First Sea Turtle Informal Intersessional Working Group Meeting (STIIWG01)

Review of CMM 2018-04 (Sea Turtles)

8 and 10 April 2026 (Pohnpei)| 10 AM-2PM

Virtual Meeting

State of the World's Sea Turtles

STIIWG01-2026-IP-15[1]

27March 2026

[1] Reference 15

SWOT

report

Volume XXI

The State of the World's Sea Turtles

SPECIAL FEATURE

Sea Turtles and Tradition in the Pacific Islands

A young loggerhead turtle swims among a school of mahi-mahi in the Mediterranean Sea. © Enric Gener/www.27mm.net; **FRONT COVER:** A green turtle swims along the north shore of Kauai, Hawai'i, U.S.A. © Steve Munch, Latitudes Gallery

Editor's Note

Sustaining Our Momentum

The past year was an extraordinary one for global sea turtle conservation. The International Sea Turtle Society Symposium in Ghana deepened ties with African conservationists for the first time on their soil. The first Atlas of Global Sea Turtle Status (2025) capstoned two decades of expert consultations by the International Union for Conservation of Nature (IUCN) Marine Turtle Specialist Group, providing an in-depth roadmap for sea turtle research and conservation. Efforts to define "Important Marine Turtle Areas" were kick-started in Africa, launching a valuable new tool for local-scale conservation (see pp. 14–15). And the green turtle's global IUCN Red List status fell from Endangered to Least Concern, proof to the world that decades of concerted conservation effort can indeed pay off (see pp. 6–9). There was even a new species of extinct leatherback discovered! Few species-centric collectives can boast such tangible successes. In many ways, our community is on a roll and can serve as a beacon of hope for biodiversity conservationists globally.

This contrasts starkly, however, with reports of the planet's overall health. Ocean temperatures reached record highs with each passing month since 2024, fueling a coral bleaching trend that has now affected 84 percent of the world's reefs. More than half of the world's bird species are declining according to the IUCN, and many ice-dependent species are increasingly threatened. And while some multinational agreements to protect Nature inched ahead, like the United Nations (UN) High Seas Treaty, now ratified, others, like the UN global plastics treaty, remained in political deadlock, and the 2025 UN Climate Change Conference (COP30) yielded little progress toward addressing Earth's greatest environmental threat.

Sadly, the U.S. government, once a major funder of international sea turtle research and conservation, abruptly canceled dozens of commitments in January 2025, leaving sea turtle projects and professionals worldwide in precarious positions, with little notice and few options. So how can our community handle this historic moment in which our conservation blueprint, experience, and know-how are at their zenith, yet systemic threats are on the rise, political will is stagnant, and government financing is dwindling?

The answer is to draw strength from our community, get creative about fundraising, stay optimistic in the face of adversity, and sustain our momentum. SWOT can help—especially with optimism and community—and we also hope to vastly expand our support for field projects (see pp. 44–47). As one colleague said, concerning funding shortages, "It's up to nonprofits and responsible rich people now." And for better or worse, the world is replete with both, particularly the latter. *Forbes Magazine* estimates there are some 3,000 billionaires and an even larger population of multimillionaires. This concentration of wealth is coupled with a rise in philanthropic giving, now at record highs in the United States.

So let us find ways to channel our collective energy and to help each other reach these generous people and companies. And for those of us who may feel hopelessly cut off, call on your global SWOT Team colleagues for help and connections. Like sea turtles, turtle folk are hardy and resilient, experts at adapting to the vagaries of politics, culture, and human behavior. I trust that our ever-growing, ever-committed, and passionate community will rise to today's challenges, take care of one another, and keep our important work focused and funded, all while keeping a weather eye on slowing the stubborn systemic threats to turtles, the biosphere, and humanity. Together we can bend the arc of history toward the positive and shape what the next era of conservation looks like.

Roderic B. Mast
Chief Editor

AT LEFT: A hawksbill turtle glides above a coral reef in the Red Sea, Egypt. © Gina Goodman/@ginagoodman

meet the turtles

The seven sea turtle species that grace our oceans belong to an evolutionary lineage that dates back at least 110 million years. Sea turtles fall into two main subgroups: **(a)** the unique family *Dermochelyidae*, which consists of a single species, the leatherback, and **(b)** the family *Cheloniidae*, which comprises the six species of hard-shelled sea turtles.

Kemp's ridley
Lepidochelys kempii
CR

Olive ridley
Lepidochelys olivacea
VU

Hawksbill
Eretmochelys imbricata
CR

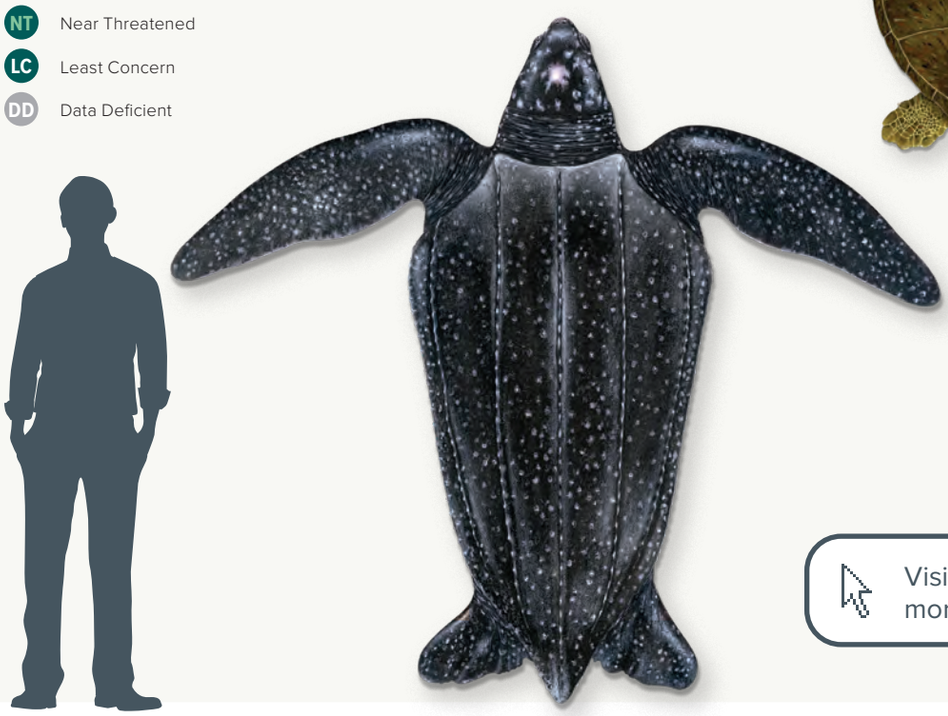
Flatback
Natator depressus
DD

Loggerhead
Caretta caretta
VU

Green
Chelonia mydas
LC

IUCN RED LIST STATUS:

- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- NT Near Threatened
- LC Least Concern
- DD Data Deficient



Leatherback
Dermochelys coriacea
VU

Visit **www.SeaTurtleStatus.org** to learn more about all seven sea turtle species!

contents

SWOT REPORT
VOLUME XXI

EDITORIAL TEAM
Roderic B. Mast, *Chief Editor*
Brian J. Hutchinson
Patricia Elena Villegas
Ashleigh Bandimere

DATA AND MAPS
Andrew DiMatteo, *CheloniData, LLC*
Ei Fujioka, *Duke University*

DESIGN
Miya Su Rowe, *Rowe Design House*

SCIENTIFIC ADVISOR
Bryan P. Wallace, *Ecolibrium, Inc., and University of Colorado Boulder*

SWOT
The State of the World's Sea Turtles

To request a copy of the latest issue of *SWOT Report* or to make a tax-deductible contribution to SWOT, contact:

State of the World's Sea Turtles
Oceanic Society
P.O. Box 844
Ross, CA 94957
U.S.A.

+1-415-256-9604

office@oceanicsociety.org
www.SeaTurtleStatus.org

Printed on FSC Certified paper

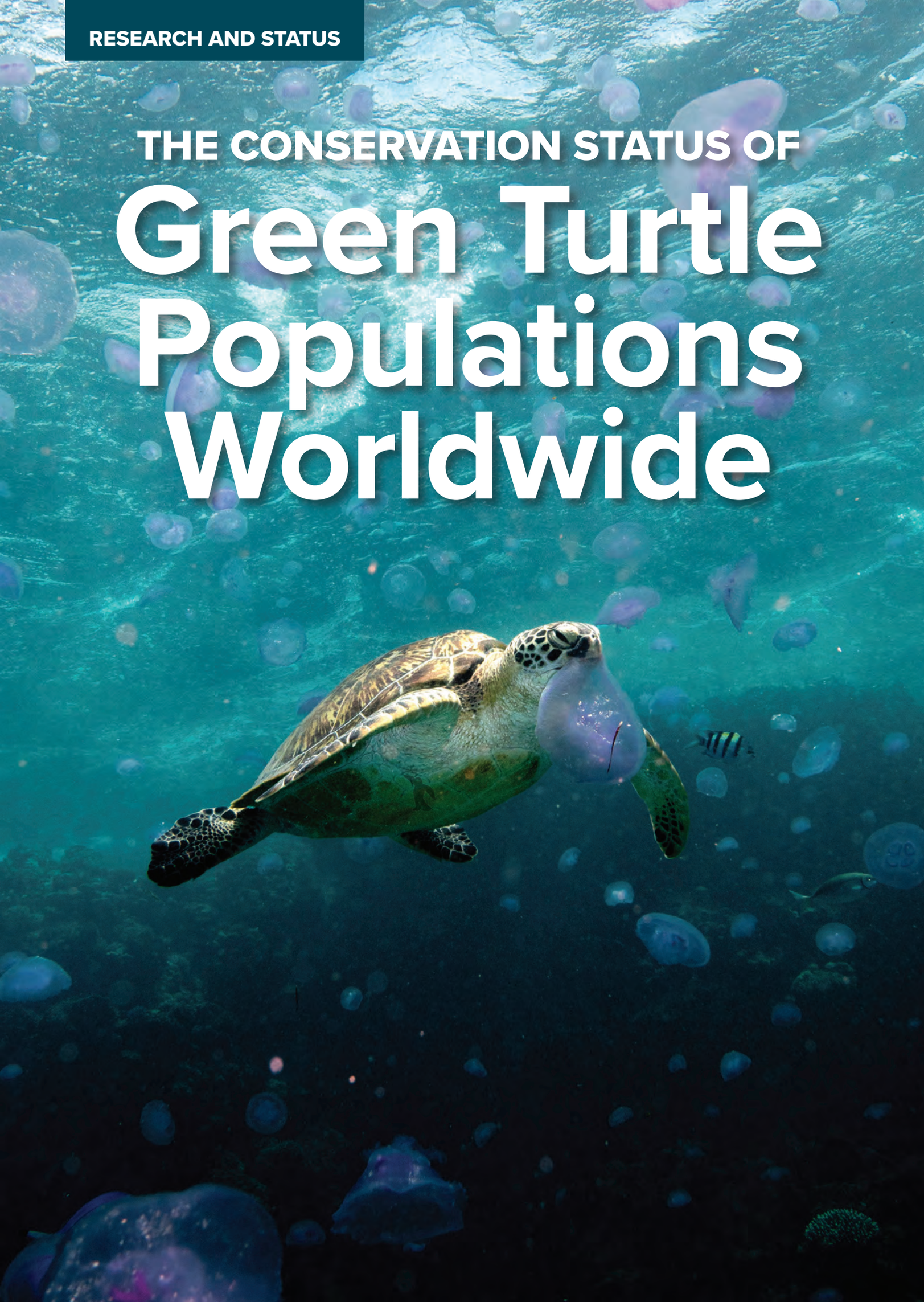
50% Recycled/
25% Postconsumer Waste

Find Mr. Leatherback!
Can you spot Mr. Leatherback's distinctive silhouette? It's hidden 11 times in this issue of *SWOT Report*.

ILLUSTRATIONS: © Dawn Witherington

THIS PAGE: © Matty Smith

THE CONSERVATION STATUS OF Green Turtle Populations Worldwide



By Juan M. Rguez-Baron, Camryn D. Allen, Jérôme Bourjea, Annette C. Broderick, Milani Chaloupka, Mayeul Dalleau, Andreas Demetropoulos, Simon Demetropoulos, Irene K. Kelly, Noam Leader, Yaniv Levy, Angela Mastrogiacomo, Ana R. Patrício, Andrea D. Phillott, Nicolas J. Pilcher, ALan F. Rees, Jeffrey A. Seminoff, Erin E. Seney, Oğuz Türközan, Bryan P. Wallace, and the MTSG Green Turtle Red List working group

Early logs from ships sailing the Caribbean and other tropical seas describe waters once teeming with green turtles. A Spanish chronicler traveling with Christopher Columbus during his second voyage (1493–1496) wrote while they were sailing along the coast of Cuba that "the sea was thick with turtles . . . so numerous that it seemed the ships would run aground on them." When pioneering sea turtle biologist Archie Carr and colleagues began to document the status of sea turtles nearly five centuries later, they found a starkly different picture. Carr's 1956 classic, *The Windward Road*, detailed the plight of the Caribbean green turtle, whose rookeries were a shadow of their former selves, and it served as the clarion call that effectively launched the modern sea turtle conservation movement. Seven decades later, the green turtle has come back from the brink and now stands as a riches-to-rags-to-riches tale of nature conservation. It is a poignant illustration of the arc from abundance to depletion at the hands of man, and ultimate recovery through decades of sustained management and conservation.

For centuries, green turtles faced the threat of intense direct take for meat, eggs, and other products. More recently, that threat has been combined with the widespread impacts from habitat loss, climate change, and incidental capture in fisheries. In 1982, the species was classified as Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. However, as conservation measures expanded globally, long-term monitoring has revealed a slow but steady recovery of the species. The most recent assessment by the IUCN-SSC (Species Survival Commission) Marine Turtle Specialist Group (MTSG), published in October 2025, reflects an encouraging turnaround: Globally, green turtles are now classified as Least Concern. This change is one of the most significant global status improvements ever documented for a long-lived marine vertebrate, and the shift is both scientifically significant and symbolically powerful.

For the first time, in addition to the global listing, the 2025 assessment also evaluated 11 green turtle subpopulations (regional management units, or RMUs), defined by long-term data on genetics, biogeography, tagging, movement behavior, demography, and expert knowledge. The RMU-based approach helped resolve a long-standing limitation of earlier global-only assessments, which could mask serious regional declines behind gains elsewhere. Over the past several years, dozens of MTSG experts contributed to a systematic process of collating, verifying, and reviewing decades of nesting and abundance data and of carefully applying Red List criteria to both the global population and each RMU. Notwithstanding these advances, applying Red List criteria to long-lived, migratory species such as sea turtles remains challenging, especially where data gaps or complex life histories make trends difficult to quantify.

The combined global and RMU-level assessments reveal a nuanced picture: Some green turtle subpopulations have undergone remarkable recoveries, while others remain small, fragmented, or in clear decline. These differences highlight not only the effectiveness of sustained conservation efforts but also the green turtle's continued vulnerability to human impacts and its dependence on conservation.

Although the global gains in green turtle populations are encouraging, they also represent only a partial recovery. Green turtle numbers remain far below their preexploitation abundance, and 4 of the 11 RMUs are still in decline. Where protections hold, turtles rebound; where they weaken, declines persist. Whether this global improvement becomes a durable conservation success will depend on the world's continued commitment to safeguarding the RMUs that remain most at risk.

Global (2025)

LC The green turtle is listed as Least Concern at the global level, meaning that the current risk of species extinction is low. Long-term conservation efforts across much of the green turtle's range have led to a 28 percent increase overall in nesting across all rookeries included in the assessment. Nevertheless, status and conservation needs remain uneven across the green turtle's 11 subpopulations, with several that are still small, fragmented, or exposed to substantial threats. Continued conservation efforts are needed across the green turtle's range to maintain its Least Concern status, with special attention to addressing lagging regions and mitigating persistent threats from bycatch, take, and coastal development.

North Atlantic (2025)

LC Distributed from the southeastern United States and Caribbean to Macaronesia and West Africa, this subpopulation includes major rookeries in the United States (Florida), Mexico (Quintana Roo, Yucatán), Costa Rica (Tortuguero), and Aves Island (Venezuela). Long-term protection has produced substantial increases at several sites, yielding a 134 percent increase in total annual nesting from 1984 to 2023. However, recent downturns at key beaches, including

AT LEFT: A green turtle feeds on a swarm of moon jellyfish in Egypt.

Tortuguero, the largest rookery in the RMU, are concerning and warrant special focus. Priorities include managing bycatch, safeguarding nesting habitat amid development, and maintaining long-term monitoring to detect emerging trends.

South Atlantic (2019)

LC This subpopulation nests across many of the region's 28 countries and dependencies, though only 8 were included in the assessment: Ascension Island (United Kingdom), Brazil, Equatorial Guinea, French Guiana, Guinea-Bissau, Príncipe Island (São Tomé and Príncipe), Suriname, and Venezuela. These areas have shown some of the most robust recoveries among all green turtle populations, with a collective 188 percent increase in nesting abundance from historical levels to 2017. Nesting trends have been strongly positive at several key beaches—notably Ascension Island. Nevertheless, bycatch and illegal take are persistent concerns, particularly in the eastern part of the region. Sustained protection of nesting beaches, coupled with expanded fishery mitigation, will be crucial to maintain these encouraging gains.

East Pacific (2023)

VU East Pacific green turtles nest along the Pacific coasts of the Americas, from Mexico to Peru, and on offshore islands in the Galápagos (Ecuador) and the Tres Marías and Revillagigedo archipelagos (Mexico). Long-term data on nesting abundance are available from just two locations—Colola Beach in Michoacán (Mexico) and the Galápagos Islands—which together host 71 percent of all nesting in the region. Despite significant increases at both sites since the early 1980s, overall nesting abundance is about 45 percent lower than the earliest available data (1970s). The current classification reflects both partial recovery and continued threats from bycatch, illegal take (i.e., harvest), and habitat degradation.

Southwest Pacific (2025)

VU Found across Australia, Papua New Guinea, Vanuatu, and nearby waters, this subpopulation includes the world's largest green turtle rookery at Raine Island, Australia. It is assessed as Vulnerable because of a combination of its small and fragmented nesting areas, geographic isolation, and declines in some populations and critical habitats. Climate-driven impacts to nesting habitat, including storm erosion, saltwater intrusion, and sand temperature rise, are of particular concern and have already led to a decline in hatchling production at Raine Island.

Central West Pacific (2023)

NT The Central West Pacific subpopulation includes nesting populations dispersed across a vast geographic range that consists of small, isolated beaches in Japan's Ogasawara Islands, Palau, Guam, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, West Papua (Indonesia), Papua New Guinea, the Marshall Islands, and the

An aerial view shows several green turtles entering the ocean on Hookipa Beach, Maui, Hawai'i, U.S.A. © David Fleetham

IUCN RED LIST STATUS		
CR Critically Endangered	VU Vulnerable	LC Least Concern
EN Endangered	NT Near Threatened	

Solomon Islands. Of the six long-term nesting datasets that are available, the nesting populations on Hahajima and Chichijima (part of the Ogasawara Island group) show the most robust growth, contributing to a 60 percent increase overall in nesting abundance across available index sites until 2021. Despite the recent gains in Japan, the status of this subpopulation is influenced by its small area of nesting habitat, which is distantly dispersed; by gaps in nesting site protection and monitoring; and by persistent threats from bycatch and direct take.

Central South Pacific (2023)

EN This small, fragmented subpopulation nests primarily in French Polynesia (Scilly Atoll), the Cook Islands, Kiribati, Tokelau, American Samoa, and Fiji, with minor nesting in Samoa, Tonga, Tuvalu, and Pitcairn. Quantitative data remain limited, but significant population declines have been observed, and the data are persistently low. Fewer than 3,000 mature females, continued low abundance, and geographic isolation pose serious recovery and monitoring constraints. Ongoing bycatch in longline fisheries and direct take of adult turtles remain major threats.

Central North Pacific (2019)

LC This geographically isolated subpopulation nests exclusively in the Hawaiian archipelago. Most nesting occurs in Lalo (French Frigate Shoals), with a small amount of nesting activity scattered among the inhabited Hawaiian Islands. Once severely depleted, the population grew—following the enactment of protections beginning in the 1970s—at a rate of 5.44 percent annually until 2012. Its improved status was bolstered by the end of commercial harvest, rigorous protection of nesting beaches, and the absence of international pressures owing to its complete confinement within the Hawaiian archipelago. However, dependence on the two primary small nesting islets (East Island and Tern Island) in Lalo leaves this subpopulation highly vulnerable to climate-driven impacts to nesting habitats, such as erosion, inundation, and warming sand and incubation temperatures. Moreover, recent assessments show a potential shift from growth to decline, suggesting that its Least Concern status warrants careful reevaluation.

North Indian (2019)

VU Nesting primarily in Oman and the Republic of Yemen, with marine habitats spanning the Red Sea, Persian Gulf (also known as the Arabian Gulf), and Arabian Sea, this subpopulation has experienced notable declines at key nesting sites. Estimates of nesting in Oman and the Republic of Yemen indicate a 38 percent decline since the 1970s, although long-term data are limited and inconsistent. Significant threats from bycatch, turtle meat and egg harvesting, and habitat loss suggest the need for a precautionary approach to managing this subpopulation.

East Indian–West Pacific (2025)

LC Extending from Southeast Asia through the western Pacific and parts of the Indian Ocean, this subpopulation is broadly distributed, with dozens of nesting sites and 10 major rookeries in Indonesia, Malaysia, the Philippines, Vietnam, and western Australia, where thousands of turtles nest each year. Long-term data indicate a 1 percent overall decline through 2022, though local trends vary widely. The large population size and widespread distribution offset moderate localized losses. The region's complex geophysical barriers limit genetic connectivity between rookeries, resulting in high genetic diversity (at least 26 distinct stocks). Loss in fisheries, both targeted and incidental, remains the biggest threat to the RMU, and ongoing protection of nesting sites, enforcement of take regulations, and habitat conservation remain high priorities.

Southwest Indian (2023)

LC This subpopulation nests widely along the East African coast, in Madagascar, and on many small islands throughout the region. Major nesting sites are found on isolated islands in the Mozambique Channel (e.g., Europa, Comoros, the Glorieuses, and Mayotte) and in southern Seychelles (Aldabra). Long-term monitoring data from major nesting sites show a 59 percent increase overall in nesting over about 30 years through 2020. The subpopulation has a large distribution and high genetic connectivity. However, persistent illegal take and incidental catch in artisanal fisheries continue to significantly affect turtles in parts of this region, and climate change–related risks pose a future threat to vulnerable island nesting sites.

