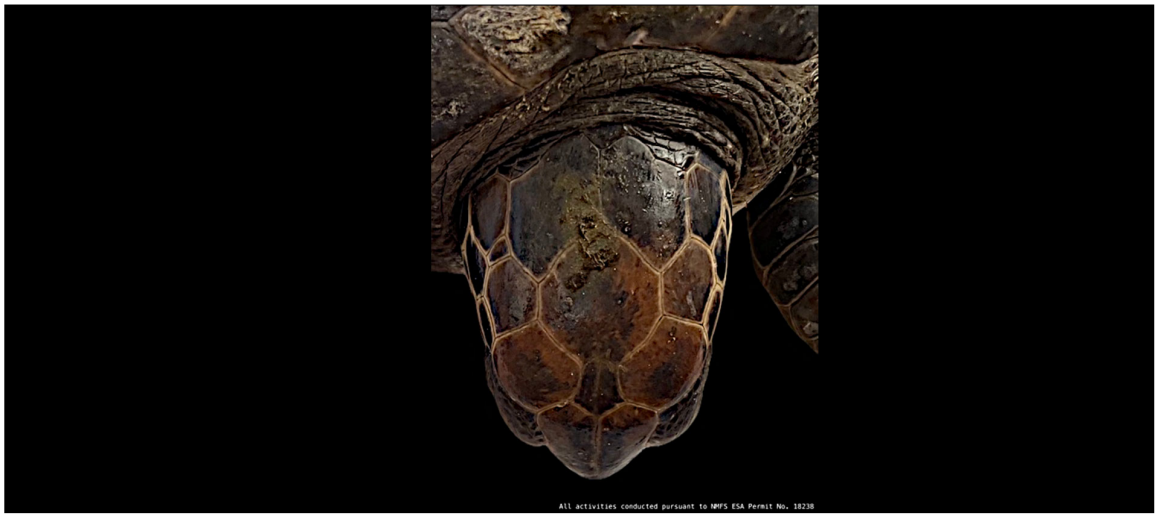

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*NMFS.SWFSC.Cm.SDB.ID255364.30Nov2023.R**

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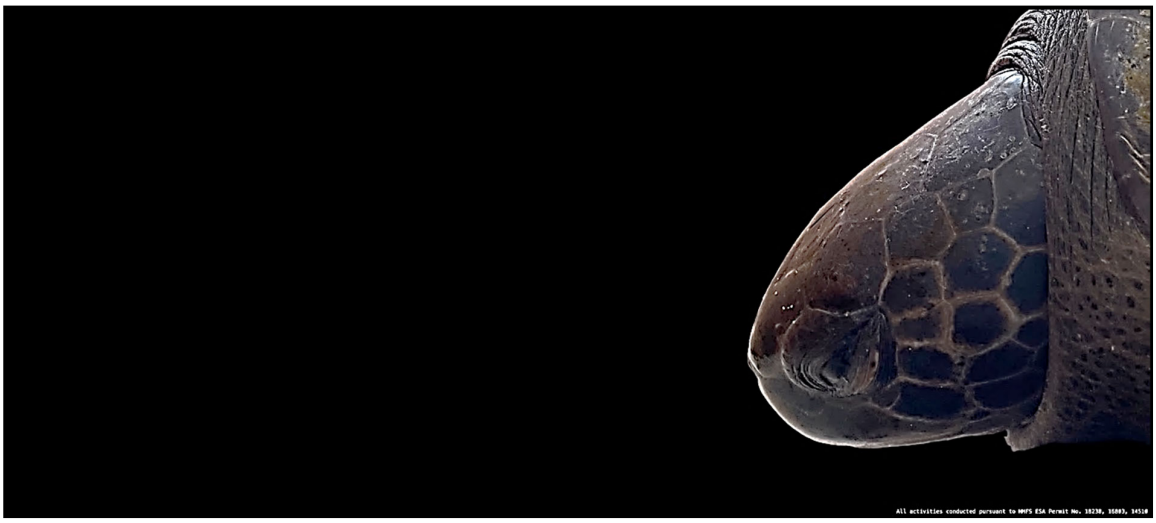