Mediterranean (2024)

NT The Mediterranean subpopulation nests mainly in Türkiye and Cyprus, with a smaller proportion nesting in the Syrian Arab Republic, Lebanon, Israel, and occasionally Egypt. This subpopulation forages throughout the eastern and central Mediterranean basins, particularly along the coasts of North Africa and the Levant. It has shown a 270 percent cumulative increase in nesting abundance over the past 30 years or so. However, the subpopulation also suffers from a limited nesting habitat (less than 300 kilometers, or 186 miles), genetic isolation, and ongoing threats from coastal development. •

HEAD-STARTING AND TRANSLOCATION:

Lessons from Decades of Experiences

By Anna Barbanti, Anna Ortega, and Sean Williamson

Head-starting and translocation are wildlife management strategies that can be implemented to support the recovery of populations or species facing a steep decline. With sea turtles, head-starting involves rearing hatchlings in captivity before releasing them into the wild to increase survival through their most vulnerable early life stages. Translocation, by contrast, entails moving and releasing individuals (eggs or turtles) to safer locations within or outside the indigenous range of the species to achieve a conservation benefit, such as increasing a population size or avoiding erosion, predation, or habitat loss.

By the mid-20th century, sea turtle populations worldwide were declining rapidly because of intensive egg and adult turtle harvesting, coastal development, and incidental capture in fisheries. In some cases, managers believed that immediate interventions were needed to prevent collapse. At the time, little was known about the drivers of population recovery in sea turtles, and head-starting and translocations were viewed as practical, hands-on approaches that could quickly improve survival rates. Because natural mortality is highest during early life stages, conservationists hypothesized that boosting hatchling survival could enhance recruitment into breeding populations.

Programs in the 1960s and 1970s aimed to compensate for human-induced losses and to "head-start" populations toward recovery. Translocation efforts focused on relocating nests from threatened beaches to safer locations or restoring nesting where it had disappeared. Over time, however, concerns emerged about whether *ex situ* actions

AT RIGHT: Kemp's ridley hatchlings emerge from their nest inside a nesting corral in Rancho Nuevo, Tamaulipas, Mexico. © Héctor Chenge

such as head-starting and translocation could inadvertently harm wild populations if poorly designed. Those concerns included questions about imprinting, survival skills, disease transmission, genetic integrity, and whether conservation resources might be better invested in protecting older life stages. Although decades of practice and research have addressed some uncertainties, many questions remain. In the following sections, we explore several examples of sea turtle head-starting and translocation and consider how these experiences inform present-day conservation decisions.

The Kemp's Ridley Restoration and Enhancement Program

During the 1940s, the Kemp's ridley sea turtle nested along the shores of Mexico in phenomenal arribadas. An amateur filmmaker documented one such event at Rancho Nuevo in 1947, where an estimated 40,000 females nested in a single day. By the 1960s and 1970s, however, the population hovered near collapse, with just a few hundred nests per year. In response to the imminent extinction of the species, the United States and Mexico launched an unprecedented binational recovery program that continues today.

To reestablish nesting on the Texas (U.S.A.) coast, where Kemp's ridleys had historically nested but had become exceedingly rare, the program combined egg translocation, imprinting research, and head-starting. Between 1978 and 1988, eggs from Rancho Nuevo were transported to Padre Island National Seashore (Texas), where they were incubated and hatchlings were released into U.S. waters. A portion of each cohort was raised in captivity for 9 to 11 months, monitored for growth and health, tagged, and released into the Gulf of Mexico.

These *ex situ* interventions were paired deliberately with *in situ* threat reduction, most notably the introduction of turtle excluder devices in U.S. shrimp trawl fisheries. This integrated approach recognized that increasing early survival would be ineffective without reducing juvenile and adult mortality at sea. The first confirmed return to Texas of a head-started female in 1996 validated key assumptions about imprinting and survival. Nesting subsequently increased in both Mexico and Texas, peaking between 2009 and 2012, before declining again in later

The Cayman Turtle Conservation and Education Centre in the Cayman Islands began in 1968 as a commercial green turtle farm and later morphed into a conservation, research, and tourism center. The center's decades of work with captive breeding and reintroduction programs have yielded valuable insights that can inform other *ex situ* conservation efforts. © Flavio Vallenari

years. This variability underscored the vulnerability of the species to environmental variability and ongoing threats.

The Kemp's ridley program remains one of the most ambitious and longest-running sea turtle recovery efforts worldwide. Its history offers critical lessons about the potentials and limits of head-starting, the importance of threat reduction across life stages, and the complexity of long-term population recovery.

The Cayman Islands Green Turtle Recovery

The Cayman Turtle Conservation and Education Centre began in 1968 as a commercial green turtle breeding facility and later evolved into a conservation, research, and tourism center. Early efforts involved acquiring adult breeding stock (more than 500 adults) from multiple Caribbean rookeries and translocating nearly half a million eggs to Grand Cayman Island to establish a head-start and reintroduction program.

In the 1980s, the focus shifted toward restoring the locally extinct Cayman Islands green turtle rookery. By 2001, more than 29,000 hatchlings and yearlings had been released. Long-term monitoring documented a recovery from a single nest in 1991 to 528 nests by 2022. To date, this program remains the only head-start program with scientifically demonstrated success in contributing to the recovery of a locally extinct sea turtle population.

The scale and longevity of the Cayman program enabled unprecedented research into captive rearing, growth, survival, behavior, genetics, tagging, and reintroduction. Long-term tagging and genetic fingerprinting allowed researchers to link captive-reared turtles to future nesting activity. The program also revealed important limitations. Maintaining a genetically diverse breeding population proved challenging, and the number of hatchlings released declined after 2002 because of logistical and biological constraints.

A 2019 genetic evaluation confirmed that at least 90 percent of nesting females and approximately 85 percent of hatchlings were the result of the reintroduction program. Remarkably, genetic analyses revealed the emergence of three distinct lineages within just two generations, highlighting how sea turtles can rapidly reshape population structure. This finding emphasizes the importance of incorporating genetic monitoring into any *ex situ* conservation effort. Despite decades of controversy, the Cayman program played a significant role in restoring a depleted rookery while advancing scientific understanding of captive breeding and *ex situ* management in long-lived marine species.

Other Head-Start Initiatives

Additional green turtle head-start efforts have occurred elsewhere with mixed outcomes. In Florida (U.S.A.), an experimental program was launched in 1971 before statewide nesting monitoring was established. Eggs collected from Atlantic coast beaches were artificially incubated, and hatchlings were reared in captivity for up to one year. Over 17 years, more than 18,000 head-started turtles were released. However, low recapture rates, concerns about male-biased sex ratios, and uncertainty about population-level benefits led to the program's termination in 1988, after which head-starting was prohibited in the state. Nevertheless, since the program's termination, six head-started turtles have been identified as adults, demonstrating survival to reproductive maturity after 15–26 years in the wild, an important finding.

In Australia's Torres Strait, head-starting emerged from experimental turtle farming research in the 1970s. Eggs and nests expected to fail were incubated, and hatchlings were reared on multiple islands to engage local communities. Although the program yielded valuable insights into egg transport sensitivity, diet, and growth, extended captive rearing raised questions about delayed ocean entry and survival. No evidence of recruitment into breeding populations was documented, and the project concluded that turtle farming and associated head-starting were neither economically viable nor demonstrably effective as conservation tools under prevailing conditions.

Are Head-Starting and Translocation Relevant Today?

Questions about the feasibility and usefulness of head-start and translocation programs remain highly relevant, particularly for critically endangered populations such as the East Pacific leatherback turtle, which has declined by more than 95 percent since the 1980s. In 2021, a workshop convened a wide range of experts to evaluate whether *ex situ* interventions might complement *in situ* conservation.

After extensive discussion, participants acknowledged the risks and uncertainties of head-starting and translocation, and they agreed not to initiate full-scale *ex situ* programs, instead continuing to prioritize bycatch reduction while also pursuing research to fill remaining knowledge gaps about *ex situ* management.

A follow-up workshop in 2025 produced a 10-year research strategy (2026–2035) outlining a science-driven approach to evaluate the role of *ex situ* tools in East Pacific leatherback conservation. The strategy emphasizes hypothesis-driven research, adaptive governance, transparency, and coordination, and it establishes a framework in which any future interventions would be rigorously justified, transparently governed, and carefully monitored.

Where Does This Leave Us?

Decades ago, head-starting and translocation emerged from a sense of urgency to prevent extinction. That urgency has only intensified as climate change and other threats accelerate. Yet uncertainty surrounding these tools has often resulted in prolonged deliberation and inaction.

Debate persists, shaped by limited long-term data and polarized interpretations of success and risk, leaving many to wonder: Do these tools actually work? The honest answer is that we may never know with full certainty. Because *ex situ* interventions never occur in isolation and are often implemented alongside threat reduction, their true impact is difficult to quantify. What is clear is that any program employing these strategies must be grounded in rigorous planning, clearly defined objectives, and long-term monitoring. Only through long-term, well-designed planning and monitoring can conservationists track progress, understand population responses, and make informed decisions in the years to come. •

African Experts Map World's First Important Marine Turtle Areas

By Alexandre Girard and Brendan Hurley

An Unprecedented African-Led Effort

In recent years, African sea turtle conservationists have organized themselves into three important regional networks. RASTOMA was the first network established, and it represents the central western countries of the continent (Cameroon, the Democratic Republic of Congo, Equatorial Guinea, Gabon, the Republic of Congo, and São Tomé and Príncipe). WASTCON (West African Sea Turtle Conservation) was the second group to be organized, and it represents the countries of Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, Nigeria, Sierra Leone, and Togo. More recently, NAST-Net (North Africa Sea Turtle Network) was created to represent the northern African countries of Algeria, Egypt, Libya, Morocco, and Tunisia. The three networks meet regularly to support the work of their members and to ensure that their regions, and Africa as a whole, are well represented regionally and globally in important sea turtle conservation initiatives, such as those led by the International Union for Conservation of Nature (IUCN) Marine Turtle Specialist Group (MTSG) and SWOT.

At a March 2025 workshop in Accra, Ghana, more than 40 attendees from 14 countries took the first steps toward identifying proposed Important Marine Turtle Areas (IMTAs) in West and Central Africa, resulting in more than 35 proposals. © Alexandre Girard; **AT LEFT:** This map of Africa's Atlantic coast shows proposed IMTAs (pink) that resulted from a multinational expert workshop in 2025. The proposed IMTAs were identified using a combination of scientific data and expert input.

"This pilot project is the first effort to translate the IMTA concept into African-led conservation action and to map key habitats, document local knowledge, and create a shared dataset to serve scientists, policymakers, nations, and local communities as they engage in decisionmaking related to sea turtle conservation."

The MTSG developed the Important Marine Turtle Area (IMTA) concept to identify and prioritize sites critical to marine turtle populations worldwide. Although the IMTA concept has been formalized and recognized by the expert community, it had not previously been applied in practice to any region in the world. Therefore, the RASTOMA network took the initiative to gather representatives from 10 of its member institutions at the 43rd International Sea Turtle Symposium in Accra, Ghana, in March 2025, to identify African IMTAs. The RASTOMA representatives were joined by colleagues from WASTCON and NAST-Net for a workshop in which members reviewed IMTA criteria and discussed the process to propose putative IMTAs.

This pilot project is the first effort to translate the IMTA concept into African-led conservation action and to map key habitats, document local knowledge, and create a shared dataset to serve scientists, policymakers, nations, and local communities as they engage in decisionmaking related to sea turtle conservation. Joining the effort was Dr. Brendan Hurley from the George Washington University (U.S.A.), an earth systems and geoinformation sciences specialist who had participated in past efforts to georeference and manage sea turtle biogeography information for conservation purposes, including the development of the regional management unit framework led by the MTSG. Funding for the Ghana IMTA workshop was provided by the Office Français de la Bodiversité, SWOT, and others.

A Regionwide Effort Rooted in Local Knowledge

More than 40 representatives from 14 countries were present at the four-day workshop, including marine biologists, spatial analysts, and community advocates. Workshop sessions discussed topics ranging from data collection, georeferencing techniques, mapping, and methods for integrating and managing metadata on ecological and cultural knowledge to support IMTA status. In addition, the project began developing a geospatial database by compiling site nominations and supporting materials from participating countries, such as maps, spatial files, field reports, and annotated images. Data have been compiled to delineate 22 IMTA proposals for Central Africa and 13 proposals for West Africa, with several more under development (see map on p. 14).

One example of a proposed IMTA is Youmet II Kombo Mukala, a previously undocumented sea turtle nesting and foraging site in Cameroon that a Cameroonian expert identified and submitted during the workshop. Similar discoveries across West and Central Africa highlight how grassroots data collection can expand the known range of sea turtle critical habitats.

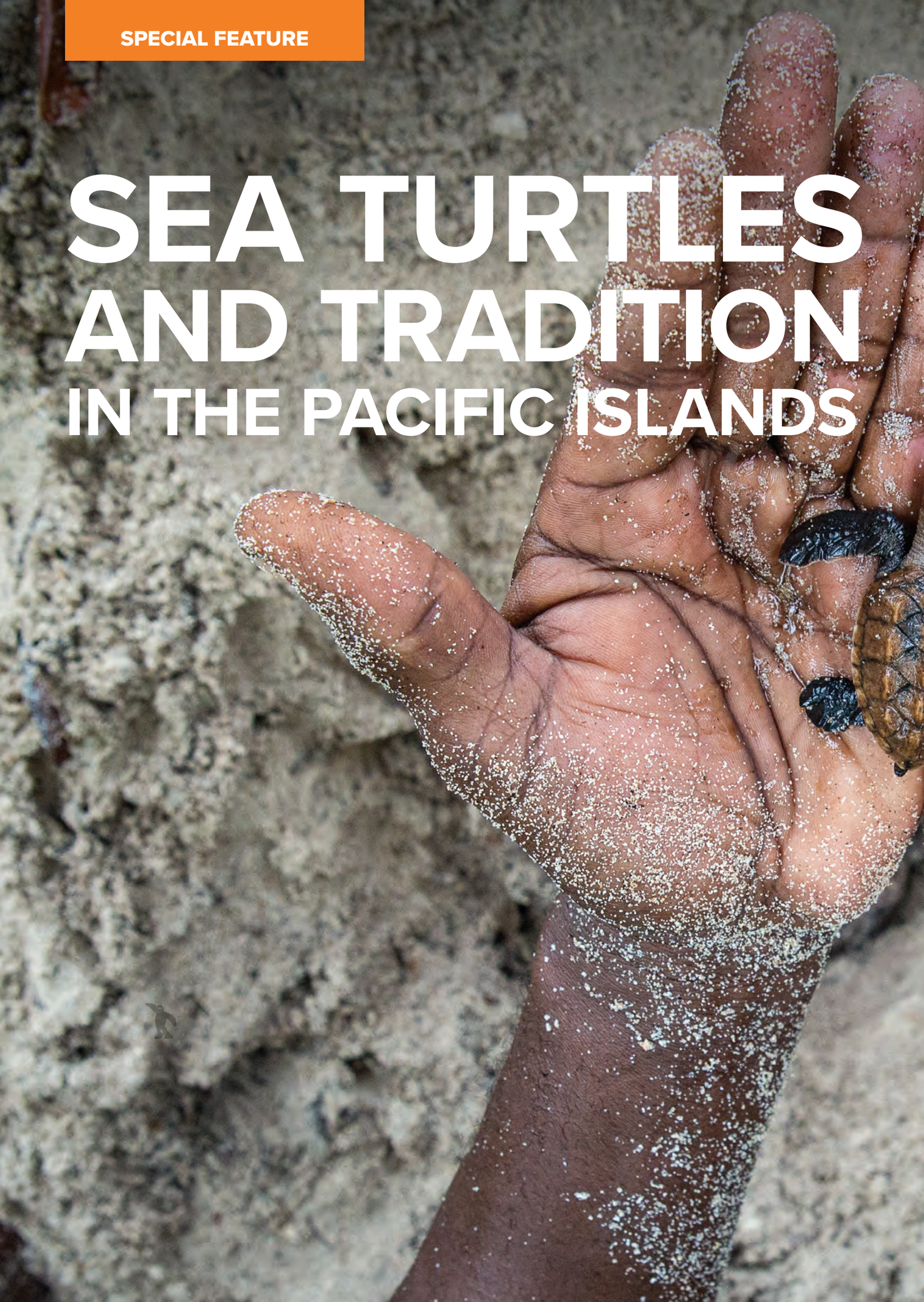
More to Come ...

This first African-led effort to identify IMTAs highlights the power of regional collaboration among strong networks across the continent. Initiated and coordinated by RASTOMA, the process brought together conservationists representing all levels of sea turtle expertise from a wide range of African countries in a setting that created powerful synergy and camaraderie around a shared vision. The IMTA workshop was a practical demonstration of how African leadership can drive meaningful contributions to global sea turtle conservation.

The workshop was just the beginning of a growing, continent-wide effort. As more sites are proposed and additional countries engage in the IMTA process, the results will provide incalculably valuable guidance for marine planning, conservation action, and policy decisions. •

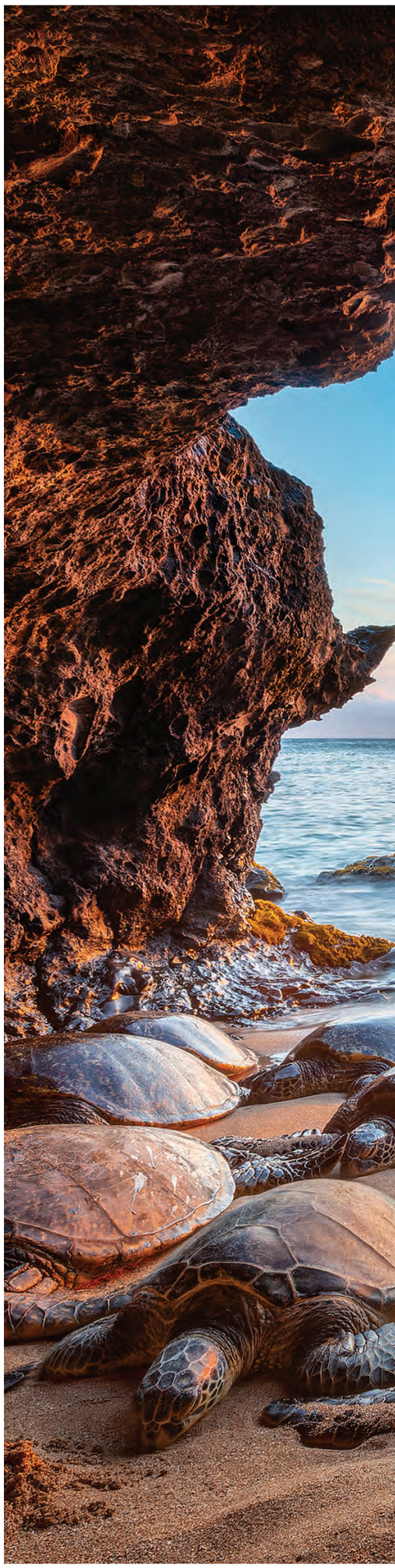
SPECIAL FEATURE

SEA TURTLES AND TRADITION IN THE PACIFIC ISLANDS



By Cristian “CJ” Cayanan • Alexander R. Gaos • Danny Akaka • Camryn D. Allen • Yolarnie Amepou • Jennifer A. Cruce Horeg • Eric Cruz • Carey Demapan • Addie R. Q. Ferguson • Brittany Finucci • Pablo A. Fuenzalida-Miralles • Dan A. Godoy • Jessy Hapdei • Shaya Honarvar • Bryant Jeffery Zebedy • Eugene Joseph • Nina Karen Pauruwahine Raharuhi • Irene K. Kelly • Cheryl S. King • Pi‘i Laeha • Alphina Liusamoa • Kelera Macedru • Alison J. Meeth • Alexi B. Meltel • Maria Petelo-Apulo • Susanna Piovano • Shritika S. Prakash • Enjoy Rain • Tyffen C. Read • Vagi Rei • Rebecca Rugaveuga Gima • Trenton Skilling • Ethan Souza • Marylou K. Staman • Josefa B. Muñoz

Extending across nearly one-third of the Earth’s surface, the Pacific Islands region is a vast assemblage of atolls, islands, and archipelagos connected by ocean processes and human history. These islands sustain unique cultures and people whose identities are inseparable from the sea. For them, sea turtles are more than wildlife; they are kin, ancestors, and symbols of resilience and longevity. Turtles were once an important food source throughout the Pacific, and in some nations, they still are. In many Pacific Island cultures, turtles are consumed as part of age-old traditional practices that are alive today. Turtle shells adorn ceremonial regalia, turtles’ journeys mirror those of voyaging peoples, and turtle protection is woven into local law and community stewardship.



AT RIGHT: Green turtles (known locally as *honu*) rest in a cave on the coast of Maui, Hawai‘i, U.S.A. © Leighton Lum; **PREVIOUS SPREAD:** A local community member holds a hatchling hawksbill turtle in the Arnavon Islands, Solomon Islands. Once heavily exploited, these islands are a rare example of recovery through long-term comanaged conservation that combines community leadership with sustained external technical, institutional, and financial support, and government involvement. © Tim Calver Photography

Ecologically, the Pacific Islands region sits at the crossroads of the tropical Pacific, where warm waters and coral archipelagos provide essential nesting habitats and foraging grounds for five sea turtle species: green turtles, hawksbills, olive ridleys, leatherbacks, and loggerheads. Each species is represented by one or more regional management units (RMUs), subpopulations defined by geography, genetics, and behavior that help guide conservation at meaningful scales. The International Union for Conservation of Nature (IUCN) rankings of these RMUs reflect a range of conservation status rankings from least concern (Central North Pacific greens) to critically endangered (Western Pacific leatherbacks).

Sea turtle management in this region requires a delicate balance between traditional authority and modern conservation frameworks. Customary harvest restrictions and cultural taboos are often complemented by national laws and international agreements grounded in Western science. Island communities and conservation practitioners face shared challenges: remote and often inaccessible nesting beaches; limited funding and institutional or enforcement capacity; and pressures from fisheries bycatch, climate change, and coastal habitat loss. The Pacific Islands are also among the world's most vulnerable areas to climate change. Rising sea levels threaten the very habitability of entire islands, forcing some communities to relocate, while warming sand temperatures and intensifying storms jeopardize the integrity of nesting beaches, as well as hatchling survival and natural sex ratios.

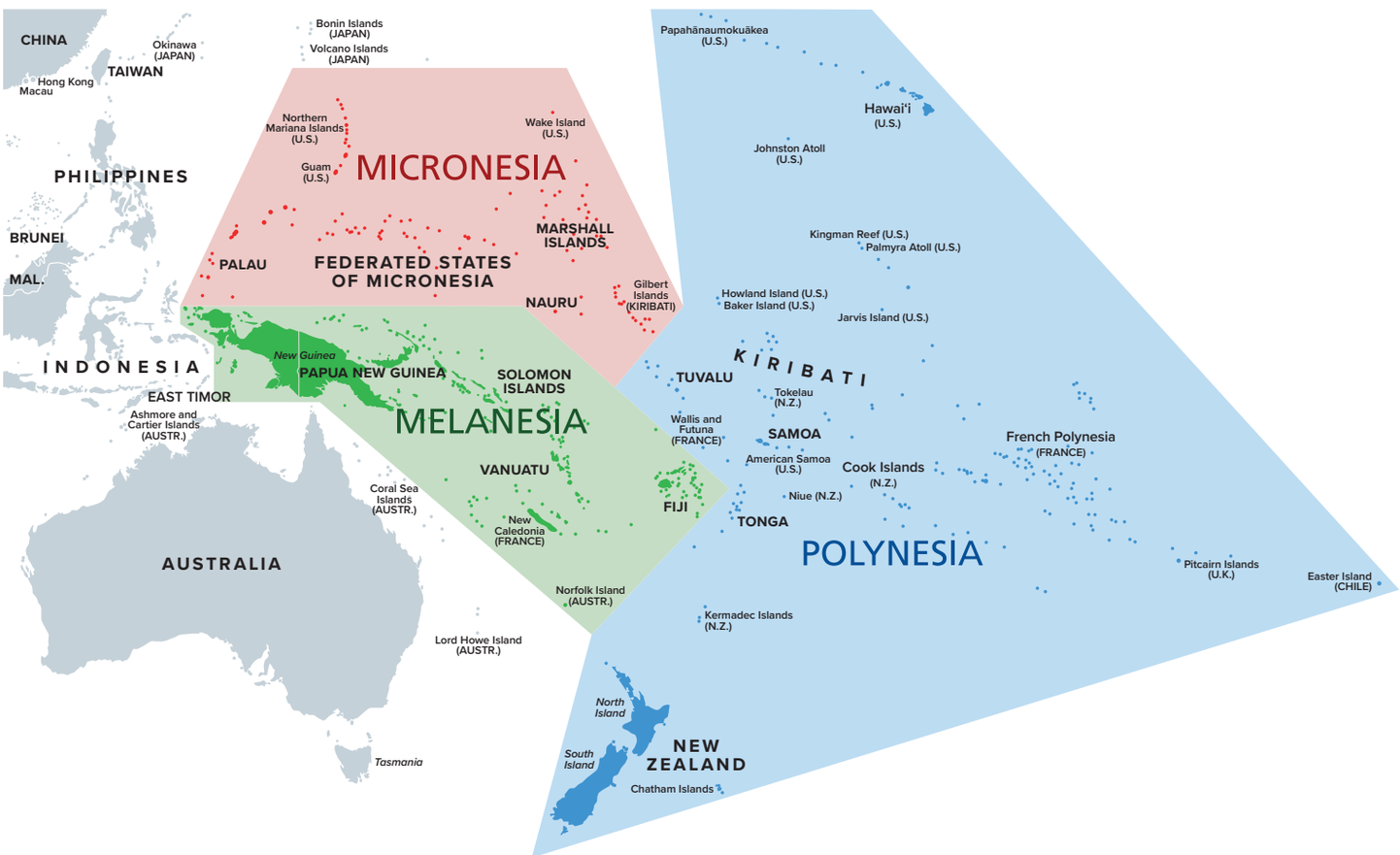
Despite these pressures, some green turtle populations—particularly in parts of Polynesia—show stable or increasing trends following decades of protection. Many hawksbill populations remain endangered, yet commercial harvest has largely ceased, and the species is the focus of monitoring and recovery programs in many nations. Olive ridley populations also have stabilized after long-term declines, a result of sustained conservation efforts. Leatherbacks and loggerheads, the most migratory of the Pacific turtles, continue to face major challenges but have become catalysts for international cooperation.

The following sections highlight cultural connections, ongoing research, and conservation efforts involving sea turtles across the Pacific, where a shared narrative emerges: one of deep cultural continuity, ecological interdependence, and an urgent call for cooperation. For Pacific peoples, sea turtles are not merely species to be conserved; they are living links between land and sea, between past and future. They embody worldviews, legends, and traditional knowledge that continue to guide a path toward a more resilient future for both turtles and the communities that honor them.

Pacific Islands Subregions

For the purposes of this article, the Pacific Islands region encompasses three subregions—Melanesia, Micronesia, and Polynesia—and the vast ocean that connects them. These island groups stretch from the Republic of Palau (Palau) in the west, to the northern remote islands of Hawai'i, to Easter Island (also known as Rapa Nui) to the east, and to the subtropical islands of New Zealand (or Aotearoa, as it is called by the Māori) to the south. These island groups' combined exclusive economic zones cover tens of millions of square kilometers of ocean, an area larger than all the world's landmasses combined, excluding Asia.

The Pacific Islands also reflect distinct ecological and conservation contexts: the richly biodiverse coral reefs of



Map showing the three major subregions of the Pacific Islands: Micronesia (red), Melanesia (green), and Polynesia (blue). © Peter Hermes Furian/Shutterstock.com

"For Pacific peoples, sea turtles are not merely species to be conserved; they are living links between land and sea, between past and future. They embody worldviews, legends, and traditional knowledge that continue to guide a path toward a more resilient future for both turtles and the communities that honor them."

Melanesia; the small, low-lying atolls of Micronesia; and the widely scattered island chains of Polynesia. These subregions are not just geographic distinctions but also living cultural spheres with overlapping histories of language, migration, trade, colonialism, and stewardship. Understanding the cultural and ecological connections between Pacific Island peoples and sea turtles requires attention to enduring traditions, values of balance and reciprocity, and deep connections with land and sea.

This feature does not attempt to represent the full breadth of cultural diversity across the Pacific Islands. Instead, it highlights vignettes from each subregion that illustrate the relationships between Pacific peoples and sea turtles and the many ways conservation has long been practiced. Recognizing Indigenous systems of care and management reveals how connections to place, spirituality, and community continue to drive stewardship of sea turtles. It also demonstrates how integrating those values and traditional knowledge with modern conservation science offers the most meaningful path forward, one that strengthens both ecological outcomes and the cultural foundations that sustain them.

Melanesia

Stretching from the island of New Guinea to the archipelago of Fiji, Melanesia encompasses one of the most biologically and culturally diverse regions of the Pacific. It includes the island nations of Fiji, the Independent State of Papua New Guinea, the Solomon Islands, and Vanuatu, as well as New Caledonia (France), West Papua (Indonesia), and the Torres Strait Islands (Australia).

FIJI: From Sacred Resource to Protected Species

Located in the central South Pacific Ocean, Fiji consists of more than 330 islands that are home to indigenous iTaukei communities, where traditional knowledge and cultural values play a vital role in sea turtle management. Sea turtles (*vonu* in Fijian) are deeply embedded in customary practices, kinship ties, and spiritual beliefs.

In precolonial Fiji, vonu were regarded as sacred, and their harvest was strictly regulated by chiefs and select members of the *gonedau* (fishing clans) whose detailed knowledge of nesting and foraging areas was incorporated into traditional fishing calendars. Vonu capture followed strict protocols and taboos, and consumption of vonu was reserved for chiefs during certain ceremonies, and, on occasion, for warriors. For centuries, a deep respect for these cultural restrictions and spiritual beliefs—combined with restricted access to harvest—served as an effective safeguard against overexploitation.

When tortoiseshell entered Fiji's cash economy in the 1840s, the sacred status of vonu began to erode, and the restrictions that had been in place were gradually replaced by the unregulated harvest of tortoiseshell and turtle meat and eggs for subsistence and commercial use—practices that continued for about a century. In 1941, the (then colonial) Fijian government introduced the first legal restrictions on vonu harvest under the Fisheries Act. Between 1997 and 2018, three separate moratoriums were enacted to prohibit the taking of vonu and their eggs. During that period, iTaukei could apply for special "exemption for traditional use" permits issued by the Ministry of Fisheries. Today, vonu are fully protected under Regulation 5 of the 2014 Offshore Fisheries Management Regulation and the Endangered and Protected Species Act of 2002.

In some Fijian villages where subsistence and limited local commercial use of vonu continues, chiefs remain the highest authority, and the gonedau only harvest the animals at their request. In other villages, iTaukei chiefs are embracing the protection of vonu by replacing vonu harvesting with cattle harvesting—demonstrating an adaptation of cultural traditions.

PAPUA NEW GUINEA: Where Kinship and Leatherback Survival Converge

For many coastal communities in Papua New Guinea (PNG), sea turtles (known to some communities as *kiu*) are kin, messengers, and guardians. Often, kiu are ancestral totems that cannot be eaten, reflecting an ethic of reciprocity that links food, culture, and stewardship. Elsewhere, kiu and their eggs are shared at communal feasts and marriages; for example, hawksbill shells are used as ornaments and ceremonial items. These uses are governed by social protocols of respect and responsibility, values that continue to guide resource use today.

Only leatherback turtles are legally protected under PNG's Fauna (Protection and Control) Act of 1966, which prohibits their trade or possession. This protection is significant because PNG is a nesting stronghold for the Western Pacific leatherback along the Huon Coast of Morobe Province, where researchers have identified beaches of global importance. Conservation efforts there have been revitalized recently through community patrols, nest protection, and tagging programs. Similar efforts are now under way on New Britain Island, signaling renewed national commitment and local engagement in leatherback recovery in PNG.

Traditional authority and communal values remain at the heart of coastal life in PNG, and when combined with modern science, they chart the best path to sustaining sea turtle populations and cultural heritage.

SOLOMON ISLANDS: Hawksbill Recovery Through Comanaged Conservation

The Solomon Islands comprise nearly 1,000 islands in the southwestern Pacific, from large volcanic landmasses to tiny coral atolls. Sea turtles hold deep cultural and spiritual importance, and they have long featured in traditional feasts, ceremonies, and exchange systems. Historically, customary authority played an important role in shaping harvest practices, alongside periods of intensive exploitation that contributed to population declines. Today, turtle harvest is still permitted in most areas under national law.

Between the Isabel and Choiseul provinces, however, the Arnavon Islands stand apart as a protected sanctuary that supports the largest hawksbill nesting site in the South Pacific. Once heavily exploited, these islands are a rare example of recovery through long-term comanaged conservation combining community leadership with sustained external technical, institutional, and financial support, and government involvement. Through patrols, nest protection, and monitoring, hatchling success has dramatically increased and local stewardship has been strengthened. In recent years, women have taken larger leadership roles in these efforts, showing how traditional values of care and cooperation continue to evolve within modern conservation frameworks.

Similar locally driven initiatives across the Solomon Islands have integrated traditional ecological knowledge with collaborative management approaches to guide sustainable harvests, beach management, and hatchery work for other species, including leatherbacks.

Micronesia

Scattered over more than 6.7 million square kilometers (2.5 million square miles) of ocean, Micronesia is a constellation of more than 2,000 small islands and atolls that form an intricate seascape of linked cultures and species. The region includes the Federated States of Micronesia, the Republic of Kiribati, the Mariana Islands (Guam and the Commonwealth of the Northern Mariana Islands), the Marshall Islands, Nauru, and Palau.

FEDERATED STATES OF MICRONESIA: Chiefdom Systems Sustain Sea Turtles

The Federated States of Micronesia (FSM) is a nation of more than 600 islands across four culturally distinct states—Yap, Chuuk, Pohnpei, and Kosrae—each with its own languages, chiefdom system, and traditional form of governance. In the FSM, conservation practices and customary law vary widely, yet they share a common respect for the ocean and its living resources.

In Yap, Ulithi Atoll supports a large green turtle (*wool*) rookery, and the persistence of this population can be attributed to traditional governance that regulates ceremonial harvest and distribution. Elders determine when wool seasons open and close, and each turtle brought ashore is approved by a chief and then shared according to clan lineage and long-standing ritual. Harvesting wool without permission remains among the gravest of offenses, with entire islands being barred from using the ocean until offerings *(bebel wuboth*) are made to the highest

Emosi Time catches a hawksbill turtle to tag and release on Kavewa Island, Vanua Levu, Fiji. Sea turtles (*vonu* in Fijian) are deeply embedded in customary practices, kinship ties, and spiritual beliefs in Fiji. © Juergen Freund

chief. Bebel wuboth can include high-value local goods, such as hand-woven lavalavas and mats or hawksbill turtle (*hoachoab*) shells. These strict cultural controls continue to safeguard wool populations. And in recent decades, community-led monitoring, which has included the tagging of nesting females and the use of satellite tracking, has supported those safeguards and demonstrated how traditional and scientific measures can reinforce one another.

Sea turtles are deeply interwoven with community identity, social structure, and spirituality in the FSM. In Chuuk, certain parts of the turtle are offered to the chief who owns the land or reef where the turtle was captured, demonstrating how sea turtles are a symbol of respect toward people in power. Similarly, in Pohnpei, turtle meat is offered to the highest-ranking chiefs, the Nahnmwarki, who also have the right to confiscate a turtle and its eggs from fishers who do not provide an offering. Farther east in Kosrae, sea turtles (*ngoe*) are linked to Nosunsap, a powerful celestial guardian connected to the sea and the balance between humans and nature. Ngoe harvesting is prohibited in Nosunsap's sacred taboo area (*kuoip*), thereby allowing populations to recover. These Micronesian customs reflect a shared ethic of restraint, reciprocity, and reverence toward nature that continues across the FSM today.

THE MARIANA ISLANDS: Reviving Culture After Centuries of Colonization

The Mariana Islands include the U.S. territories of Guam and the Commonwealth of the Northern Mariana Islands (CNMI), totaling 15 islands. The Indigenous peoples of the Marianas are known as CHamoru (in Guam) and Chamorro (in the CNMI). Green turtles are referred to as *haggan betde*, and hawksbills are referred to as *haggan karai*.

The CHamoru and Chamorro peoples traditionally used sea turtles in deeply symbolic and practical ways. Turtle shells were crafted into valued ornaments, known as *ålas*, that played a role in maintaining reciprocity and building social relationships. One highly esteemed type of ålas was *guinahan famagu'on* (children's wealth), a necklace made of turtle shell discs that was given to an individual who saved a child's life. Turtle shells represented gratitude and generosity, they were tokens of peace during conflict, and they were status symbols among high-ranking women. Turtle meat was reserved for celebratory feasts, and harvested animals were used entirely, reflecting a cultural ethic of respect and balance with nature.

Those traditions were profoundly transformed by centuries of colonization of Guam and the CNMI by Spain, the United States, Japan, and Germany, followed by U.S. militarization in both territories. These forces reshaped land use, language, and community structure, which resulted in an erosion of traditional practices tied to turtles and the ocean. Concurrently, these shifts made the Marianas an area of interest for intensive in-water sea turtle research—and that research has provided valuable insights into turtle foraging, health, and long-distance migrations.

Today, the expanding understanding of Mariana sea turtles mirrors a growing CHamoru and Chamorro cultural renaissance that is rekindling traditional language, navigational skills, healing practices, and ocean stewardship. This revival is reconnecting people to ancestral knowledge and reaffirming the bond between culture and conservation.

THE MARSHALL ISLANDS: Stewardship of Nesting Grounds Influenced by Legend and Ritual

The Marshall Islands consists of 29 atolls and five islands running northwest to southeast in two roughly parallel chains named *Ralik* and *Ratak*, which translate to "sunset" and "sunrise," respectively.

Sea turtles are an important cultural resource to the Marshallese, as depicted in two legends. In one legend, Lijebake (the Great Mother Turtle) rescues her granddaughter from mistreatment in Kiribati and brings her to Jemo Island for refuge, which explains why turtles prefer to nest on Jemo Island. In another legend, the two sons of Lijebake visit her in Bikar (a favored nesting ground for turtles). She gives her obedient, appreciative son the higher-quality, upper portion of her shell to wear, thereby bestowing magical powers on him, and she gives her disobedient son the lower-quality, tail portion of the shell. This legend explains why the Marshallese value the neck plate of the carapace over the tail plate.

Until the mid-20th century, chiefs designated several islands and atolls as sea turtle reserves under the customary *mo* (taboo area) system. Strict rituals were required to take turtles from a protected area. Before gathering eggs and turtles, an *iroij* (chief) would conduct an opening ceremony that included chants, sacred offerings, and rituals. Then the iroij and senior people would lead the gathering of turtles and eggs in an organized manner: the iroij was the first to step on the island, followed by the other participants, all walking in strict silence in a single file so that only one set of footprints appeared on the sand.

PALAU: A Legacy of Tradition and Ocean Conservation

Palau (also known as Belau) is an island nation composed of more than 300 islands that are part of the westernmost Caroline Islands group, adjacent to the FSM in the east. In Palau, *melob* (green turtle) meat and eggs are a traditional and customary source of food. Historically, green turtle meat was reserved for chiefs or people of high status. In modern Palauan society, the only ceremony for which turtle meat is required is the confirmation of a new *Ibedul*, which is the paramount chief title for the State of Koror. During the ceremony, the new Ibedul must wash his hands in turtle blood in the village of Ngerchemai before traveling to the southern island of Peleliu to receive his title.

Ngasech (hawksbill turtle) shells are used for jewelry, accessories, and *toluk* (money plates). Toluk are highly valued in Palauan culture, and their exchange strengthens ties between families and clans. Toluk are traditionally traded between families during life events such as births, marriages, and funerals. They are also exchanged between women as a form of compensation for various services. Because toluk have been in constant circulation within communities, they hold much historical significance. However, in recent interviews with Palauan women, some have shared that crafting new toluk is no longer necessary, both because hawksbills are declining in number and new toluk are less valuable than older pieces.

Palau's reefs and beaches support one of the most significant remaining ngasech nesting populations in Micronesia. Ongoing monitoring has documented regular nesting activity and gradual signs of recovery following historic overharvest.

Melob also nest and forage extensively in Palauan waters. The melob population is protected by long-standing hunting closures that coincide with peak nesting periods (from May to August and December to January). Taking eggs or nesting females is prohibited, and captured turtles must meet minimum size requirements. Ngasech remain under year-round protection because of their still-vulnerable population.

Polynesia

Occupying a vast triangle—from Hawai‘i (U.S.A.) in the north to Easter Island (Chile) in the southeast to New Zealand in the southwest—Polynesia covers the largest area of any Pacific subregion. Within this immense ocean expanse lie American Samoa; the Cook Islands; French Polynesia; Niue; Norfolk Island; the Pitcairn, Henderson, Ducie, and Oeno Islands (United Kingdom); Rotuma (Fiji); the Independent State of Samoa; Tokelau (New Zealand); the Kingdom of Tonga; Tuvalu; and the Territory of the Wallis and Futuna Islands (France).

THE HAWAIIAN ISLANDS: Successful Recovery of the Green Turtle

In the Central Pacific, the geographically isolated Hawaiian archipelago consists of eight main volcanic islands and several atolls and islets. To some *Kānaka Maoli* (Native Hawaiian) families, the *honu* (green turtle) and the *honu‘ea* or *‘ea* (hawksbill turtle) are revered as *‘aumākua*—spiritual guardians linking people and the sea. An example of sea turtles being regarded as a protective force is found in the *mo‘olelo* (traditional story) of Kauila, which speaks of a turtle that could shift into the form of a girl and use her magic to protect children. Families that did not hold turtles as their ‘aumākua would occasionally harvest the animals for the meat, blood, and shell, which were used medicinally and in the creation of implements such as fishhooks. Some *kūpuna* (elders) note that the symbolic link between the honu and the *honua* (the world) is illustrated by the turtle’s shell because it carries the map of the islands, which mirrors the journeys of Polynesian voyagers who, like turtles, travel great distances but always find their way home.

In old Hawai‘i, all natural resources were protected and managed by the *kapu* system, which regulated harvests and reinforced reciprocal respect for marine life. The kapu system enforced temporary restrictions (e.g., by region or time of year) on the harvest of specific resources that were informed by the cultural practice of *kilo* (observation over time). In this way, the management of resources, such as turtles, was often informed by the people who spent the most time interacting with those resources.

Following the commercialization of turtle harvesting from the late 19th century to the middle of the 20th century, populations of Hawai‘i’s sea turtles declined sharply. However, since the introduction of protection measures in the late 1970s, the green turtle has made a remarkable recovery and now numbers in the thousands. In contrast, the honu‘ea remains far rarer, though monitoring suggests slow, incremental increases in nesting activity. Most honu (green turtles) nest on the remote, low-lying atolls of Lalo (the French Frigate Shoals) in the northwestern Hawaiian Islands, where they face increasing threats from rising seas and coastal erosion. The impacts of climate change on this population remain uncertain, prompting both concern and caution as discussions continue on whether limited harvesting by Indigenous peoples could one day be reintroduced on the islands.

In the past, much of Hawai‘i’s traditional ecological knowledge was suppressed through colonization and Western influence, but in recent decades, Kānaka Maoli and allies have worked to restore ancestral practices of care for the land and sea. Today, turtles in Hawai‘i embody both cultural continuity and ecological renewal. The resilience of the honu and the gradual reemergence of the honu‘ea reflect a broader recognition of how ancestral practices of observation and restraint align with modern conservation.

AMERICAN SAMOA AND THE INDEPENDENT STATE OF SAMOA: Shared Cultures

Situated in the mid-South Pacific, the Samoan archipelago consists of the U.S. territory of American Samoa to the east and Samoa to the west. American Samoa includes five inhabited volcanic islands—Tutuila, Aunu‘u, Ofu, Olosega, and Ta‘ū—alongside two uninhabited coral atolls called Swains Atoll and Rose Atoll. Samoa is primarily made up of two large inhabited volcanic islands—Upolu and Savai‘i—and several smaller islets.

American Samoa and Samoa share a deeply rooted cultural heritage known as *Fa‘a-Samoa* (the Samoan Way), and customs and cultural practices continue to guide community life and modern conservation. Historically, the *laumei* (sea turtle) use was governed by customary protocols that ensured sustainable and respectful practices. The *matai* (chief) system and *fono* (village council) determined when and how laumei could be taken, how laumei parts were to be shared, and the meat that was to be reserved for ceremonial occasions. Today, these community-based mechanisms embody a long-standing ethic of respect and restraint toward marine life and illustrate the enduring relationship between cultural governance and conservation. While traditional norms once limited turtle harvest to chiefly contexts, modern conservation laws in both Samoa and American Samoa now prohibit most forms of harvest and trade, reflecting a continuation of traditional values of reverence within contemporary conservation frameworks.