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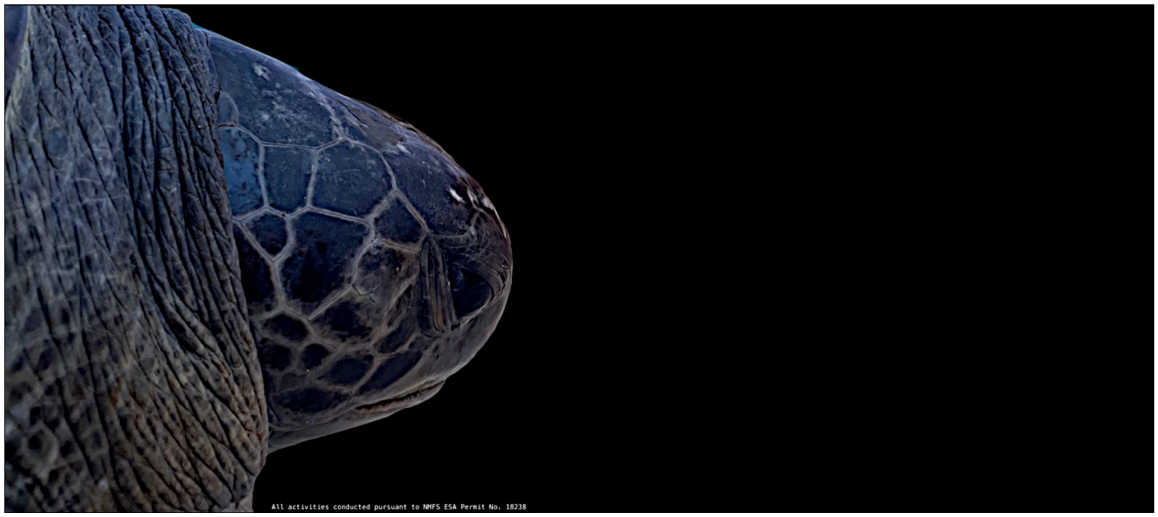

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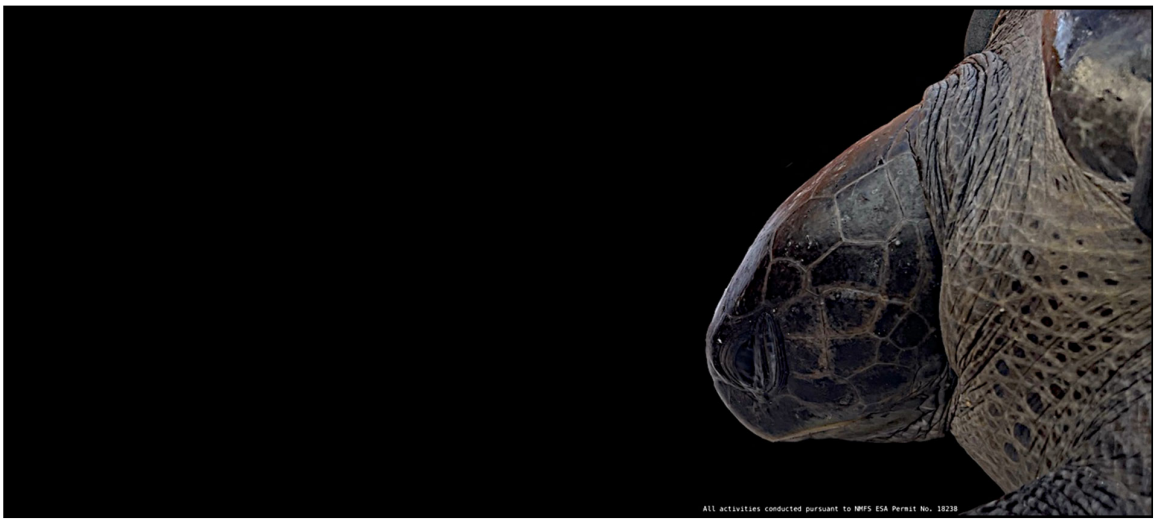