Laumei are also known as *i‘a sā* (sacred fish) and symbolize wisdom, protection, and connection to the sea; they appear in petroglyphs, material arts (e.g., ornaments and combs), and myths. One legend tells of the shark and the turtle that connect Samoa and American Samoa. In that legend, an old, blind woman and her daughter suffered through famine while living in Samoa. Unable to find food, they both jumped off a cliff into the ocean below, and their bodies transformed—one into a turtle and the other into a shark. They swam toward American Samoa, and on their arrival, they returned to their human forms and found food, thanks to a chief’s hospitality. The woman and her daughter were so appreciative that they promised to live just beyond the cliffs and to return when they were called by a song that they had gifted to the villagers. When a villager sings this song at the legendary site, it is believed that a turtle and a shark will appear. Myths such as these demonstrate the profound traditional ecological knowledge and oral stories that unite Samoan peoples and laumei.

A leatherback turtle fitted with a satellite transmitter emerges under a full moon to nest on Haevo Beach, Isabel Island, Solomon Islands. Western Pacific leatherbacks, which are critically endangered, nest primarily in Indonesia, Papua New Guinea, and the Solomon Islands. © Alexander R. Gaos

NEW ZEALAND: Where Leatherbacks Feed and Marine Connections Endure

New Zealand (or Aotearoa) lies at the southwestern edge of the Polynesian Triangle, where warm tropical currents meet cooler temperate seas. Although *honu* (sea turtles) do not nest there, the surrounding waters are important seasonal foraging grounds for several species, including leatherbacks, greens, loggerheads, hawksbills, and olive ridleys, all of which are protected under the Wildlife Act of 1953. For the Māori, the Indigenous people of New Zealand, honu are part of a broader relationship they have with the ocean. Honu are seen as voyagers that traverse great distances, and they embody endurance, navigational prowess, and the connection between people and the sea. In *te ao Māori* (the Māori worldview), sea turtles symbolize the deep interdependence between all living things and the ocean.

Leatherback turtles are the most frequent visitors to New Zealand's waters, and the region that extends from Northland to the Kermadec Islands is home to some of the highest concentrations of foraging leatherbacks in the western Pacific. Most leatherbacks originate from the western Pacific nesting population, though leatherbacks from the eastern Pacific can also be found feeding on the abundant jellyfish population in the highly productive waters of the region.

This same ocean productivity draws fisheries, especially longline operations in the north during the warmer months when leatherbacks are most abundant, resulting in bycatch rates that can exceed international recommendations. Efforts are under way to better document bycatch and to assess options for reducing impacts.

Looking to the Future

The Pacific Islands region represents a vast and culturally rich expanse where sea turtles are more than just marine species—they are sacred beings, cultural touchstones, and symbols of social and ecological balance. Indigenous communities in the region have long upheld systems of stewardship rooted in reciprocity, respect, and deep ecological knowledge; those systems are not relics but active practices that continue to guide conservation today. The strong cultural ties between sea turtles and Pacific Islanders will drive the recovery and persistence of turtle populations in this region now and in the future.

The cultural practices and success stories shared in this feature highlight the importance of recognizing and supporting Indigenous leadership in conservation as central to effective environmental governance. As global efforts to protect biodiversity increase, the people of the Pacific Islands offer invaluable lessons on how cultural heritage and ecological stewardship can be seamlessly interwoven. By honoring and amplifying Indigenous voices and traditions, we not only safeguard species such as sea turtles but also uphold the cultural integrity and resilience of Pacific Island communities. Conservation is not solely a scientific endeavor—it is also a cultural commitment, a spiritual duty, and a communal act of care that spans generations and oceans. •

Maps: Sea Turtle Biogeography in the Pacific Islands

The maps on pp. 27–29 display available nesting and satellite telemetry data for sea turtles in the Pacific Islands. The data include 793 nesting sites and 512 satellite tags representing greens, hawksbills, leatherbacks, olive ridleys, and loggerheads. Data were compiled through a literature review and provided directly to SWOT by hundreds of data contributors. For metadata and information about data sources, see the data citations on pp. 50–53 or visit www.SeaTurtleStatus.org/maps/pacific-islands-sea-turtles.

We are grateful to all of the data contributors and projects that participated in this effort. For details, please see the complete data citations on pp. 52–53.

Nesting Biogeography

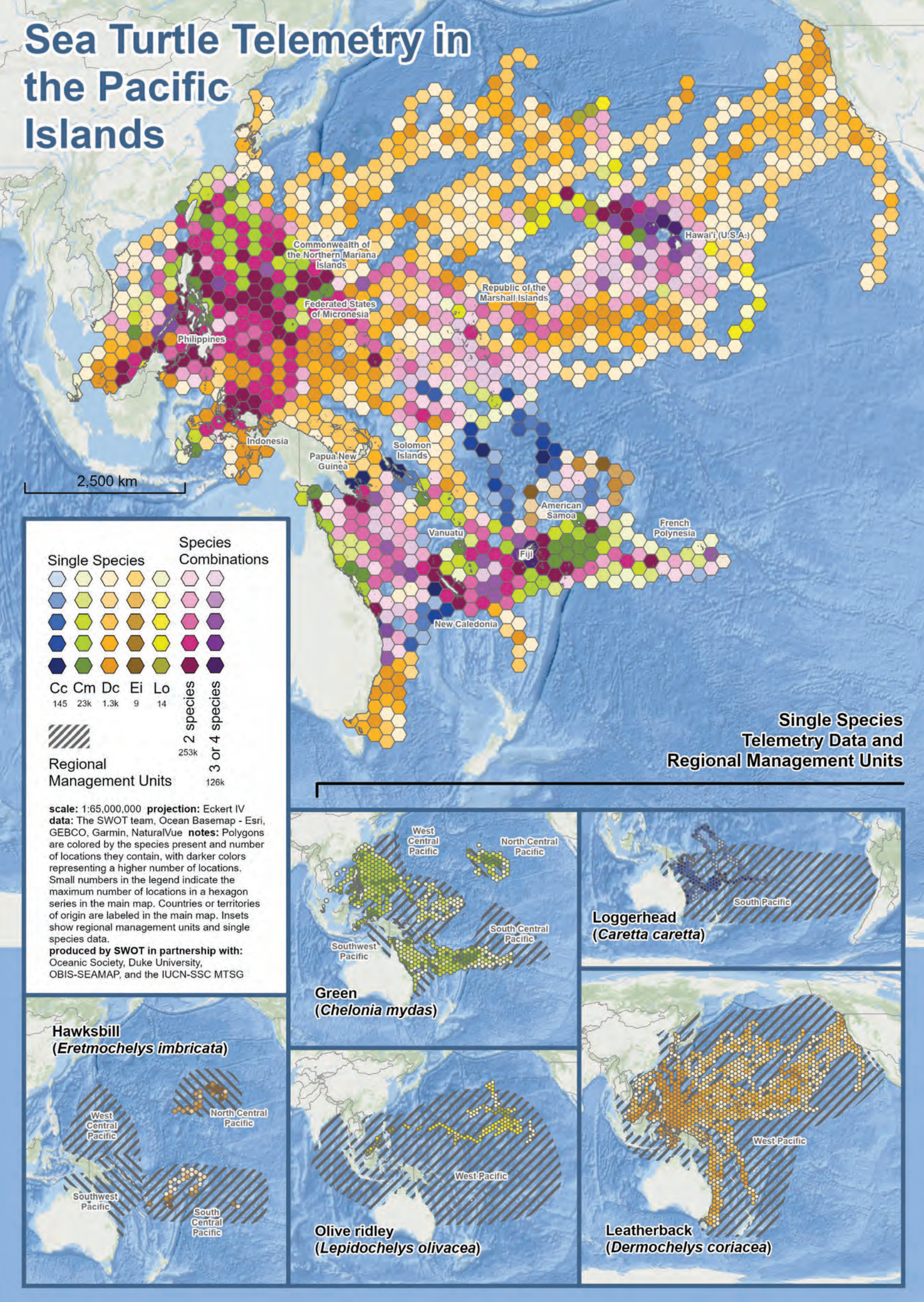
Nesting sites are represented by dots colored by species and scaled according to their relative nesting abundance in the most recent year for which data are available. At sites where multiple species nest, data from all species were combined to form an abundance-scaled pie chart that indicates the proportion of each species nesting at that site. For uniformity, all types of nesting counts (e.g., number of nesting females, number of crawls) were converted to number of clutches as needed. Conversion factors ranged from 1.5 to 3.8 clutches per female and 0.58 to 0.81 crawls per clutch, depending on species.

Satellite Telemetry

The satellite telemetry map on p. 27 presents data from more than 500 green, leatherback, hawksbill, olive ridley, and loggerhead turtles and represents more than 508,000 animal locations. Only tracks from tags deployed on turtles originating in the Pacific Islands were included, thereby excluding some turtles that originate outside of the Pacific Islands but inhabit the region's waters (most notably, North Pacific loggerheads, which originate in Japan). For more information on the mapping methodology, see the map's legend.

Scan the QR code below to access interactive digital versions of the maps online.

Sea Turtle Telemetry in the Pacific Islands



Single Species

Species Combinations

Cc	Cm	Dc	Ei	Lo	2 species	3 or 4 species
145	23k	1.3k	9	14	253k	126k

Regional Management Units

scale: 1:65,000,000 **projection:** Eckert IV
data: The SWOT team, Ocean Basemap - Esri, GEBCO, Garmin, NaturalVue **notes:** Polygons are colored by the species present and number of locations they contain, with darker colors representing a higher number of locations. Small numbers in the legend indicate the maximum number of locations in a hexagon series in the main map. Countries or territories of origin are labeled in the main map. Insets show regional management units and single species data.

produced by SWOT in partnership with:
Oceanic Society, Duke University, OBIS-SEAMAP, and the IUCN-SSC MTSG

Single Species Telemetry Data and Regional Management Units

Green
(*Chelonia mydas*)

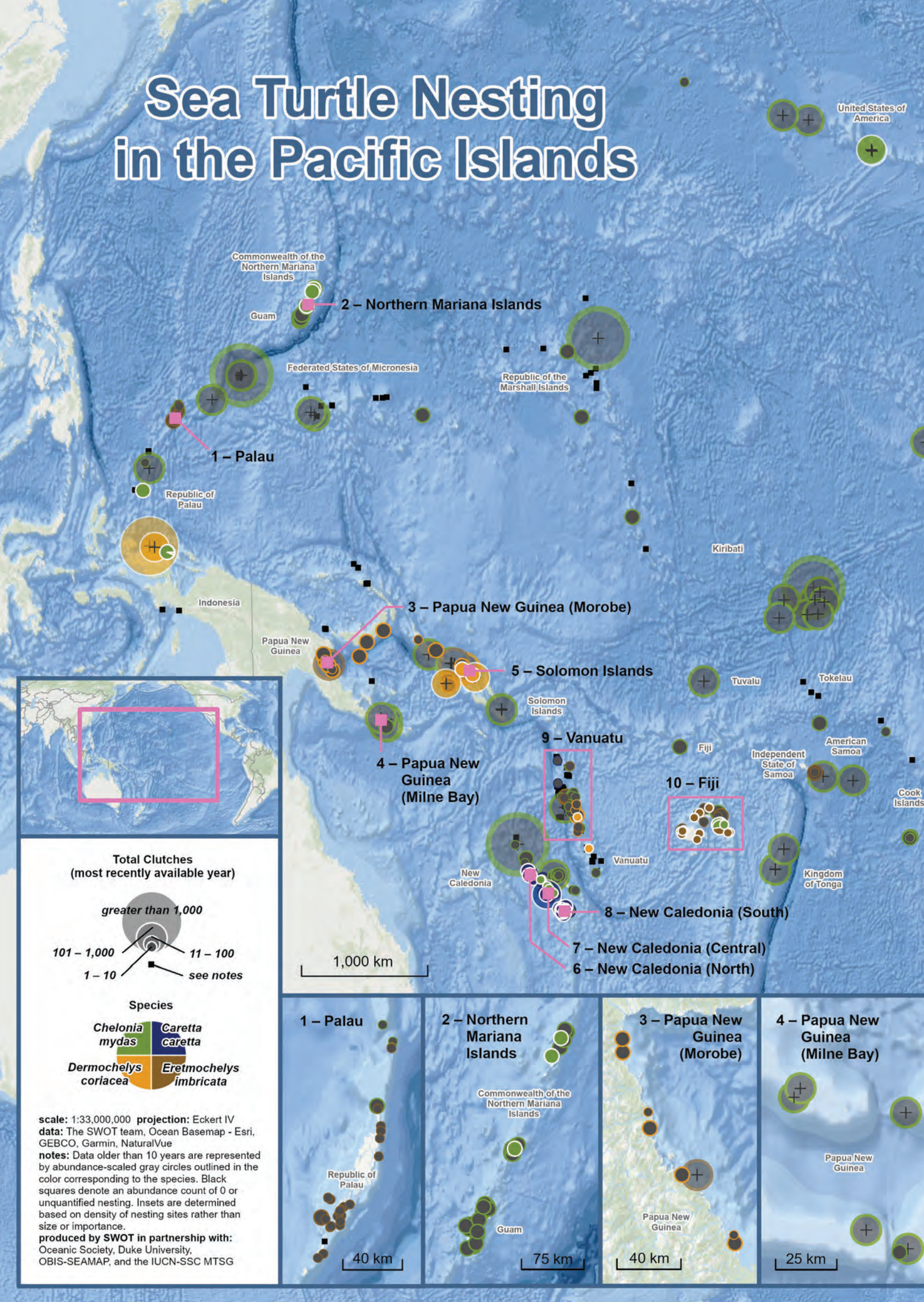
Loggerhead
(*Caretta caretta*)

Hawksbill
(*Eretmochelys imbricata*)

Olive ridley
(*Lepidochelys olivacea*)

Leatherback
(*Dermochelys coriacea*)

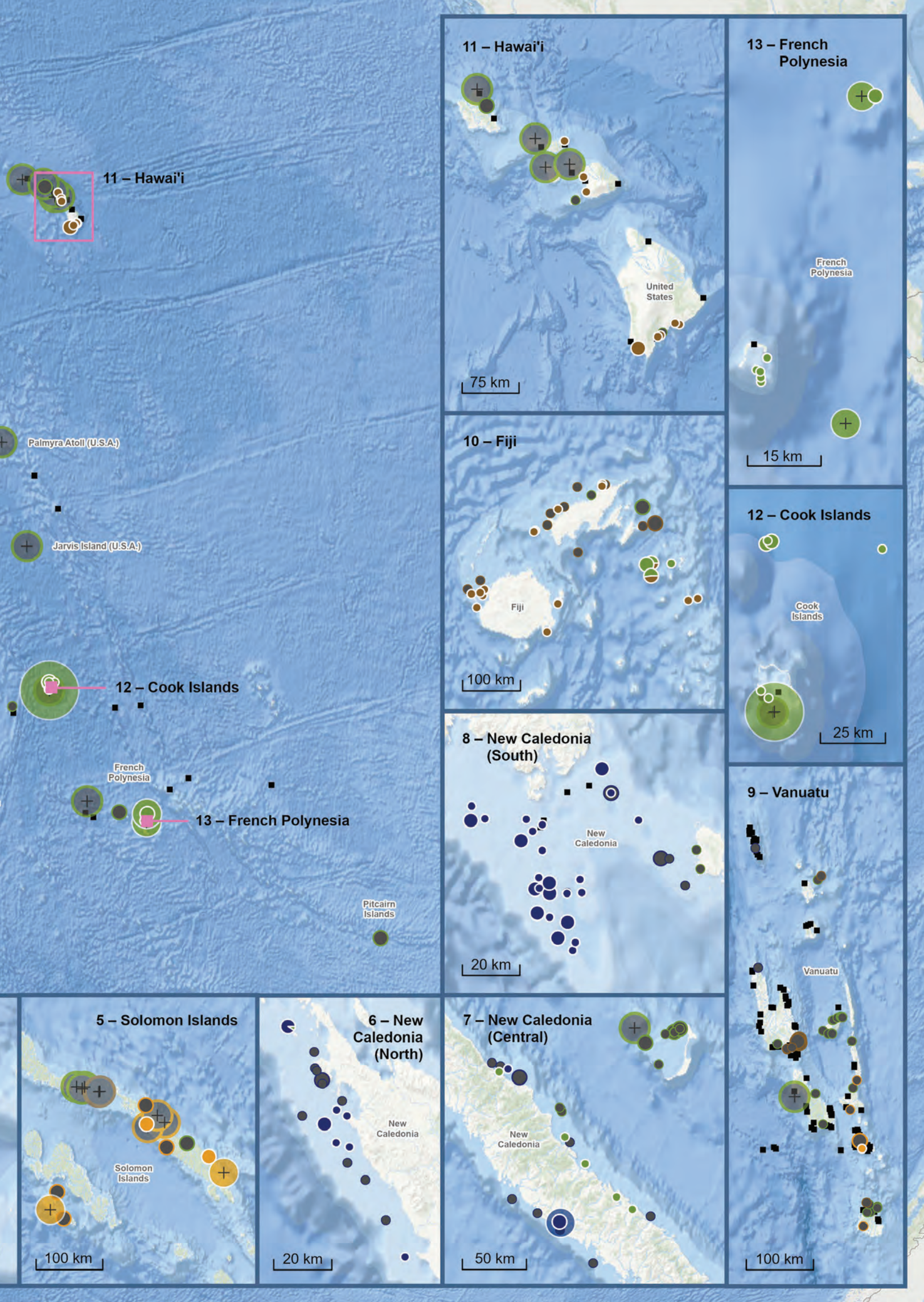
Sea Turtle Nesting in the Pacific Islands



Total Clutches
(most recently available year)

Species

scale: 1:33,000,000 **projection:** Eckert IV
data: The SWOT team, Ocean Basemap - Esri, GEBCO, Garmin, NaturalVue
notes: Data older than 10 years are represented by abundance-scaled gray circles outlined in the color corresponding to the species. Black squares denote an abundance count of 0 or unquantified nesting. Insets are determined based on density of nesting sites rather than size or importance.
produced by SWOT in partnership with: Oceanic Society, Duke University, OBIS-SEAMAP, and the IUCN-SSC MTSG


11 – Hawai'i
Palmyra Atoll (U.S.A.)
Jarvis Island (U.S.A.)
12 – Cook Islands
French Polynesia
13 – French Polynesia
Pitcairn Islands
11 – Hawai'i
United States
75 km
13 – French Polynesia
French Polynesia
15 km
10 – Fiji
Fiji
100 km
12 – Cook Islands
Cook Islands
25 km
8 – New Caledonia (South)
New Caledonia
20 km
9 – Vanuatu
Vanuatu
100 km
5 – Solomon Islands
Solomon Islands
100 km
6 – New Caledonia (North)
New Caledonia
20 km
7 – New Caledonia (Central)
New Caledonia
50 km

Strengthening Collaboration for Hawksbill Protection

By The Steering Group for the Hawksbill Single Species Action Plan and the Convention on the Conservation of Migratory Species (CMS) IOSEA Marine Turtle MoU Secretariat

A First-Ever Multinational Approach

The critically endangered hawksbill turtle faces mounting threats from illegal trade, overexploitation, habitat loss, bycatch, and climate change throughout its global range, and these hazards are particularly intense in the waters of several Southeast Asian and western Pacific countries. To address these issues, a hemispheric effort is under way to bring together 33 Range States to develop a collaborative policy instrument to protect the species. The initiative falls under the Convention on the Conservation of Migratory Species (CMS) and is known as the Indian Ocean–South-East Asian (IOSEA) Marine Turtle Memorandum of Understanding (MoU). Under this intergovernmental agreement, a Single Species Action Plan (SSAP) for the hawksbill turtle in Southeast Asia and the western Pacific Ocean has been developed.

The commitments under the SSAP apply throughout the region it covers, including to each Range State's area of jurisdiction and to any Range State's flag vessels that engage in the exploitation of hawksbills in international waters. As of mid-2025, 16 countries had formally adopted the SSAP, and 8 countries had already reported on their progress in implementing its requirements. Drawing from those reports, this article explores what is working, where challenges remain, and which priority actions are most urgent now.

A hawksbill turtle swims amid the lush coral of Jessie Beazley Reef in Tubbataha, Philippines. © Noel Guevara

Turning Commitments into Action

A June 2025 progress report revealed encouraging steps by several Range States toward implementing the hawksbill turtle SSAP. Most notably, reporting governments showed advances in strengthening the criminal justice response to illegal activities involving hawksbills. In Australia, fines and prison terms for offenses involving marine turtles tripled, all while rights under the Native Title Act were protected. Similarly, in Thailand, the maximum imprisonment time for hunting, trading, and possession of protected marine wildlife was extended from 4 years to 10–15 years, and fines were increased 40-fold. And in Malaysia and the Philippines, the United Nations Office on Drugs and Crime Rapid Reference Guide is being used to support the prosecution of wildlife crimes in those countries. Across many Range States, the harvest of hawksbill turtles, including their eggs, is now outlawed, marking a significant step toward reducing direct human pressures on the species. Some carefully regulated exceptions remain for traditional and indigenous use, as well as for scientific research.

Other important successes include legislative reforms that strengthen protections for hawksbill turtles and efforts to close legal loopholes in the enforcement of international commitments. Thailand, for instance, now lists the hawksbill turtle as a protected species under its Wild Animal Conservation and Protection Act, which means that import and export of the species are strictly controlled. Likewise, the United States reports that it is illegal to import, export, or take any endangered species, including the hawksbill, for any purpose, commercial or otherwise.

Beyond new laws, several countries are also investing in capacity building, thereby bolstering the people and institutions charged with enforcing the laws. Between 2023 and 2024, wildlife officers in the Philippines participated in an ambitious series of training workshops and courses focused on tackling transnational organized crime and improving the monitoring of environmental offenses. Fiji, meanwhile, trained and appointed fish wardens and expanded cross-agency enforcement programs. Such efforts signal a shift toward stronger, better-equipped frontline protection for hawksbill turtles across the region.

Closing the Gaps

Despite the progress reported, major gaps remain, and many key issues have not been fully addressed yet, including shortfalls in membership and reporting. Some of the most notable missing actions concern addressing illicit financial flows and corruption linked to turtle trafficking, though some countries reported having undertaken relevant actions on this topic. For example, Malaysia highlighted its participation in the Association of Southeast Asian Nations Wildlife Enforcement Network, which aims to improve intelligence sharing and coordinate joint operations. Such efforts help countries better understand community motivations for using hawksbill turtles while promoting sustainable alternatives.

However, the major impediment to implementation of the SSAP and to hawksbill conservation overall is the scarcity of funding and technical expertise, which hinders interregional collaboration to curb illegal take and trade and limits actions to effectively address sea turtle bycatch by illegal, unreported, and unregulated (IUU) fishing. IUU fishing is a severe threat to hawksbills and is exacerbated by high levels of bycatch and targeted take, particularly in small-scale fisheries, which are widespread.