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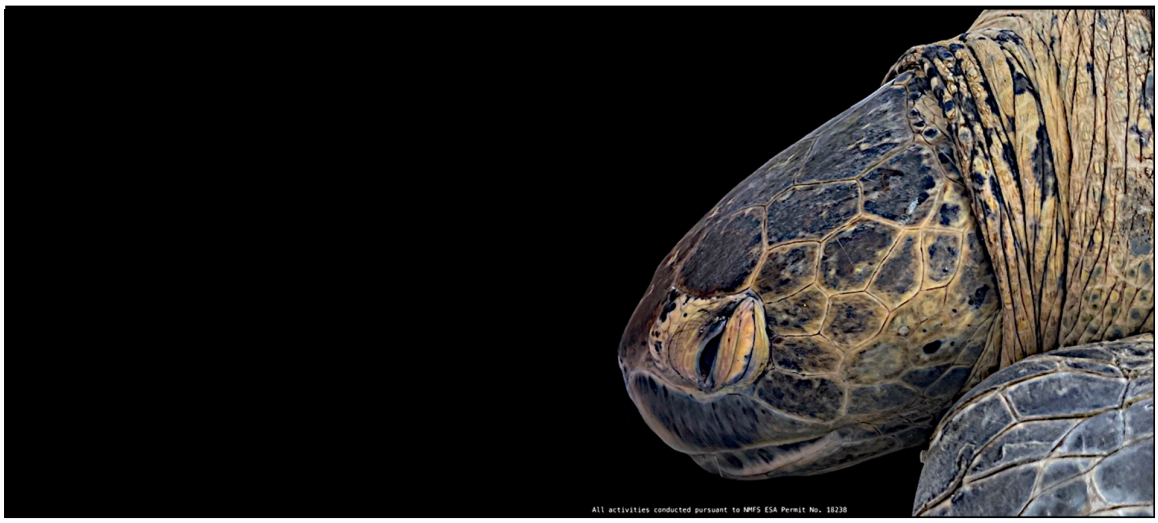

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*NMFS.SWFSC.Cm.SBNWR.ID162434.26Jun2024.T**

*NMFS.SWFSC.Cm.SBNWR.ID162434.26Jun2024.R**

*NMFS.SWFSC.Cm.SBNWR.ID162434.26Jun2024.L**

NMFS.SWFSC.Cm.SBNWR.ID257530.24Apr2024.T

No (R) photo taken

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No (L) photo taken

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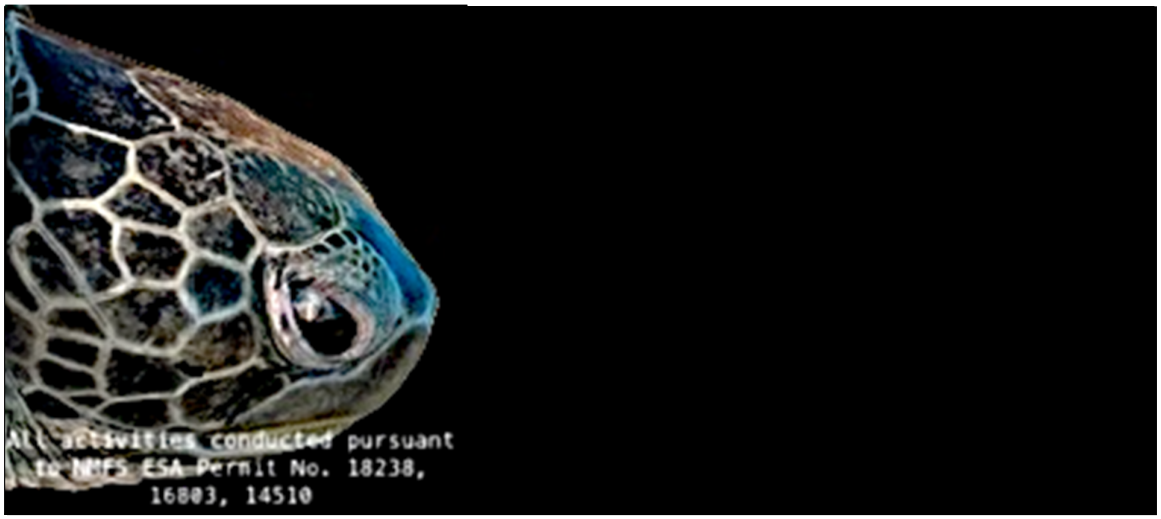
NMFS.SWFSC.Cm.SBNWR.ID251708.21Feb2024.T



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*NMFS.SWFSC.Cm.SBNWR.ID159552.02Nov2023.T**

*NMFS.SWFSC.Cm.SBNWR.ID159552.02Nov2023.R**

*NMFS.SWFSC.Cm.SBNWR.ID159552.02Nov2023.L**