The Range States must invest more in capacity building to ensure that their people have the necessary skills to deliver on the SSAP's ambitious goals. Hence, the signatories of the IOSEA Marine Turtle MoU have endorsed the development of a capacity-building strategy to design an appropriate way to address the region's most pressing needs. Recommendations to further strengthen implementation, based on the challenges reported by the Range States, will be discussed at the 15th Meeting of the CMS Conference of the Parties (CMS COP15), in March 2026, in Campo Grande, Brazil.

Conservation efforts are ongoing and improving in this vast region, offering many reasons for hope. By weaving together past achievements, understanding difficulties, and addressing unresolved priorities, the region aims to take tangible steps to secure a future for hawksbill turtles. •

Pacific Leatherback Monitoring Drives Oceanwide Conservation Planning

By George Shillinger, Helen Bailey, Steven Bograd, John Douglas, Matthew R. Dunn, Peter Dutton, Tomoharu Eguchi, Kayla Fisher, Brittany Finucci, Karin Forney, Sierra Fullmer, Alexander R. Gaos, Richard Hamilton, Heather S. Harris, Elliott L. Hazen, Erin L. LaCasella, Garrett Lemons, Dong Liang, Samuel Malagon, Duane March, Andrew S. Maurer, Karen L. Middlemiss, Anna Ortega, Kristin Reed, Richard Reina, Kayla Sargent, Jeffrey A. Seminoff, Peter Waldie, Heather Welch, Sean Williamson, and Scott R. Benson

Standing on the bow of the *Sheila B.*, researchers scan the ocean's surface for the glint of a leatherback carapace. Even though they are the largest sea turtle species, spotting one in the open Pacific can feel like searching for a needle in an ocean of haystacks. Fortunately, the crew isn't alone. Overhead, an aerial survey team searches from an altitude of 650 feet, using radios to direct the vessel team toward any leatherbacks the team spots.

This teamwork enables the researchers to locate and net these ocean giants one by one, bringing them on board to conduct a health assessment and attach satellite and acoustic tracking tags to each turtle's carapace. Once the flurry of activity is complete, the turtle is released back into California coastal waters to continue its journey, feeding on jellyfish, tunicates, and salps as it goes.

Since 2000, the U.S. National Oceanic and Atmospheric Administration (NOAA) has been monitoring leatherbacks off California. In 2019, the U.S.-based nongovernmental organization Upwell Turtles joined the effort and in 2022 led the expansion of the work into Oregon and Washington. Scientists have now tagged more than 100 leatherbacks off California's Central Coast, collecting telemetry and health assessment data, along with aerial survey data for multiple species. Through collaborations with state and federal agencies, the data are mobilized to inform conservation policy, providing insights that support protections for leatherbacks in U.S. waters, including critical habitat designations and guidance on fishery operations.

Monitoring efforts in California wrap up each year in November when the leatherbacks migrate back to waters adjacent to nesting beaches in Indonesia, Papua New Guinea, the Solomon Islands, and Vanuatu. We discovered these migration paths thanks to telemetry research conducted in the early 2000s that revealed two distinct subpopulations nesting in the West Pacific: one population nesting from June to August that forages primarily in the North Pacific, and the other population nesting from December to February that forages primarily in the waters of Australia and New Zealand.

Those vast migrations from beach to foraging grounds expose leatherbacks to threats at every turn. They can become entangled in ghost nets, hooked on longlines, struck by vessels, or starve after ingesting plastic that blocks their intestines. According to the International Union for Conservation of Nature (IUCN) Marine Turtle Specialist Group's Conservation Priorities Portfolio (see *SWOT Report*, vol. XX, "An Atlas of Global Sea Turtle Status 2025"), West Pacific leatherbacks are among the most threatened and at-risk sea turtles in the world. The population has declined by more than 80 percent in the past 40 years, and fisheries interactions in the waters of many nations and on the high seas are a primary driver. Protecting leatherbacks means ensuring that they are safe throughout their entire migration, which makes international collaboration key to their recovery.

In 2024, Upwell and NOAA joined forces with New Zealand's Department of Conservation and National Institute of Water and Atmospheric Research, and with Monash University (in Australia), to launch the first aerial surveys and to conduct mock capture exercises targeting leatherbacks in New Zealand's foraging grounds. This fieldwork, initiated in 2025, laid the foundation for future surveys and vessel-based tagging efforts aimed at informing regional management and conservation decisions.

As partnerships grow across the Pacific to collect more data, the next step is to mobilize this new knowledge to support conservation strategies. In 2025, Upwell and Monash University developed an integrated species distribution model (iSDM) and a corresponding risk management tool (RMT) for leatherbacks in Australia and New Zealand's waters. The project was carried out with support from the New South Wales Department of Climate Change, Energy, the Environment, and Water under the Marine Estate Management Strategy.

The current beta versions of iSDMs and RMTs use data on leatherbacks, fisheries, and oceanographic conditions to create an algorithm that predicts where leatherbacks are most likely to be. These predictions update as ocean conditions change, offering a dynamic tool that could be used to protect leatherbacks in near real time. Imagine, for example, fisheries managers having access to this information in the form of a map showing areas to avoid leatherback bycatch and using it in their decisionmaking processes.

The more data an algorithm has, the more accurate its predictions can be. As such, the aforementioned partners are working to strengthen the accuracy of the iSDM and RMT tools by amassing data from an ever-broadening coalition of partners in places such as Indonesia (World Wildlife Fund), the Solomon Islands (The Nature Conservancy), and New Zealand (Ministry for Primary Industries, Department of Conservation).

These Pacific-wide efforts to collect data, forge partnerships, and develop new conservation tools are helping to create an adaptive management framework that could bolster traditional fisheries bycatch mitigation measures. While there is further work to be done to put adaptive management tools like iSDMs and RMTs into daily action, these tools offer hope to allow fishers to sustain their livelihoods while mitigating their impact on leatherbacks.

Back on the California coast, Upwell and NOAA tagged a leatherback in 2025 and named it Ricky Ricardo in honor of the late leatherback researcher Ricardo Tapilatu (1966–2022). Tracking data revealed that after spending a month foraging in U.S. waters, Ricky began a trans-Pacific migration. Protecting leatherbacks during a journey as vast as Ricky's is a monumental challenge—one that will benefit from both traditional conservation measures and the adaptive management tools described earlier. Leatherbacks have roamed the seas for more than 100 million years, but today their future depends on our collective ability to share knowledge, resources, and responsibility to ensure that the oceans are somewhere they can thrive. •

ABOVE: A leatherback turtle with a satellite transmitter attached swims off the coast of California, U.S.A., a critical feeding area for leatherbacks from the western Pacific. © George Shillinge/NOAA Permit #21111; **INSET:** Researchers on board the Sheila B. pose with a leatherback turtle that was tagged near Moss Landing, California, U.S.A. Data collected from the turtle's tag was used to inform conservation policy in U.S. waters and beyond. © Heather S. Harris/NOAA Permit #21111

THE GUIANAS AT A CROSSROADS: Leatherbacks, Illegal Fishing, and the Cost of Inaction

By Audrey Chevalier

As the Amazon River flows into the Atlantic Ocean, it carries vast amounts of organic matter that are pushed northward along the coast of South America by the North Brazilian Current. This system floods the coastal waters of the Guianas (French Guiana, Suriname, and Guyana) with nutrient-rich waters, creating one of the world's most productive marine ecosystems in terms of chlorophyll, biomass, and marine species diversity. These "chocolate waters," as they are called locally, support abundant fish populations and significant coastal fisheries that provide employment and affordable, high-quality animal protein to local communities.

The Guianas also once hosted the world's largest leatherback turtle population, which at its peak accounted for an estimated 40 percent of all global leatherback nesting on the legendary beaches of the Maroni Estuary, with Awala-Yalimapo (French Guiana) on the right bank and Galibi (Suriname) on the left. Today, the picture is starkly different. Numbers of nesting leatherbacks

in the Maroni Estuary have been in continuous decline since the early 2010s and have fallen by an estimated 99 percent. The region's once-abundant fish stocks are also showing signs of collapse, with many species severely overfished.

Since the early 2000s, local communities, fishers, and conservationists have reported significant numbers of illegal, unreported, and unregulated (IUU) fishing vessels deploying drift gillnets, a highly nonselective type of gear that entangles a wide range of marine species of all sizes. Gillnets used by IUU fishers often violate laws designed to limit environmental impacts, including maximum net lengths of 2.5 kilometers (1.5 miles) (according to European law) and minimum mesh sizes of 80 millimeters (3 inches) (stretched length). Investigations have revealed that illegal vessels routinely use nets averaging 5 kilometers (3 miles) long with a small mesh that captures both juvenile and adult fish. Moreover, these boats frequently work in coordinated fleets that align multiple vessels side by side, effectively blocking major swaths of the Guianas coastline.

Not surprisingly, the ecological consequences of this extraction have been devastating, and leatherbacks are especially vulnerable to this gear. Unlike other sea turtles, leatherbacks cannot easily maneuver around obstacles; their large, heavy bodies and ancient reptilian brains do not allow them to respond quickly to avoid obstacles. A drifting gillnet, completely invisible to them in these highly turbid waters, becomes a lethal trap. Turtles become entangled in the mesh or float lines, struggle to escape, exhaust themselves, and eventually drown. In 2001, 11 adult leatherbacks were found dead in a single net segment off the coast of Awala-Yalimapo, an early warning of the now-observed collapse in the ecosystem.

By 2024, the scale of the IUU fishing problem had multiplied dramatically, with an average of 15 boats operating daily in the Awala area, collectively deploying some 60 kilometers (37 miles) of net spread directly across the turtles' migratory route. As years passed without effective enforcement to stop these illegal practices, mass mortality followed, and the number of leatherbacks returning to nest plummeted. By 2025, only 17 leatherbacks nested in Awala, a dramatic decline from the estimated 1,000 per year in the 1990s.

Sea turtles are often described as "indicator species" because their decline signals a broader ecological problem. In the Guianas, those warnings went unheeded, to the detriment of the leatherbacks and many other marine species. For the first time in history, a 2023 annual census of fish larvae in coastal mangroves documented a total absence of acoupa weakfish larvae in French Guiana, the region's most important commercial fish species. Once abundant, acoupa is now among several coastal fish stocks showing clear signs of collapse.

Sadly, what began as an environmental crisis has now become a widespread social and economic concern as well. As fisheries decline because of IUU fishing pressures, local coastal communities that have depended on fishing are left struggling to maintain their livelihoods and secure affordable animal protein.

The collapse of Guianan leatherbacks, the ever-weakening fish stocks, and the subsequent demise of local community livelihoods must become a clarion call for coordinated regional action, including enforcement of regulations, realistic and efficient deterrence strategies to fight IUU fishing in national waters, improved environmental monitoring, and assistance to small-scale sustainable fisheries that support both local needs and a thriving economy in the region. If these steps are taken now, there may still be time to protect what remains of the region's chocolate waters and their rich marine diversity. •

ABOVE: Three illegal fishing boats work in alignment to create a large barrier of mesh net along the Guianan coastline. The practice is detrimental to leatherbacks, which cannot see or avoid the nets in the murky waters. © WWF French Guiana;
AT LEFT: A leatherback nests in Awala-Yalimapo, French Guiana, where the population, once considered the world's largest, has declined by an estimated 99 percent since the early 2010s. Rampant illegal, unreported, and unregulated (IUU) fishing is thought to be one of the main drivers of the decline. © Julien Clozeau/Zeppelin

Costa Rica's Newest Arribada Beach Faces an Uncertain Future

By Sonia Gutiérrez Parejo, Ninive Rodríguez-Espinoza, Daniel Arauz Naranjo, Isabel Naranjo, Randall Arauza, Daniela Rojas-Cañizales, and Roldán A. Valverde

In Corozalito, Costa Rica, the sound of cars rolling toward the beach just before sunrise signals the final moments of the previous night's *arribada*—the synchronized emergence of thousands of nesting olive ridley turtles. Corozalito's residents arrive at the beach for their morning ritual, unaware of the frenzy that unfolded in the dark just hours before. Soon after, folding chairs and playful children share the beach with the few remaining turtles, scavenging vultures, and scattered eggs. The scene feels timeless, like a tradition forged across generations. Yet its origins are surprisingly recent. Arribadas began in Corozalito in 2011, sparking a remarkable transformation at this small, isolated beach on Costa Rica's north Pacific coast.

In 2008, the Rescue Center for Endangered Marine Species (Centro de Rescate de Especies Marinas Amenazadas, or CREMA) began monitoring sea turtle nesting in Corozalito and documented a steady rise in nesting abundance. In 2011, the first official arribada occurred. What began as a rare phenomenon grew to be a regular event. First there was one arribada per year, then two, then three, and eventually, in 2025, six—a new record. This increased frequency has led the scientific community to recognize Corozalito as Costa Rica's third arribada beach, joining the established sites at Nancite and Ostional.

Despite Corozalito's mere 768 meters (about half a mile) of coastline, it hosts an ever-increasing number of female olive ridleys during each arribada. In October 2021, more than 20,000 nesting females emerged, the largest arribada ever recorded on the beach. Questions have been raised about whether this tiny beach can continue to sustain such large numbers of nesting turtles. Will the beach follow the boom-and-bust pattern seen at Nancite, which experienced dramatic declines after periods of intense nesting? Or will it sustain a robust population as at Ostional, where arribadas have persisted for decades?

Questions about Corozalito's future extend beyond biology as well. The arribada phenomenon has drawn more visitors to the community, and residents worry about whether Corozalito—still a small rural town—is prepared to support, regulate, and ultimately benefit from the tourism influx. While increased visitation brings the potential for new livelihoods, it also risks overwhelming the community's limited infrastructure and disrupting social and environmental systems.

The Long Shadow of Ostional

As sea turtles have gained global attention and protection, Costa Rica's coastal communities have increasingly looked to Ostional for guidance, because it is home to the country's oldest recorded arribadas. Starting in the 1950s, locals illegally harvested eggs from nests at Ostional on a massive scale to supplement their income. Then, in 1984, the Costa Rican government granted a legal exception that allows Ostional community members to collect a portion of eggs during the early stages of each arribada. Many scientists support this system, citing the naturally low hatching success of eggs laid during the beginning of densely packed nesting events because of microbial loads and destruction by subsequent females. For decades, Ostional's model has been held up as a global case study, so it is no surprise that Corozalito looks to it now as it navigates its own future.

What Divides Them

The debates unfolding in Corozalito echo generational divides seen worldwide. Younger residents, who have been educated in a modern context of environmental awareness and conservation norms, face an uncertain economic landscape and often feel excluded from community decisionmaking. Elders, who hold influence over local governance and traditions, are more resistant to change.

These tensions were first captured during a series of interviews led by researcher Carmen Mejías-Balsalobre and colleagues in 2018. Younger participants expressed total opposition to egg extraction, whether legal or illegal. Elders, however, were more open to controlled subsistence use and even commercialization, citing Ostional's long-standing model as an example to follow. This disagreement has fueled years of internal conflict, with residents torn between conservation values, economic pressures, and questions of identity and autonomy.

What Unites Them

Despite disagreements over egg harvest, Corozalito residents share an overwhelming consensus on one point: support for well-regulated, turtle-focused tourism is needed, especially given that outside investors have been rapidly acquiring land and initiating development projects. Signs advertising property for future tourist ventures now line the roads, and gas stations have arisen seemingly from nowhere. Wealthy landowners and outside investors are far better positioned to thrive in this emerging economy, while many locals fear being left behind.

Other coastal communities, such as nearby Playa Grande, offer sobering examples of what could come. There, longtime residents were priced out of their own towns, pushed aside as land speculation and tourism intensified. As living costs rise, some in Corozalito worry that economic desperation could revive the once-persistent illegal egg harvest.

Adding urgency to these concerns is Corozalito's lack of formal protection for its wildlife and natural ecosystems. Unlike Nancite, a national park, or Ostional, a national wildlife refuge, Corozalito remains legally vulnerable to exploitation. Today, CREMA and the Asociación de Desarrollo Integral de Corozalito (ADICOR), with support from the Riester Foundation and local guides, are working to steer the community toward a sustainable future—one that balances conservation, livelihoods, and cultural integrity.

Achieving that vision will require partnership. The community, nongovernmental organizations, and environmental authorities must work together to secure legal protection, manage tourism, and safeguard both the turtles and the people whose lives are intertwined with the extraordinary arribadas. •

AT RIGHT: An olive ridley nests during an arribada on Corozalito. © Eli Bianchi; **PREVIOUS SPREAD:** Olive ridleys crawl ashore to nest on Corozalito beach on Costa Rica's north Pacific coast. Arribadas (mass nesting events) began here in 2011 and have since increased in frequency, creating both opportunities and challenges for local residents. © Eli Bianchi

FAQs ABOUT SEA TURTLES

Do Sea Turtles Communicate?

By Kostas Papafitsoros and Damien Chevallier

Sea turtles were once thought to be largely solitary and silent, but emerging research and observations challenge this long-held belief. Scientists now know that turtles use a combination of physical interactions, chemical cues, and sounds to navigate surprisingly complex social environments.

Nonvocal Communication

Much of sea turtle communication appears to be physical. During the mating season, for example, a female can express a decisive “no!” to an interested male by lifting herself vertically in the water with her plastron facing him, making a mating attempt impossible. In foraging grounds where many turtles share space and resources, sea turtles also engage in frequent social interactions. A long-term study at a small foraging patch on Zakynthos Island, Greece, found that certain individual loggerheads aggressively chase and bite turtles that intrude on their preferred feeding areas—behavior that clearly communicates territorial defense.

Not all interactions carry such obvious intent. Across species, including loggerheads, greens, and hawksbills, divers and researchers have documented nonaggressive pursuits, rubbing, and beak touching. The purpose of these subtler behaviors remains open to interpretation. Yet because sea turtles can detect waterborne odors, close-contact behaviors such as beak touching could work in tandem with olfaction to exchange information. Whether this represents deliberate communication is still unknown, but it highlights an intriguing dimension of turtle social behavior that is worthy of future study.

By attaching acoustic and video recorders to free-ranging juvenile green turtles, as seen here, scientists have discovered that sea turtles use a range of sounds to communicate with one another. © Damien Chevallier; **PREVIOUS SPREAD:** A juvenile loggerhead passes the message, "Get out of here!" to a male loggerhead that is invading its foraging spot near Zakynthos Island, Greece. © Kostas Papafitsoros

Vocal Communication

Although sea turtles were long considered silent, recent acoustic research shows that they can both hear and produce a range of underwater sounds. Using multisensor acoustic and video recorders attached to free-ranging, juvenile green turtles, scientists have documented the turtles emitting pulses, rumbles, squeaks, and grunts within their hearing range (50–1,600 Hz).

Some of the sounds appear to play a social role. Nighttime "rumbles," for instance, often involve several individuals vocalizing together, hinting at group-level interactions. Other vocalizations, such as long squeaks or sharp grunts, occur frequently around other turtles and even humans and may function as alert or alarm signals. Playback experiments reinforce this idea: When exposed to recorded turtle sounds, other turtles often show vigilance or avoidance behaviors, demonstrating that acoustic communication continues well beyond early-life stages.

Studies also show that embryos and hatchlings of several sea turtle species—including green turtles, leatherbacks, olive ridleys, and Kemp's ridleys—produce a variety of sounds from within the nest chamber. These vocalizations increase shortly before emergence and are thought to help synchronize movement up the nest column and coordinate the group exodus, a behavior that likely improves survival. This early-life signaling reveals that communication begins well before turtles reach the ocean.

Chemical Communication

Sea turtles possess well-developed nasal cavities suited for detecting scents, and some species have scent-emitting Rathke glands that can release chemical compounds into the water. Because turtles can detect waterborne odors, researchers have proposed that smell could contribute to social signaling. In one study, juvenile green turtles exposed to odor extracts from adult males' Rathke glands showed a marked decrease in activity, indicating that turtles can detect and respond to chemical cues produced by conspecifics. However, the specific functions of these cues remain unclear.

Taken together, these discoveries challenge the long-held view of sea turtles as mute and asocial animals. Instead, they reveal a diverse communication toolkit—physical interactions, chemical cues, and underwater vocalizations—that not only enriches our understanding of sea turtle behavior but also opens new possibilities for conservation, including the use of natural turtle sounds to help reduce fishery bycatch and other spatially explicit threats. •

What Can Fossils Tell Us About Today's Sea Turtles?

By Andrew D. Gentry

Sea turtles are among the most globally recognized and well studied of all the reptiles, yet their evolution remains a mystery. Recent studies show that many extinct species of marine-adapted turtles may not even be related to the sea turtles alive today. It appears, in fact, that disparate clades of turtles have independently evolved to live in the sea at different times, developing features such as paddle-like limbs and hydrodynamic shells. Determining which of these convergent evolutionary lineages gave rise to modern sea turtles has been the subject of rigorous scientific study for centuries.

The earliest fossil turtle widely considered to be adapted for marine life is *Odontochelys semitestacea*, a species that lived in shallow, nearshore habitats off the coast of China some 220 million years ago. While it lacked a complete shell and well-developed flippers, molecular studies of its fossil remains reveal isotope signatures nearly identical to the modern green turtle, indicating that *Odontochelys* likely fed on marine plants. Researchers have speculated that *Odontochelys* may have foraged on algae, much like a modern Galápagos marine iguana, using its claws to cling to submerged rocks.

Nearly 70 million years later, during the Late Jurassic, another group of turtles called *thalassochelydians* began to invade the marine realm in what is now western and central Europe. This diverse group also shows marine features such as reduced shells and enlarged salt glands, but, like *Odontochelys*, also lacked the rigid flippers required for life in the sea.

Toward the end of the Age of Dinosaurs, highly specialized marine forms known as *protostegids* appeared in the fossil record and quickly spread around the globe. This group includes the massive Archelon, which reached lengths of over 12 feet and weighed more than a ton. Although protostegids possessed many of the same marine adaptations as modern leatherbacks, there is no scientific consensus on their relatedness.

The global cataclysm 66 million years ago that ended the reign of dinosaurs also claimed protostegids; however, a separate lineage called *chelonioids* managed to survive the Cretaceous-Paleogene mass extinction. Over the course of millions of years, chelonioids evolved, spreading around the globe and diversifying into the iconic leatherback and hard-shelled sea turtle species we know today. •

This fossilized shell of *Ueloca colemanorum*, a newly discovered extinct species of leatherback turtle, was found in Alabama, U.S.A. © Telegraph Creative; **ABOVE:** A preserved mosaic of bony ossicles makes up the fossilized shell of a newly discovered extinct leatherback turtle, *Ueloca colemanorum.* © Telegraph Creative

Acting Globally

SWOT GRANT RECIPIENTS

Since 2006, SWOT's grants have helped field-based partners around the world achieve important research and conservation goals. To date, 201 grants have been awarded to 153 applicants in more than 58 countries and territories for work addressing four key themes: (1) networking and capacity building, (2) filling of data gaps, (3) behavior change for conservation, and (4) conservation action. The following are overviews of SWOT's 2025 grantees. Visit www.SeaTurtleStatus.org/grants for application instructions and a list of past SWOT grantees.

TOP ROW: © Institut Halieutique et des Sciences Marines, University of Toliara; © Murdoch University; **MIDDLE ROW:** © Community Unification for Responsible Management of Aquatic Resources; © Atoll Marine Conservation; **BOTTOM ROW:** © Society for Marine Species Conservation

Atoll Marine Conservation (Maldives)

The organization will expand its Sea Turtle Heroes program to deliver school-based education that reduces illegal take and pet-keeping while fostering long-term conservation attitudes and community stewardship across the Maldives.

Bahari Hai Conservation (Kenya)

The organization will strengthen its conservation efforts with the Roka fishing community through training, improving turtle handling and data collection, organizing monitoring patrols, and sharing results with fishers to support long-term stewardship.

Community Unification for Responsible Management of Aquatic Resources (CURMA) (Philippines)

Community-based protection and monitoring in La Union will be expanded, which will strengthen local capacity to address threats to critical nesting, foraging, and breeding habitat and to support long-term sea turtle stewardship.

Centro de Estudios AquaMarina Asociación Civil (Argentina)

The center will study the distribution and habitat use of adult male leatherbacks in the South Atlantic, using data collection and satellite tracking to address major knowledge gaps in male turtle ecology.

Ghana Instinct (Ghana)

The organization will strengthen conservation at Cape Three Points through enhanced beach patrols, reduced poaching, and improved hatchery capacity to protect olive ridley, green, and leatherback turtles.

Institut Halieutique et des Sciences Marines, University of Toliara (Madagascar)

Researchers will identify which sea turtle species are captured in small-scale fisheries in southwest Madagascar to improve understanding of species-specific risk and feeding ecology. Findings will be used to guide locally adapted conservation strategies.

Murdoch University (Australia)

Researchers from Murdoch University will strengthen culturally grounded green turtle monitoring in Yawuru Saltwater Country by creating hands-on opportunities for Yawuru leadership, knowledge sharing, and stewardship alongside Western scientific approaches.

Society for Marine Species Conservation (Liberia)

The project will reduce poaching, bycatch, and pollution threats by strengthening nesting beach protection, fostering community stewardship, and supporting sustainable livelihoods that reduce pressure on sea turtle populations in Rivercess County.

Somali Integrated Fisheries Organization (Somalia)

The organization will develop sea turtle conservation along Somalia's coastline by establishing monitoring programs, promoting community engagement, and encouraging Somalia's integration into global conservation efforts.

Teal Guetschow (Trinidad)

Researcher Teal Guetschow will evaluate LED net lights as a bycatch reduction tool for artisanal gillnet fisheries in Trinidad and Tobago. The goal is to help address high levels of leatherback bycatch near important leatherback nesting beaches.

Turtle Foundation (Cabo Verde)

The foundation will strengthen nest protection and enforcement measures on Boa Vista Island—a nesting site for many of Cabo Verde's loggerheads—by implementing enhanced field capacity, protection dogs, and tools such as drones.

AZA-SAFE GRANT RECIPIENTS

Since 2019, SWOT has partnered with the Association of Zoos & Aquariums (AZA) and its Sea Turtle SAFE (Saving Animals from Extinction) program to make annual grants for projects that support two of the top global priorities for sea turtle conservation—eastern Pacific leatherbacks and Kemp's ridley turtles.

TOP ROW: © Irlanda Esmeralda Gallardo Alanis, George Mason University; © Gulf Specimen Marine Laboratory Inc.; **MIDDLE ROW:** © Campamento Tortuguero Los Quelonios; **BOTTOM ROW:** © Carlos Delgado – Universidad Michoacana de San Nicolás de Hidalgo; © Mildred Alpizar Quezada, Instituto Politécnico Nacional

© Brenda Sarahi Ramos Rivera

Brenda Sarahi Ramos-Rivera (Mexico)

This doctoral candidate will continue to support the protection of Kemp's ridley nesting beaches in the Playa Piedra de Tlacoyunque Sanctuary through monitoring patrols, threat reduction, and organized beach cleanups.

Proyecto Tortuga Negra (Mexico)

At Mexiquillo, a major eastern Pacific leatherback nesting beach, Carlos Delgado-Trejo will ensure the continuation of nesting beach protection and successful hatchling emergence and release.

Corporación Yemanyá Agua y Conservación (Ecuador)

The organization will expand its outreach to artisanal fishing communities in Esmeraldas and Manabí to improve conservation awareness and to promote behaviors that reduce impacts to eastern Pacific leatherbacks affected by fishing activities.

Campamento Tortuguero los Quelonios (Mexico)

This conservation camp in Playa Ventura will address the threat of rising temperatures and work to strengthen hatchery-based management to sustain and build on two decades of reproductive success.

Fundación de la Universidad Veracruzana (Mexico)

Artificial light pollution is affecting Kemp's ridleys at El Laurel. University representatives will work with community members to identify, mitigate, and manage problematic lighting while improving nest protection and monitoring.

Gulf Specimen Marine Laboratory Inc. (U.S.A.)

This group's rescue and rehabilitation of stranded sea turtles, including cold-stunned Kemp's ridleys, will continue to inspire sea turtle conservation and strengthen response and medical care capacity in western Florida.

Irlanda Esmeralda Gallardo Alanis, George Mason University (Mexico)

This doctoral student will expand her long-term biological monitoring of Kemp's ridley and hawksbill turtles to strengthen the conservation discussion and data collection for these species and their habitats in Tamaulipas, Mexico, and in southern Texas, U.S.A.

Mildred Alpizar Quezada, Instituto Politécnico Nacional (Mexico)

This biologist will protect nests and improve hatch success by addressing egg take and trade networks at three leatherback index beaches: Barra de la Cruz-Playa Grande and Cahuitan, Oaxaca and Tierra Colorada, Guerrero.

Verdiazul (Costa Rica)

The group will continue nest protection measures and hatchery management to support reproductive success at Playa Junquillal, an important eastern Pacific leatherback nesting beach.

Warriors of the Rainbow (Mexico)

Members will support nightly patrols, nest relocation, hatchery management, beach cleanups, and volunteer engagement to ensure protection of eastern Pacific leatherbacks in Guerrero, Mexico.

LIVING LEGENDS OF
Sea Turtle Conservation

Each year, SWOT Report recognizes influential figures in our field whose work has helped define modern sea turtle conservation. Here we introduce three additions to this distinguished group. See the full profiles and learn about all of SWOT's Living Legends at www.SeaTurtleStatus.org/legends.

Joséa S. Dossou-Bodjrènou

One of Benin's most respected environmental leaders, Joséa is known for his lifelong commitment to wildlife conservation, environmental education, and community engagement. Though trained in animal production and health, he also has expertise in museology, aquariology, taxidermy, plastodermy, and osteology, skills that have shaped his integrative approach to conservation. In 1995, he cofounded the nongovernmental organization Nature Tropicale, Benin's first organization to join the IUCN in 2004 and one of West Africa's most influential conservation institutions. Joséa has dedicated more than 30 years to advancing biodiversity protection across Benin's wetlands, rivers, coastal ecosystems, and forests, spanning many important species, including sea turtles, manatees, marine and freshwater fish, amphibians, reptiles, elephants, and more. A champion of community-based conservation, he has built partnerships with local fishers, youth groups, schools, and government agencies to address poaching, habitat loss, unsustainable harvest, and human-wildlife conflict. As founder and director of the Musée des Sciences Naturelles (Museum of Natural Sciences) in Benin, Joséa has helped transform environmental knowledge into accessible public programs that inspire national pride and stewardship. He has authored numerous publications, led public-awareness campaigns, and trained generations of conservation practitioners, teachers, and students.

Describe your proudest accomplishment in sea turtle conservation.

My greatest pride, one that I share with my colleagues in sea turtle conservation, is having organized a large network of eco-volunteers, eco-guards, and other dedicated volunteers along the 125 kilometers (77 miles) of Benin's coastline. These deeply committed people—many of them residents—work tirelessly day and night to save sea turtles and other marine and coastal wildlife, such as whales, dolphins, migratory birds, sharks, rays, and African manatees.

Colin Limpus

Dr. Colin Limpus is one of Australia's most distinguished sea turtle biologists and among the world's foremost authorities on marine turtle ecology and conservation. He was the chief scientist for the Threatened Species Unit of the Queensland Department of Environment and Heritage Protection for more than 50 years, and since 1995 he has served as the scientific councilor for marine turtles for the United Nations Environment Programme Convention on Migratory Species.

Col began his sea turtle work in the late 1960s and went on to establish the Queensland Turtle Research Programme, one of the longest-running and most comprehensive sea turtle monitoring initiatives in the world. He has played a central role in shaping Australia's understanding of sea turtle biology, demography, conservation, and management, and he led pioneering research on all six marine turtle species that occur in Australia. His work at the Mon Repos turtle rookery helped transform it into a global hub for loggerhead turtle conservation and public education, and his decades of monitoring at Raine Island have aided in the protection of that green turtle rookery, the world's largest. Col's research interests also include freshwater turtles, crocodiles, dugongs, and sea snakes. He has authored or coauthored hundreds of publications and mentored multiple generations of researchers and conservationists. Col's efforts have contributed to policy, threatened species listings, protected areas, and recovery plans, leaving an enduring legacy for Australia's marine wildlife and coastal ecosystems.

Describe your proudest accomplishment in sea turtle conservation.

It was on December 26, 2003, when I first met Premiere (seen in the accompanying photo), a nesting loggerhead turtle at Mon Repos. She was the first confirmed return of about a quarter million loggerhead, green, and flatback hatchlings that my team had tagged using carapace notching during the 1970s and 1980s. Using laparoscopy, I was able to confirm that she had not produced eggs yet, and it appeared that she had migrated from a very distant foraging area. That assumption was tested by fitting her with a satellite tag. Her postnesting migration took her 1,400 kilometers (870 miles) north to the Howick Reefs in the Northern Great Barrier Reef. She has returned for five breeding seasons since 2003, and further tracking during two postnesting migrations shows that she has strong fidelity to both her home foraging area and her chosen nesting beach. Premiere and the many tagged hatchings that have returned to nest at Mon Repos for half a century have helped to increase our understanding of their complex life history.

Jeanne A. Mortimer

Born in Chicago, Jeanne spent every summer until age 20 at a lodge in the Canadian North Woods, where she gained a passion for nature and an independent spirit. As an undergrad at the University of Notre Dame, she pursued studies in tropical biology and human cultures. Then, as a student of Archie Carr, she earned her MSc and PhD at the University of Florida, working with green turtles in Nicaragua and at Ascension Island. Next, she did a three-year consultancy to assess sea turtle status in the Seychelles, a job that proved pivotal to her life. For more than five decades, she worked on six continents and in some 20 countries, returning repeatedly to Seychelles, where in 1995, she became a permanent resident and later a Seychellois citizen, and she continues to live and work there. Jeanne's research interests include sea turtle nesting and foraging ecology, population status, growth rates, migrations, genetic phylogeny, human utilization, and conservation. Since 1995, her focus has been the Seychelles and Chagos Archipelagos, and during the past decade she has worked extensively with seagrass ecosystems of the Western Indian Ocean. She retains her affiliation with the University of Florida, lectures at the University of Seychelles, and has authored several books, dozens of peer-reviewed publications, and hundreds of papers, chapters, and reports.

Describe your proudest accomplishment in sea turtle conservation.

I am proud that my initial three-year study and 1984 report on status and management of Seychelles turtles provided the baseline data and arguments that local Seychellois conservationists (Lindsay Chong Seng, John Collie, Maxime Ferrari, and Nirmal Shah, among others) used to convince high-level decisionmakers and legislators to pass the 1994 Wild Animals (Turtles) Protection Regulations, making it illegal to disturb, catch, injure, fish, kill, sell, purchase, receive, or possess any sea turtle or turtle egg. Another proud accomplishment was to have been part of the Malaysian team (comprising colleagues at WWF Malaysia, Malaysian turtle champion Dr. Chan Eng Heng, and others) that provided data and arguments that convinced the government in the early 1990s to cease heavy exploitation of green turtle and hawksbill eggs in Peninsular Malaysia before their populations declined to the critically low levels of the leatherback. Both species responded well, especially at Pulau Redang, where Dr. Chan promoted natural, in situ incubation of green turtle clutches (without hatcheries). •

Visit **www.SeaTurtleStatus.org/legends** to read the complete Q&A with each of these living legends.

SWOT Data Citations

We are grateful to all who generously contributed their sea turtle data for inclusion in the maps featured throughout this volume. Data contributors and sources are cited throughout the following pages. For information about how the feature maps of sea turtle biogeography in the Pacific Islands were created, please see the text on p. 26.

GUIDELINES OF DATA USE AND CITATION

The nesting and satellite telemetry data that follow correspond to the maps of sea turtle biogeography in the Pacific Islands on pp. 28–29. More details about nest data records can be found on the virtual version of this map at www.SeaTurtleStatus.org/maps/pacific-islands-sea-turtles. To use data for research or publication, you must obtain permission from the data providers.

Nesting Data Citations

Additional metadata, including nesting beach names, nest counts, and year of data collection, may be found online on the interactive web version of this map found at www.SeaTurtleStatus.org/maps/pacific-islands-sea-turtles, at http://seamap.env.duke.edu/swot, or by viewing the original data source (if published).

AMERICAN SAMOA

Citations: (A) Murakawa, S. K. K., M. MacDonald, B. Peck et al. 2025. *Green Sea Turtle Assessment in the Central South Pacific: Rose Atoll National Wildlife Refuge*. Unpublished manuscript. U.S. National Oceanic and Atmospheric Administration (NOAA); **(B)** Tagarino, A., and R. Utzurrum. 2010. *Investigations into the Status of Marine Turtles in American Samoa: Assessment of Threat to Nesting Activities and Habitat in Swains Island: Final report, October 1, 2008, to September 30, 2009.* NOAA; **(C)** Tagarino, A., K. S. Saili, and R. Utzurrum. 2008. *Investigations into the Status of Marine Turtles in American Samoa, with Remediation of Identified Threats and Impediments to Conservation and Recovery of Species: Final Report, October 1, 2004, to September 30, 2008.* NOAA.
Data Providers: Brian Peck, Camryn Allen, Carlo Caruso, Frank Parrish, Frank Pendleton, Irene Kinan Kelly, Kimberly Maison, Kyle Van Houtan, Mark MacDonald, Shawn K. K. Murakawa, and T. Todd Jones

COOK ISLANDS

Citations: (A) Balazs, G. H. 1995. Status of sea turtles in the central Pacific Ocean. In K. Bjorndal (ed.), *Biology and Conservation of Sea Turtles*, pp. 243–252. Smithsonian Institution Press; **(B)** White, M. 2010. Nesting and genetic census. Unpublished data; **(C)** White, M. 2012. *Rufford Expedition to Palmerston Atoll.* Project update, April; **(D)** White, M. 2012. *Sea Turtles in the Cook Islands: Volume One: 2009–2012*; **(E)** White, M. 2013. Nesting and genetic census. Unpublished data; **(F)** White, M. 2017. Personal communication. SWOT database online 2017; **(G)** White, M. 2025. SWOT turtles 2025. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026); **(H)** Woodrum-Rudrud, R. 2010. Forbidden sea turtles: Traditional laws pertaining to sea turtle consumption in Polynesia (including the Polynesian outliers). *Conservation and Society* 8 (1): 84–97.
Data Providers: Irene Kinan Kelly, Kimberly Maison, and Michael White

FIJI

Citations: (A) Batibasaga, A., and N. Nand. 2008. Hawksbill nesting in Fiji. Personal communication with the Fiji Fisheries Department. In *SWOT Report—The State of the World's Sea Turtles*, vol. III (2008); **(B)** Batibasaga, A., S. Waqaiabete, and A. Qauqau. 2006. Notes on Fijian sea turtles: Estimates on population status. Information provided for the Sea Turtle Working Group Meeting, Centre for Appropriate Technology and Development, Nadave, Fiji, May 31–June 1; **(C)** Bell, L. 2013. *Community Turtle Conservation and Monitoring Network.* Community Ecosystem Partnership Fund and Conservation International Pacific Islands Program; **(D)** Guinea, M. 1993. *Sea Turtles of Fiji.* South Pacific Regional Environmental Programme; **(E)** Prakash, S. S., T. M. Tuiono, S. Clay et al. 2020. Temporal and geographic distribution of hawksbill turtle (*Eretmochelys imbricata*) nests in Fiji, South Pacific. *Testudo* 9 (2): 12–23; **(F)** Piovano, S., and A. Batibasaga. 2021. Fiji. In T. M. Work, D. Parker, and G. H. Balazs (eds.), *Sea Turtles in the Oceania Region: 2021 MTSG Annual Regional Report.* International Union for the Conservation of Nature (IUCN)–Species Survival Commission (SSC) Marine Turtle Specialist Group; **(G)** Prakash, S., and K. Miller. 2023. *Multi-disciplinary Approach to Develop and Strengthen Sea Turtle Population Assessments in Northern Lau, Fiji.* Unpublished report. Kaibu Foundation; **(H)** Prakash, S., and S. Piovano. 2025. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026); **(I)** Sharma-Gounder, S., and R. Veeran. 2010. *Ringgold Isles Green Turtle Nesting and Tagging Survey (3–9 December 2010): Brief Activity Report.* Fiji Fisheries Department.
Data Providers: Aisake Batibasaga, Irene Kinan Kelly, Kaibu Foundation, Kimberly Maison, Neema Nand, Shritika Prakash, and Susanna Piovano

FRENCH POLYNESIA

Citations: (A) Bowen, B. W., F. A. Abreu-Grobois, G. H. Balazs, N. Kamezaki, C. J. Limpus, and R. J. Ferl. 1995. Trans-Pacific migrations of the loggerhead turtle (*Caretta caretta*) demonstrated with mitochondrial DNA markers. *Proceedings of the National Academy of Sciences* 92 (9): 3371–3734; **(B)** Goutenegre, S. 2011. Chelonia Polynesia. Personal communication; **(C)** Hirth, H. F. 1971. *Synopsis of Biological Data on the Green Turtle: Chelonia mydas (Linnaeus) 1758.* Food and Agriculture Organization of the United Nations; **(D)** Pritchard, P. C. H. 1995. Marine turtles of Micronesia. In K. Bjorndal (ed.), *Biology and Conservation of Sea Turtles*, pp. 263–274. Smithsonian Institution Press; **(E)** Touron, M., C. Gaspar, A. Carpentier, M. Van Der Helm, M. Petit, and V. Stabile. 2017. *Bilan de la Saison de Ponte 2016–2017 de la Tortue Verte (Chelonia mydas) sur l'Atoll de Tetiaroa, en Polynésie Française.* Te Mana o Te Moana; **(F)** Trevor, A. P. 2009. *Secretariat of the Pacific Regional Environment Programme Turtle Research and Monitoring Database System (TREDS) Annual Report 2009.*
Data Providers: Irene Kinan Kelly and Kimberly Maison

GUAM

Citations: (A) Division of Aquatic and Wildlife Resources. 2009. *Final Annual Progress Report for the Guam Sea Turtle Recovery Project.* NOAA; **(B)** Grimm, G., and J. Farley. 2008. *Sea Turtle Nesting Activity on Navy Base Guam 2007–2008.* Draft report. Naval Facilities Engineering Systems Command Marianas.
Data Providers: Irene Kinan Kelly and Kimberly Maison

INDONESIA

Citations: (A) National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2020. *Endangered Species Act Status Review of the Leatherback Turtle* (Dermochelys coriacea), 2020; **(B)** Tapilatu, R. F. 2017. The evaluation of nest relocation method as a conservation strategy for saving sea turtle populations in the North Coast of Manokwari, Papua Barat Province, Indonesia. *Ecology, Environment and Conservation* 23 (4): 24–33; **(C)** Tapilatu, R. F., H. Wona, R. H. S. Siburian, and S. T. Saleda. 2020. Heavy metals contaminants in the eggs and temperatures of nesting beaches of sea turtles in Kaimana, West Papua, Indonesia. *Biodiversitas* 21 (10): 4582–4590.
Data Providers: Irene Kinan Kelly, Joshua Eberdong, Kimberly Maison, Romy Trono, and Angie Viloria

KIRIBATI

Citations: (A) Balazs, G. H. 1995. Status of sea turtles in the central Pacific Ocean. In K. Bjorndal (ed.), *Biology and Conservation of Sea Turtles*, pp. 243–252.

Smithsonian Institution Press; **(B)** Bell, L. A. J., N. Ruata, and R. Bebe. 2009. *Kiribati Marine Turtle Profile.* Draft report for the Secretariat of the Pacific Regional Environment Programme; **(C)** Stone, G., D. Obura, S. Bailey et al. 2001. *Marine Biological Surveys of the Phoenix Islands: Summary of Expedition Conducted from 24 June–25 July 2000.* New England Aquarium; **(D)** Obura, D., and G. S. Stone (eds.). 2002. *Phoenix Islands: Summary of Marine and Terrestrial Assessments in the Republic of Kiribati, 5 June–10 July 2002.* New England Aquarium; **(E)** Teatao, R., T. Kautu, and T. Waqainabete. 2021. Kiribati. In T. M. Work, D. Parker, and G. H. Balazs (eds.), *Sea Turtles in the Oceania Region: 2021 MTSG Annual Regional Report.* IUCN-SSC Marine Turtle Specialist Group.
Data Providers: Irene Kinan Kelly and Kimberly Maison

MARSHALL ISLANDS, REPUBLIC OF THE

Citations: (A) McCoy, M. 2004. *Defining Parameters for Sea Turtle Research in the Marshall Islands.* NOAA Administrative Report AR-PIR-08-04; **(B)** National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998. *Recovery Plan for U.S. Pacific Populations of the Green Turtle*; **(C)** Puleloa, W. K., and N. Kilma. 1992. *The Sea Turtles of the Northern Marshalls: A Research Expedition to Bikar and Erikup Atolls and Jemo Island.* Unpublished report; **(D)** Seminoff, J. A., C. D. Allen, G. H. Balazs et al. 2015. *Status Review of the Green Turtle* (Chelonia mydas) *Under the U.S. Endangered Species Act.* NOAA Technical Memorandum NOAA-NMFS-SWFSC-539. NOAA and National Marine Fisheries Service.
Data Providers: Irene Kinan Kelly and Kimberly Maison

MICRONESIA, FEDERATED STATES OF

Citations: (A) Cruce, J. 2010. *Monitoring of Nesting Green Turtles* (Chelonia mydas) *on Loosiep Island, Ulithi Atoll, Yap, Federated States of Micronesia, 2010.* Technical report prepared for the Joint Institute for Marine and Atmospheric Research; **(B)** Cruce-Johnson, J. 2006. *Yap State Sea Turtle Conservation Program, Ulithi Tagging Project, Gielop and Iar Islands, Summer 2005.* Report prepared for the Yap State Marine Resources Management Division; **(C)** Dethmers, K. E., D. Broderick, C. Moritzi et al. 2006. The genetic structure of Australasian green turtles (*Chelonia mydas*): Exploring the geographical scale of genetic exchange. *Molecular Ecology* 15 (13): 3931–3946; **(D)** Kinin, I., and J. Cruce. 2010. Personal communication; **(E)** Kolinski, S. 1993. *Outer Island Turtle Project Stage III: Report on Elato Atoll Fieldwork.* Report prepared for the Yap State Marine Resources Management Division; **(F)** Naughton, J. J. 2001. Sea turtle survey at Oroluk Atoll and Minto Reef, Federated States of Micronesia. *Marine Turtle Newsletter* 55: 9–12; **(G)** Pritchard, P. C. H. 1995. Marine turtles of Micronesia. In K. Bjorndal (ed.), *Biology and Conservation of Sea Turtles*, pp. 263–274. Smithsonian Institution Press; **(H)** Smith, A., S. Kolinski, and V. Hachiglou. 1991. Outer Island Turtle Project, Yap State, F.S.M.: Status Report. Report prepared for the South Pacific Regional Environment Programme's Regional Marine Turtle Conservation Programme Meeting in Nouméa, New Caledonia, August 12–13.
Data Providers: Irene Kinan Kelly, Jennifer Cruce, Kimberly Maison, and Wayne Sentman

NEW CALEDONIA

Citations: (A) Garnier, J., S. Andréfouët, C. Farman, and the BWÄRÄ Sea Turtle Network. 2021. New Caledonia. In T. M. Work, D. Parker, and G. H. Balazs (eds.), *Sea Turtles in the Oceania Region: 2021 MTSG Annual Regional Report.* IUCN-SSC Marine Turtle Specialist Group; **(B)** Lafage, D. 2017. Association BWÄRÄ. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. III (2008); **(C)** Limpus, C. J., M. Boyle, and T. Sunderland. 2005. New Caledonian loggerhead turtle population assessment: 2005 pilot study. In I. Kinan (ed.), *Proceedings of the Second Western Pacific Sea Turtle Cooperative Research and Management Workshop. Volume II: North Pacific Loggerhead Sea Turtles*, pp. 77–92. Western Pacific Regional Fishery Management Council; **(D)** Pritchard, P. C. H. 1994. Les D'Entrecasteaux Enfin! Report of an expedition to study the sea turtles of the D'Entrecasteaux Reefs, north of New Caledonia. In B. A. Schroeder and B. E. Witherington (compilers), *Proceedings of the Thirteenth Annual Symposium on Sea Turtle Biology and Conservation*, pp. 143–145. NOAA Technical Memorandum NMFS-SEFSC-341, National Marine Fisheries Service; **(E)** Limpus, C., S. Mounier, and A. Downer. 2009. Project to determine the distribution and population sizes of nesting marine turtles in New Caledonia, and to enhance the capacity of local governments to protect and manage these species. Poster presented at the 29th Annual Symposium on Sea Turtle Biology and Conservation in Brisbane, Australia, February 17–19; **(F)** WWF-France in New Caledonia. 2017. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XIII (2008); **(G)** WWF-France in New Caledonia. 2006. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. I.
Data Providers: Dominique Lafage, Irene Kinan Kelly, Kimberly Maison, and Marc Oremus

NORTHERN MARIANA ISLANDS, COMMONWEALTH OF THE

Citations: (A) Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife. 2009. *Population Dynamics of Sea Turtles at the Northern Marianas.* Annual report to the National Marine Fisheries Service Pacific Islands Regional Oceanscape Program under grant no. NA08NMF4540613; **(B)** Ilo, L., G. P. Camacho, and C. Alepuyo. 2005. *Sea Turtle Nesting and In-Water Assessment Report for the Commonwealth of the Northern Mariana Islands (Saipan, Tinian, and Rota), 2005.* CNMI Division of Fish and Wildlife; **(C)** Pultz, S., M. L. Lusk, and D. L. Turner Tomaszewicz. 2021. Commonwealth of the Northern Mariana Islands. In T. M. Work, D. Parker, and G. H. Balazs (eds.), *Sea Turtles in the Oceania Region: 2021 MTSG Annual Regional Report 2021.* IUCN-SSC Marine Turtle Specialist Group; **(D)** Summers, T. M., S. L. Martin, J. R. Hapdei, J. K. Ruak, and T. T. Jones. 2018. Endangered green turtles (*Chelonia mydas*) of the Northern Mariana Islands: Nesting ecology, poaching, and climate concerns. *Frontiers in Marine Science* 4: 313001.
Data Providers: Irene Kinan Kelly and Kimberly Maison

PALAU

Citations: (A) Colin, P. L., E. Kisokau, and V. Patris. 2021. Palau. In T. M. Work, D. Parker, and G. H. Balazs (eds.), *Sea Turtles in the Oceania Region: 2021 MTSG Annual Regional Report.* IUCN-SSC Marine Turtle Specialist Group; **(B)** Klain, S., and J. Eberdong. 2007. *Palau Marine Turtle Conservation and Monitoring Program, 2005–2006: Report to the National Oceanic and Atmospheric Administration (NOAA).* Unpublished report; **(C)** Palau Bureau of Marine Resources. 2008. *Palau Marine Turtle Conservation and Monitoring Program: Final Report.* Unpublished report.
Data Providers: Irene Kinan Kelly, Joshua Eberdong, Kimberly Maison, and Sarah Klain

PAPUA NEW GUINEA

Citations: (A) Dethmers, K. E., D. Broderick, C. Moritzi et al. 2006. The genetic structure of Australasian green turtles (*Chelonia mydas*): Exploring the geographical scale of genetic exchange. *Molecular Ecology* 15 (13): 3931–3946; **(B)** Dutton, P. H., C. Hitipeuw, M. Zein et al. 2007. Status and genetic structure of nesting populations of leatherback turtles (*Dermochelys coriacea*) in the western Pacific. *Chelonian Conservation and Biology* 6 (1): 47–53; **(C)** Kinan, I. (ed.). 2005. *Proceedings of the Second Western Pacific Sea Turtle Cooperative Research and Management Workshop. Volume I: West Pacific Leatherback and Southwest Pacific Hawksbill Sea Turtles*. Western Pacific Regional Fishery Management Council; **(D)** Kinch, J. 2003. *Sea Turtle Resources in the Milne Bay Province, Papua New Guinea: Results of a Nesting Survey (21–27 January 2003) at Panayayapona and Panadaludalu Islands (Jomard Islands), with Additional Notes.* Milne Bay Community-Based Coastal and Marine Conservation Program; **(E)** Wangunu, N., D. Kwan, I. Bell, and J. Pita. 2004. *Turtle Tagging and Monitoring in Milne Bay Province, December 2003.* Report prepared for Conservation International, Papua New Guinea Department of Environment and Conservation, and South Pacific Regional Environment Programme. Milne Bay Community-Based Marine Conservation Program; **(F)** Krueger, B. 2008. Hawksbill nesting in Papua New Guinea. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. III (2008); **(G)** National Fisheries Authority, Papua New Guinea. 2007. *A Review of Fisheries and Marine Resources in New Ireland Province, Papua New Guinea.* National Fisheries Authority and Coastal Fisheries Management and Development Project; **(H)** National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998. *Recovery Plan for U.S. Pacific Populations of the Loggerhead Turtle* (Caretta caretta). National Marine Fisheries Service; **(I)** Pilcher, N. J. 2010. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. VI (2011); **(J)** Pilcher, N. J. 2011. *Community-Based Conservation of Leatherback Turtles Along the Huon Coast, Papua New Guinea.* Final report to the Western Pacific Regional Fishery Management Council; **(K)** Pilcher, N. J. 2013. *Community-Based Conservation of Leatherback Turtles Along the Huon Coast, Papua New Guinea.* Final report to the Western Pacific Regional Fishery Management Council; **(L)** Pritchard, P. C. H. 1979. Marine turtles of Papua New Guinea. Unedited field notes. Fisheries Archive Paper No. P87. Papua New Guinea Wildlife Division.
Data Providers: Barry Krueger, Irene Kinan Kelly, Kimberly Maison, Nicolas Pilcher, Peter Dutton, and Vagi Rei

PITCAIRN ISLANDS, U.K. OVERSEAS TERRITORY

Citations: (A) Brooke, M. de L. 1995. Seasonality and numbers of green turtles (*Chelonia mydas*)

nesting on the Pitcairn Islands. *Biological Journal of the Linnean Society* 56 (1–2): 325–327.
Data Providers: Irene Kinan Kelly and Kimberly Maison

SAMOA

Citations: (A) Momoemausu, M., J. Ward, M. Iakopo, P. Ifopo, and F. Sio. 2006. *Report on the Hawksbill Turtle Nesting Survey 2005–2006.* Unpublished report. Division of Environment and Conservation, Ministry of Natural Resources and Environment; **(B)** Ward, J., and I. Asotasi. 2008. *An Assessment of the Current Status of the Hawksbill Turtles* (Eretmochelys imbricata) *on the Aleipata Islands, 2007–2008.* Unpublished report. Division of Environment and Conservation, Ministry of Natural Resources and Environment.
Data Providers: Juney Ward and Malama Momoemausu

SOLOMON ISLANDS

Citations: (A) Dutton, P. H., C. Hitipeuw, M. Zein, G. Petro et al. 2007. Status and genetic structure of nesting populations of leatherback turtles (*Dermochelys coriacea*) in the western Pacific. *Chelonian Conservation and Biology* 6 (1): 47–53; **(B)** Kinan, I. (ed.). 2005. *Proceedings of the Second Western Pacific Sea Turtle Cooperative Research and Management Workshop. Volume I: West Pacific Leatherback and Southwest Pacific Hawksbill Sea Turtles*. Western Pacific Regional Fishery Management Council; **(C)** Ramohia, P., C. Siota, D. Motui et al. 2007. *Hawksbill and Green Turtle Nesting Activities on Kerehikapa Island in the Arnavon Community Managed Conservation Area*. Unpublished manuscript. The Nature Conservancy, Solomon Islands Field Office; **(D)** Siota, C., and P. Ramohia. 2007. *Peak Hawksbill Nesting Activities in the Arnavon Community Marine Conservation Area.* Unpublished manuscript. The Nature Conservancy, Solomon Islands Field Office; **(E)** Vaughan, P. 1981. *Marine Turtles: A Review of Their Status and Management in the Solomon Islands.* Technical Report. Fisheries Division, Ministry of Natural Resources; **(F)** Ramohia, P. C., and J. Pita. 1996. *Arnavon Islands Survey.* Report to the South Pacific Regional Environment Programme on the Regional Marine Turtle Conservation Programme in the Solomon Islands. Fisheries Division, Ministry of Agriculture and Fisheries; **(G)** Waldie, P., J. Pita, S. Vuto, and R. Hamilton. 2022. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XVIII (2023).
Data Providers: Catherine Siota, Irene Kinan Kelly, Kimberly Maison, Peter Ramohia, and Peter Waldie

TOKELAU

Citations: (A) Balazs, G. H. 1983. Sea turtles and their traditional usage in Tokelau. Atoll Research Bulletin 279. Smithsonian Institute.
Data Providers: Irene Kinan Kelly and Kimberly Maison

TONGA

Citations: (A) Bell, L. A. J., L. Matoto, and 'U. Fa'aniunu. 2009. *Project Report: Marine Turtle Monitoring Programme in Tonga.* Marine Turtle Conservation Act Project report; **(B)** Havea, S., and K. T. MacKay. 2009. Marine turtle hunting in the Ha'apai Group, Tonga. *Marine Turtle Newsletter* 123: 15–17.
Data Providers: Irene Kinan Kelly and Kimberly Maison

TUVALU

Citations: (A) Alefaio, S., T. Alefaio, and A. Resture. 2006. *Turtle Monitoring on Funafuti, Tuvalu, 4–14 December 2006.* Report of survey administered by the Institute of Marine Resources, University of the South Pacific.
Data Providers: Irene Kinan Kelly and Kimberly Maison

UNITED STATES (HAWAII, PALMYRA ATOLL, AND JARVIS ISLAND)

Citations: (A) Balazs, G. H. 1976. Green turtle migrations in the Hawaiian archipelago. *Biological Conservation* 9 (2): 125–140; **(B)** Niethammer, K. R., G. H. Balazs, J. S. Hatfield, G. L. Nakai, and J. L. Megyesi. 1997. Reproductive biology of the green turtle (*Chelonia mydas*) at Tern Island, French Frigate Shoals, Hawai'i. *Pacific Science* 51 (1): 36–47; **(C)** Balazs, G. H., and M. Chaloupka. 2004. Thirty-year recovery trend in the once-depleted Hawaiian green sea turtle stock. *Biological Conservation* 117 (5): 491–498; **(D)** Chaloupka, M., T. M. Work, G. H. Balazs, S. K. K. Murakawa, and R. Morris. 2008. Cause-specific temporal and spatial trends in green sea turtle strandings in the Hawaiian archipelago (1982–2003). *Marine Biology* 154 (5): 887–898; **(E)** Gaos, A. R., L. Kurpita, H. J. Bernard et al. 2021. Hawksbill nesting in Hawai'i: Thirty-year dataset reveals recent positive trend for a small yet vital population. *Frontiers in Marine Science* 8: 770424; **(F)** National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998. *Recovery Plan for U.S. Pacific Populations of the Green Turtle*. National Marine Fisheries Service; **(G)** Pacific Whale Foundation. 2007. *Sea Turtles: A Hawai'i Wildlife Guide*. Accessed 2012; **(H)** Parker, D., G. H. Balazs, M. Rice et al. 2015. *Map Guide to Hawaiian Marine Turtle Nesting and Basking*. www.georgehbalazs.com; **(I)** Seminoff, J. A., C. D. Allen, G. H. Balazs et al. 2015. *Status Review of the Green Turtle* (Chelonia mydas) *Under the U.S. Endangered Species Act.* NOAA Technical Memorandum NOAA-NMFS-SWFSC-539. NOAA and National Marine Fisheries Service; **(J)** Staman, M., A. Glinsky, J.-W. Staman, S. Ishimaru, and S. Martin. 2025. Green turtle nesting. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
Data Providers: Alexander Gaos, Andrew Glinsky, George H. Balazs, Irene Kinan Kelly, Jan-Willem Staman, Kimberly Maison, Marylou Staman, Shelbie Ishimaru, and Summer Martin

VANUATU

Citations: (A) Fletcher, M. 2008. Personal communication. SWOT database online 2010; **(B)** Hickey, F. 2022. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XVIII (2023); **(C)** Hickey, F., and F. David. 2022. Won Smol Bag turtle monitoring. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XVIII (2023); **(D)** MacKay, K. 2022. Won Smol Bag turtle monitoring. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XVIII (2023); **(E)** Petro, G., F. Hickey, and K. MacKay. 2005. Leatherback turtles in Vanuatu. In I. Kinan (ed.), *Proceedings of the Second Western Pacific Sea Turtle Cooperative Research and Management Workshop. Volume I: West Pacific Leatherback and Southwest Pacific Hawksbill Sea Turtles*, pp. 73–77. Western Pacific Regional Fishery Management Council; **(F)** Petro, G., F. Hickey, and K. MacKay. 2007. Leatherback turtles in Vanuatu. *Chelonian Conservation and Biology* 6 (1): 135–137; **(G)** Wan Smolbag Theatre. 2008. Personal communication.
Data Providers: Donald Aromalo, Francis Hickey, George Petro, Kenneth MacKay, Michelle Fletcher, and Wan Smolbag Theatre

Telemetry Data Citations

The following data records refer to satellite telemetry datasets from tags that were deployed on sea turtles in the Pacific Islands and were combined to create the maps on p. 27. The data are organized by country of deployment. For information on data processing and filtering, see the note on the map on p. 27. These data were generously contributed to SWOT by the people and partners listed subsequently. Records that have a SWOT ID can be viewed in detail in the SWOT online database and mapping application at http://seamap.env.duke.edu/swot, which contains additional information about the projects and their methodologies.

To save space, we have used the following abbreviations in the data source fields: **(1)** "STAT" refers to Coyne, M. S., and B. J. Godley. 2005. Satellite Tracking and Analysis Tool (STAT): An integrated system for archiving, analyzing, and mapping animal tracking data. *Marine Ecology Progress Series* 301: 1–7. **(2)** "SWOT Online Database" refers to Kot, C. Y., E. Fujioka, A. DiMatteo et al. 2023. The State of the World's Sea Turtles Online Database. Data provided by the SWOT Team and hosted on OBIS-SEAMAP. Oceanic Society and Marine Geospatial Ecology Lab, Duke University. https://seamap.env.duke.edu/swot. **(3)** "OBIS-SEAMAP" refers to Halpin, P. N., A. J. Read, E. Fujioka et al. 2009. OBIS-SEAMAP: The world data center for marine mammal, sea bird, and sea turtle distributions. *Oceanography* 22 (2): 104–115. When listed, these sources indicate that the dataset was contributed online through STAT, SWOT, or OBIS-SEAMAP.

FIJI

DATA RECORD 1

Project Title: Hawksbills Tracked in Fiji
Metadata: 2 *Eretmochelys imbricata*
Data Source: Hawksbills tracked in Fiji. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
SWOT Contacts: Aisake Batibasaga, Denise Parker, George H. Balazs, Lui Bell, National Oceanic and Atmospheric Administration (NOAA), World Wide Fund for Nature (WWF), National Trust of Fiji, University of the South Pacific, and Mamanuca Environment Society

FRENCH POLYNESIA

DATA RECORD 2

Project Title: Hawksbills Tracked in French Polynesia
Metadata: 3 *Eretmochelys imbricata*
Data Source: Gaspar, C., D. M. Parker, and G. H. Balazs. 2012. Hawksbills tracked in French Polynesia. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
SWOT Contacts: Te Mana o Te Moana, Cecil Gaspar, Department of Environment, NOAA, Denise Parker, and George H. Balazs

MARSHALL ISLANDS

DATA RECORD 3

Project Title: Green Turtles Tracked from Marshall Islands
Metadata: 5 *Chelonia mydas*
Data Source: Parker, D. M., G. H. Balazs, K. Frutchey, E. Kabua, E., Langidrik, and K. Boktok. 2015. Conservation considerations revealed by the movements of post-nesting green turtles from the Republic of the Marshall Islands. *Micronesica* 2015-03: 1–9.
SWOT Contacts: Denise Parker and George H. Balazs

DATA RECORD 4 | SWOT ID: 341

Project Title: USAKA (U.S. Army Kwajalein Atoll) Turtle Release Program
Metadata: 1 *Eretmochelys imbricata*
Data Sources: (A) Sims, C. 2024. USAKA turtle release program. Dataset published in OBIS-SEAMAP and originated from Satellite Tracking and Analysis Tool (STAT; www.seaturtle.org/tracking/index.shtml?project_id=137); **(B)** OBIS-SEAMAP. **(C)** STAT.
SWOT Contacts: Cathy Madore and Ken Sims

MICRONESIA, FEDERATED STATES OF

DATA RECORD 5

Project Title: Migrations and Conservation Implications of Post-nesting Green Turtles from Gielop Island, Ulithi Atoll, Federated States of Micronesia
Metadata: 13 postnesting *Chelonia mydas*
Data Source: Kolinski, S. P., J. Cruce, D. M. Parker, G. H. Balazs, and R. Clarke. 2014. Migrations and conservation implications of post-nesting green turtles from Gielop Island, Ulithi Atoll, Federated States of Micronesia. *Micronesica* 2014-04: 1–9.
SWOT Contacts: Steven Kolinski and Denise Parker

NEW CALEDONIA

DATA RECORD 6

Project Title: New Caledonia Marine Turtle Argos Tracking Project
Metadata: 47 *Chelonia mydas*, 33 *Caretta caretta*
Data Source: M. Oremus. 2023. *Turtles Without Borders: New Caledonia Marine Turtle Argos Tracking Project (SAT-NC)*. WWF France.
SWOT Contacts: Marc Oremus and Olivier Chateau

SAMOA

DATA RECORD 7

Project Title: Hawksbills Tracked in Samoa
Metadata: 1 *Eretmochelys imbricata*
Data Source: Bell, L., D. M. Parker, and G. H. Balazs. 2010. Hawksbills tracked in Samoa. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
SWOT Contacts: Lui Bell, SPREP, Ministry of Natural Resources, NOAA, Denise Parker, and George H. Balazs

DATA RECORD 8

Project Title: Green Turtles Tracked from Rose Atoll
Metadata: 8 *Chelonia mydas*
Data Source: Craig, P., D. M. Parker, R. Brainard, M. R. Rice, and G. H. Balazs. 2004. Migrations of green turtles in the central South Pacific. *Biological Conservation* 116 (3): 433–438.
SWOT Contacts: Denise Parker and George H. Balazs

UNITED STATES OF AMERICA (HAWAII)

DATA RECORD 9

Project Title: National Marine Fisheries Service (NMFS) Turtle Tracking
Metadata: 1 *Caretta caretta*, 6 *Lepidochelys olivacea*
Data Source: (A) Parker, D. M., G. H. Balazs, and J. Polovina. 2015. NMFS turtle tracking. Dataset published in OBIS-SEAMAP; **(B)** OBIS-SEAMAP.
SWOT Contacts: Denise Parker and NOAA Pacific Islands Fisheries Science Center

DATA RECORD 10

Project Title: Hawksbills Tracked in Hawaii
Metadata: 11 *Eretmochelys imbricata*
Data Sources: (A) Parker, D. M., G. H. Balazs, C. S. King, L. Katahira, and W. Gilmartin. (2009). Short-range movements of hawksbill turtles (*Eretmochelys imbricata*) from nesting to foraging areas within the Hawaiian Islands. *Pacific Science* 63 (3): 371–382; **(B)** Parker, D. M., C. S. King, M. R. Rice, and G. H. Balazs. 2014. First use of a GPS satellite tag to track a post-nesting hawksbill (*Eretmochelys imbricata*) in the Hawaiian Islands with an indication of possible mortality. *Marine Turtle Newsletter* 142: 10–13.
SWOT Contact: Denise Parker

DATA RECORD 11

Project Title: Post-nesting Green Turtles Tracked from Hawaii
Metadata: 21 *Chelonia mydas*
Data Source: Balazs, G. H., D. M. Parker, and M. R. Rice. 2017. Ocean pathways and residential foraging locations for satellite tracked green turtles breeding at French Frigate Shoals in the Hawaiian Islands. *Micronesica* 2017-04: 1–19.
SWOT Contacts: Denise Parker and George H. Balazs

UNITED STATES OF AMERICA (NORTHERN MARIANA ISLANDS)

DATA RECORD 12 | SWOT ID: 974

Project Title: CNMI Sea Turtle Program Satellite Tracked Green Turtles 2011
Metadata: 3 postnesting *Chelonia mydas*
Data Sources: (A) Summers, T. 2013. CNMI Sea Turtle Program satellite tracked green turtles 2011. Dataset published in OBIS-SEAMAP; **(B)** OBIS-SEAMAP.
SWOT Contacts: Tammy Summers, NOAA Pacific Islands Fisheries Science Center, and Commonwealth of the Northern Mariana Islands Department of Lands and Natural Resources, Division of Fish and Wildlife

VANUATU

DATA RECORD 13

Project Title: Hawksbills Tracked in Vanuatu
Metadata: 1 *Eretmochelys imbricata*
Data Source: Parker, D. M, and G. H. Balazs. 2008. Hawksbills tracked in Vanuatu. Personal communication. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
SWOT Contacts: Secretariat of the Pacific, WWF, Wan Smolbag Theatre, NOAA, Denise Parker, and George H. Balazs

MULTINATIONAL

DATA RECORD 14

Project Title: Large-Scale Movements and High-Use Areas of Western Pacific Leatherback Turtles, *Dermochelys coriacea*
Metadata: 89 adult and subadult *Dermochelys coriacea*
Data Source: Benson, S. R., T. Eguchi, D. G. Foley et al. 2011. Large-scale movements and high-use areas of western Pacific leatherback turtles, *Dermochelys coriacea*. *Ecosphere* 2 (7): 1–18.
SWOT Contact: Scott Benson

DATA RECORD 15

Project Title: Migrations of Green Turtles (*Chelonia mydas*) between Nesting and Foraging Grounds Across the Coral Sea
Metadata: 7 *Chelonia mydas*
Data Source: Read, T. C., L. Wantiez, J. M. Werry, R. Farman, G. Petro, and C. J. Limpus. 2014. Migrations of green turtles (*Chelonia mydas*) between nesting and foraging grounds across the Coral Sea. *PLOS One* 9 (6): e100083.
SWOT Contact: Tyffen Read

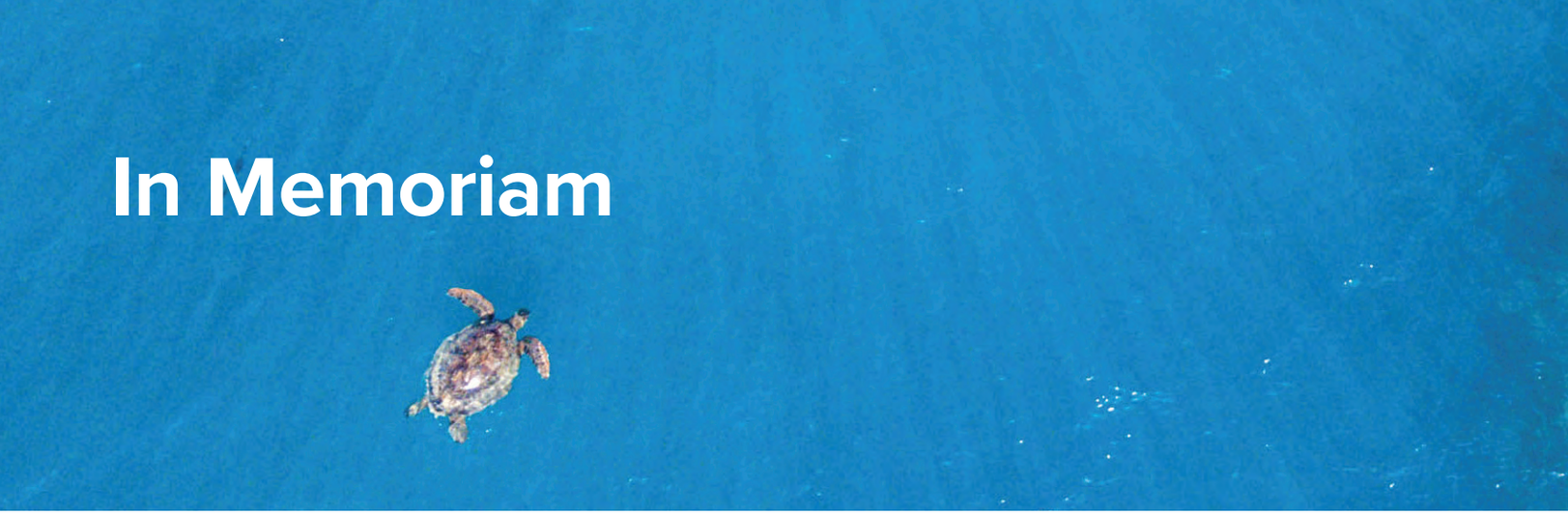
DATA RECORD 16

Project Title: Tracking Vonu Home to Fiji
Metadata: 6 *Caretta caretta*, 2 *Eretmochelys imbricata*, 8 *Chelonia mydas*
Data Source: Balazs, G. H. 2017. Tracking vonu back home to Fiji. Presented to the International Union for Conservation of Nature–Species Survival Commission, Marine Turtle Specialist Group, Oceania Region.
SWOT Contacts: Denise Parker and George H. Balazs

DATA RECORD 17

Project Title: NOAA Pacific Islands Fisheries Science Center Marine Turtle Tracking Program
Metadata: 212 *Chelonia mydas*, 29 *Eretmochelys imbricata*, 2 *Lepidochely olivacea*
Data Source: NOAA Pacific Islands Fisheries Science Center Turtle Tracking Program. 2026. In *SWOT Report—The State of the World's Sea Turtles*, vol. XXI (2026).
SWOT Contacts: Alexander Gaos, Summer Martin, and NOAA Pacific Islands Fisheries Science Center

In Memoriam



Beloved members of our global community have passed away since the publication of *SWOT Report*, vol. XX, including those memorialized here and many more whose legacies live on through their communities and loved ones. The SWOT team is grateful to all the sea turtle researchers, conservationists, and enthusiasts who have committed a significant portion of their lives, energies, and passions to ensure that future generations can enjoy abundant sea turtle populations in healthy oceans globally.

Jean Beasley (1935–2025)

Jean was the leader and driving force at the Karen Beasley Sea Turtle Rescue and Rehabilitation Center on Topsail Island, North Carolina, since its founding in the 1990s. Started by Jean and her daughter, Karen, as the Topsail Turtle Project, the center adopted its new name after Karen's untimely death. Jean believed that every turtle is special, and the "Turtle Hospital" grew into a thriving institution that rescued, rehabilitated, and released thousands of turtles over the years. It also educated countless visitors and local community volunteers. The center is now a regional hub for receiving sick, cold-stunned, and injured sea turtles from the Atlantic coast of the United States. A colleague who worked with Jean at the center said, "She walked the walk. She didn't just say we should save sea turtles. She saved sea turtles. She was a true leader."

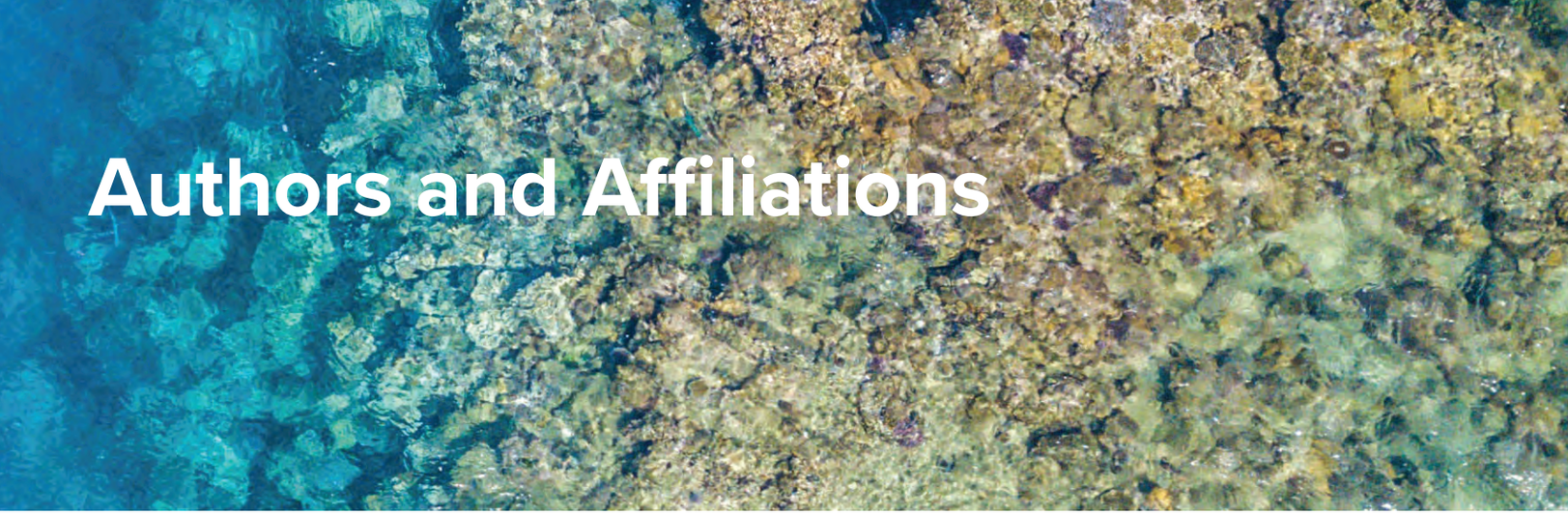
Carlos Enrique "Kike" Chacón Sanabria (1954–2025)

Kike's memory lives on at Marino Las Baulas National Park in Costa Rica. Long before research stations and global collaborations arose to protect leatherback turtles in Costa Rica, biologists from around the world found refuge at "Kike's Place." What began in the 1990s as a seasonal cantina and campsite run by Kike and his wife, Yani, became their permanent home and "Grand Central Station" for sea turtle conservationists. Kike carried the struggles of field science on his shoulders, from feeding teams of volunteers to lifting spirits and ensuring that every challenge or question was met with a practical answer. Even through protracted illness, humor never left him, and his famous words "no problems, only solutions" became a credo for conservation partners across generations. He was father, friend, collaborator, and quiet architect of progress at the world-renowned national park named for the leatherback turtle.

Víctor de la Toba (1959–2025)

For more than 20 years, Víctor de la Toba safeguarded the nature, ecosystems, and sea turtles of his community located on the windswept Cabo San Lázaro on Mexico's Pacific coast. One of many partners in the Grupo Tortuguero de las Californias, his work and commitment provided important information to better understand sea turtles' ecology in a remote but extremely important area. Known for his great heart and unwavering dedication, Víctor mentored countless students, always teaching them that conservation was equal parts science and perseverance. At its 26th annual meeting, Grupo Tortuguero declared Víctor the first-ever recipient of its highest honor, the Wallace J. Nichols Award, in recognition of his lifetime of dedication. Family, students, and teammates will forever remember Víctor's laughter and his broad smile, his commitment to sea turtles, and his steadfast belief in community-driven solutions.

Authors and Affiliations



© Tom Vierus/Ocean Image Bank

DANNY AKAKA, Mauna Lani Auberge Living Culture Team, Hawai'i, U.S.A.

CAMRYN D. ALLEN, IUCN-SSC Marine Turtle Specialist Group, Hawai'i, U.S.A.

YOLARNIE AMEPOU, Piku Biodiversity Network, Papua New Guinea

RANDALL ARAUZ, Rescue Center for Endangered Marine Species (CREMA), Guanacaste, Costa Rica

DANIEL ARAUZ NARANJO, Rescue Center for Endangered Marine Species (CREMA), Guanacaste, Costa Rica

HELEN BAILEY, Blue Wave Consulting, LLC, Maryland, U.S.A.

ANNA BARBANTI, Independent Consultant, Queensland, Australia

SCOTT R. BENSON, NOAA Southwest Fisheries Science Center, California, U.S.A. (Retired)

STEVEN BOGRAD, Department of Ocean Sciences, University of California, Santa Cruz, California, U.S.A.

JÉRÔME BOURJEA, UMR MARBEC, IFREMER, Université de Montpellier, CNRS, IRD, Sète, France

ANNETTE C. BRODERICK, Centre for Ecology and Conservation, University of Exeter, U.K.

CRISTIAN "CJ" CAYANAN, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Guam and Hawai'i, U.S.A.

MILANI CHALOUPKA, Ecological Modelling Services Pty Ltd and Marine Spatial Ecology Lab, School of the Environment, University of Queensland, Brisbane, Queensland, Australia

AUDREY CHEVALIER, Independent doctor of veterinary medicine (DVM), French Guiana, France

DAMIEN CHEVALLIER, Centre National de la Recherche Scientifique (CNRS), and Station de Recherche Marine de Martinique, Martinique, France

JENNIFER A. CRUCE HOREG, University of the Sunshine Coast, Guam

ERIC CRUZ, NOAA Fisheries, Pacific Islands Fisheries Science Center, Guam

MAYEUL DALLEAU, Biotope, International Division, Montpellier, France

CAREY DEMAPAN, Department of Lands and Natural Resources, Division of Fish and Wildlife, Commonwealth of the Northern Mariana Islands

ANDREAS DEMETROPOULOS, Cyprus Wildlife Society, Nicosia, Cyprus

SIMON DEMETROPOULOS, Mediterranean Turtle Research and Conservation Society (MedTRACS), Peyia, Paphos, Cyprus

JOHN DOUGLAS, SJSU/Moss Landing Marine Labs, California, U.S.A.

MATTHEW R. DUNN, Earth Sciences New Zealand, New Zealand

PETER H. DUTTON, NOAA Southwest Fisheries Science Center, California, U.S.A.

TOMOHARU EGUCHI, NOAA Southwest Fisheries Science Center, California, U.S.A.

ADDIE R. Q. FERGUSON, University of Guam Sea Grant, Guam

BRITTANY FINUCCI, Earth Sciences New Zealand, Wellington, New Zealand

KAYLA FISHER, Upwell, California, U.S.A.

KARIN FORNEY, NOAA Southwest Fisheries Science Center, California, U.S.A. (Retired)

SIERRA FULLMER, Upwell, California, U.S.A.

PABLO A. FUENZALIDA-MIRALLES, University of the Sunshine Coast, Australia

ALEXANDER R. GAOS, IUCN-SSC Marine Turtle Specialist Group and International Sea Turtle Society, Hawai'i, U.S.A.

ANDREW D. GENTRY, Department of Education, Learning Campus at Gulf State Park, Alabama, U.S.A.

ALEXANDRE GIRARD, PatriNat (OFB-MNHN-OFB-IRD) Muséum national d'Histoire naturelle, Paris, France, and Réseau des Acteurs de la Sauvegarde des Tortues Marines en Afrique centrale (RASTOMA), Yaoundé, Cameroon

DAN A. GODOY, Karearea Consultants, New Zealand

SONIA GUTIÉRREZ PAREJO, Rescue Center for Endangered Marine Species (CREMA), Guanacaste, Costa Rica

RICHARD HAMILTON, The Nature Conservancy, Queensland, Australia

JESSY HAPDEI, Jessy's Tag Services, Guam

HEATHER S. HARRIS, Upwell, California, U.S.A.

ELLIOTT L. HAZEN, University of California Santa Cruz, Department of Ecology and Evolutionary Biology, California, U.S.A.

SHAYA HONARVAR, University of Hawai'i at Mānoa, Pacific Cooperative Studies Unit, Hawai'i, U.S.A.

BRENDAN HURLEY, Department of Geography and Environment, The George Washington University, Washington, DC, U.S.A.

EUGENE JOSEPH, Conservation Society of Pohnpei, Pohnpei, Federated States of Micronesia

IRENE K. KELLY, IUCN-SSC Marine Turtle Specialist Group, Hawai'i, U.S.A.

CHERYL S. KING, Hawaiian Hawksbill Conservation, Hawai'i, U.S.A.

ERIN L. LACASELLA, NOAA Southwest Fisheries Science Center, California U.S.A.

PI'I LAEHA, Mauna Lani Auberge Living Culture Team, Hawai'i, U.S.A.

NOAM LEADER, Science Division, Israel Nature & Parks Authority, Israel

GARRETT LEMONS, NOAA Southwest Fisheries Science Center, California, U.S.A.

YANIV LEVY, Israel Sea Turtle Rescue Center, Israel Nature and Parks Authority, and Leon H. Charney School of Marine Sciences, University of Haifa, Israel

DONG LIANG, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Maryland, U.S.A.

ALPHINA LIUSAMOA, American Samoa Department of Marine and Wildlife Resources – Wildlife Division, American Samoa

KELERA MACEDRU, Independent consultant, Udu, Fiji

SAMUEL MALAGON, Navfeas, New York, U.S.A.

DUANE MARCH, National Parks and Wildlife Service, NSW, Australia

ANGELA MASTROGIACOMO, Mediterranean Turtle Research and Conservation Society (MedTRACS), Peyia, Paphos, Cyprus

ANDREW S. MAURER, NOAA Southwest Fisheries Science Center, California, U.S.A.

ALISON J. MEETH, University of Hawai'i at Mānoa, School of Life Sciences, Hawai'i, U.S.A.

ALEXI B. MELTEL, University of Hawai'i at Mānoa, Kewalo Marine Laboratory, Hawai'i, U.S.A.

KAREN L. MIDDLEMISS, Department of Conservation, New Zealand

JOSEFA B. MUÑOZ, University of Hawai'i at Mānoa, Cooperative Institute for Marine and Atmospheric Research, and IUCN-SSC Marine Turtle Specialist Group, Hawai'i, U.S.A.

ISABEL NARANJO, Rescue Center for Endangered Marine Species (CREMA), Guanacaste, Costa Rica

ANNA ORTEGA, Cooperative Institute for Marine and Atmospheric Research, Hawai'i, U.S.A.

KOSTAS PAPAFITSOROS, Queen Mary University of London, and ARCHELON, the Sea Turtle Protection Society of Greece

ANA R. PATRÍCIO, Centre for Ecology, Evolution and Environmental Changes, CE3C, Portugal

NINA KAREN PAURUWAHINE RAHARUHI, Hapu Cultural & Environmental Monitor, Ngāti Kahu/Ngāti Whātua, Aotearoa, New Zealand

MARIA PETELO-APULO, University of Hawai'i at Mānoa, Hawai'i, U.S.A.

ANDREA D. PHILLOTT, FLAME University, Pune, India; IUCN-SSC Marine Turtle Specialist Group, India

NICOLAS J. PILCHER, Marine Research Foundation, Sabah, Malaysia

SUSANNA PIOVANO, Ika Bula Consultants, Suva, Fiji

SHRITIKA S. PRAKASH, Ika Bula Consultants, Suva, Fiji

ENJOY RAIN, Department of Marine Resources, Chuuk, Federated States of Micronesia

TYFFEN C. READ, Department of Agriculture and Primary Industries, South Province, Noumea, New Caledonia

KRISTIN REED, Upwell, California, U.S.A.

ALAN F. REES, IUCN-SSC Marine Turtle Specialist Group, U.K.

VAGI REI, Sustainable Marine Environment Division, Papua New Guinea

RICHARD REINA, Monash University, Victoria, Australia

JUAN M. RGUEZ-BARON, JUSTSEA Foundation, Colombia, and Department of Biology and Marine Biology, University of North Carolina Wilmington, U.S.A.

NINIVE RODRÍGUEZ-ESPINOZA, Rescue Center for Endangered Marine Species (CREMA), Guanacaste, Costa Rica, and Grupo de Trabajo en Tortugas Marinas del Golfo de Venezuela (GTTM-GV), Maracaibo, Venezuela

DANIELA ROJAS-CAÑIZALES, Grupo de Trabajo en Tortugas Marinas del Golfo de Venezuela (GTTM-GV), Maracaibo, Venezuela, and University of Florida, Florida, U.S.A.

REBECCA RUGAVEUGA GIMA, Project Sepik, Papua New Guinea

KAYLA SARGENT, Upwell, California, U.S.A.

JEFFREY A. SEMINOFF, NOAA Southwest Fisheries Science Center, California, U.S.A.

ERIN E. SENEY, University of Central Florida, Orlando, Florida, U.S.A.

GEORGE SHILLINGER, Upwell, California, U.S.A.

TRENTON SKILLING, Kosrae Conservation and Safety Organization, Kosrae, Federated States of Micronesia

ETHAN SOUZA, Mauna Lani Auberge Living Culture Team, Hawai'i, U.S.A.

MARYLOU K. STAMAN, IUCN-SSC Marine Turtle Specialist Group, Hawai'i, U.S.A.

OĞUZ TÜRKÖZAN, Aydın Adnan Menderes University, Aydın, Turkiye

ROLDÁN A. VALVERDE, Sea Turtle Conservancy, Florida, U.S.A., and The University of Texas Rio Grande Valley, Texas, U.S.A.

PETER WALDIE, The Nature Conservancy, Solomon Islands

BRYAN P. WALLACE, Ecolibrium, Inc., and University of Colorado, Boulder, Colorado, U.S.A.

HEATHER WELCH, Institute of Marine Science, University of California, Santa Cruz, California, U.S.A.

SEAN WILLIAMSON, Nocterra and Monash University, Western Australia, Australia

BRYANT JEFFERY ZEBEDY, Marshall Islands Marine Resources Authority, Majuro, Marshall Islands

Acknowledgments

We are grateful to the following donors for their support of the SWOT Program in 2025–2026: Betlach Family Foundation, The Frances and Benjamin Benenson Foundation, Bob and Diana Friedman, Goldring Family Foundation, Marisa I. Hormel Trust, Morna Mellor, Ken and Kris Moore, Steve and Kathleen Moore, Seiko Prospex, Joseph S. and Diane H. Steinberg 1992 Trust, as well as the Association of Zoos & Aquariums' Sea Turtle SAFE (Saving Animals From Extinction) Program and its partners, including Adventure Aquarium, Aquarium of the Pacific, Audubon Nature Institute, Dallas Zoo, Gladys Porter Zoo, Kansas City Zoo & Aquarium, Mystic Aquarium, National Aquarium, New England Aquarium, North Carolina Aquarium on Roanoke Island, OdySea Aquarium, Pittsburgh Zoo & Aquarium, Point Defiance Zoo & Aquarium, Remote Ecologist, Inc., SEA LIFE Arizona Aquarium, South Carolina Aquarium, Texas State Aquarium, The Florida Aquarium, The Maritime Aquarium at Norwalk, Topeka Zoo & Conservation Center, and Virginia Aquarium & Marine Science Center.

SWOT report

The State of the World's Sea Turtles

State of the World's Sea Turtles
Oceanic Society
P.O. Box 844
Ross, CA 94957
U.S.A.

SeaTurtleStatus.org