OVER THREE DECADES OF SAFEGUARDING OCEAN LIFE: THE JOURNEY FROM CÔN ĐẢO NESTING BEACHES TO THE IOSEA NETWORK OF SITES (1993 – 2025)

Author: Le Hong Son
Department of Conservation and International Cooperation, Con Dao National Park Management Board.
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PROLOGUE: OVER 30 YEARS OF A JOURNEY NURTURING LIFE

Con Dao National Park—a frontline archipelago situated in the southeastern waters of Vietnam—is the very first locality in Vietnam to initiate and persistently implement a systematic, continuous marine turtle conservation program from 1993 to the present. These pristine waters serve as a sacred haven where the nesting population of Green sea turtles (*Chelonia mydas*) accounts for nearly 90% of the total breeding turtles across Vietnam's territorial waters.



Photo 1: *Green sea turtle (Chelonia mydas) regularly nesting on the sandy beaches of Con Dao National Park. Credit: Con Dao National Park*

Over three decades have passed across 18 white sandy beaches encompassing 24 hectares of nesting habitat. Generations of forest rangers and conservationists at Con Dao National Park have bound their lives to every rhythm of the ocean tide. From the arduous early days marked by severe scarcity to the present day, Con Dao National Park has proudly become the 11th member site of the Network of Sites of Importance for Marine Turtles in the Indian Ocean – South-East Asia Region (IOSEA Marine Turtle Site Network).

These pages are not merely technical logs; they tell a story of unyielding faith, profound ecological awakening, sleepless nights braving oceanic squalls, and a triumphant anthem of nearly three million tiny souls safely embarking on their

journey back to Mother Ocean.

1. MEMORIES OF PAST NESTING BEACHES: COMMENCING FROM ARDUOUS TIMES AND ECOLOGICAL AWAKENING (1987 – 1993)

Looking back at the logs prior to 1987, Con Dao once bore a deeply painful wound. At that time, conservation awareness was rudimentary, and marine turtles were treated merely as commercial commodities for handicraft souvenirs and a source of cheap food. Green turtles and Hawksbills were harvested indiscriminately; shells were carved for curios, and clutches were excavated immediately after being laid for local trade. The heartbreaking climax arrived in 1987, when a local handicraft enterprise procured up to 50 Hawksbills and 70 Green turtles purely to produce handicraft goods.

A historic turning point emerged in mid-1987 following a field mission conducted by the late Professor Vo Quy alongside Ms. Elizabeth Kemf (Senior Conservation Officer and representative of international environmental organizations). The urgent warnings of the scientists regarding the brink of extinction touched the conscience of local authorities and island residents alike. A sequence of foundational policies was promptly enacted: a comprehensive ban on transporting marine turtles and turtle-derived products off the island (August 1987); Inter-Agency Circular No. 01/TTLT affirming that sea turtles are strictly protected under criminal legislation (1988); and Directive No. 02 (1989) decisively halting destructive nearshore fishing. That was the very first sacred "covenant" established between mankind and the ocean.



Photo 2: *Con Dao National Park Forest Ranger force collaborating with relevant law enforcement authorities to intercept and handle marine turtle poaching and illegal trafficking. Credit: Con Dao National Park.*

When the formal conservation program commenced in 1993, the pioneering generation of rangers stepped into this battle empty-handed: lacking technical documentation, severely deficient in equipment, and without formal training. Guided by the principle of "learning while acting", rangers established makeshift outposts on remote islets such as Hon Bay Canh, Hon Tre Lon, Hon Cau, and Hon Tai. These guardians took turns keeping nocturnal vigils, trekking dozens of kilometers in utter darkness and guided only by soft red headlamps to shield each clutch from egg poachers and natural predators.

There were nights of raging squalls far off Hon Bay Canh where blinding rain lashed against their faces, yet rangers persistently patrolled the sand dunes, racing against surging tides threatening to wash nests into the sea. Each freshly laid, warm egg was gently transferred into collection baskets and transported across rugged terrain to safe hatcheries. Salty drops of sweat blended with sea sprays, but radiant smiles broke out knowing that fragile lives had been safeguarded through the storm.

2. WHEN PASSION WAS EMPOWERED BY SCIENCE AND INTERNATIONAL SOLIDARITY

Devotion to nature truly bears fruit when illuminated by rigorous scientific methodology and international solidarity:

- **Partnership with WWF (since 1995):** In 1995, WWF-Vietnam funded the archipelago's first systematic marine turtle conservation project. In 1996, an intensive study tour and training program in the Philippines and Malaysia for 10 Con Dao staff broadened technical horizons, standardizing rescue protocols, clutch relocation procedures, and the establishment of semi-natural incubation hatcheries under strict thermal monitoring.

- Deciphering Epic Oceanic Migrations: Over 7,700 nesting female encounters have received Inconel flipper tags for biological monitoring. Satellite transmitters deployed on legendary nesting turtles such as Bay Canh 1, Bay Canh 2, Con Son 1, An, Hoa, and Trieu delineated breathtaking journeys: Con Dao turtles traversed thousands of nautical miles across international waters to Palawan (Philippines), Sihanoukville (Cambodia), Pahang (Malaysia), Natuna (Indonesia), Phu Quy, and Truong Sa (Spratly Islands) before swimming back to their natal

beaches in Con Dao to lay eggs. This convincingly demonstrates that marine turtles are a shared global heritage that transcends national boundaries.

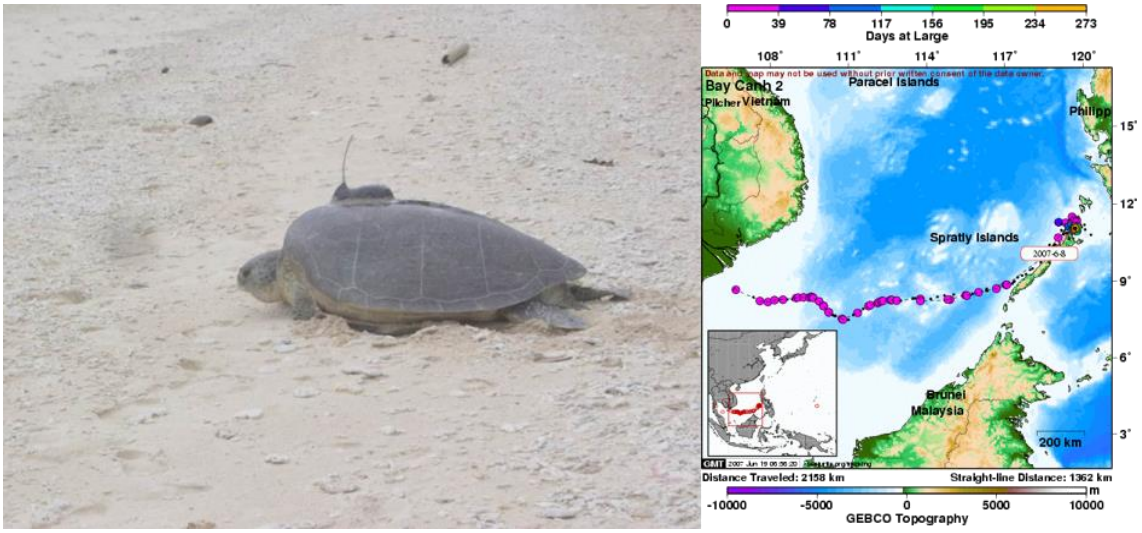

Photo 3: *Satellite transmitter deployed on a nesting female and international satellite tracking migratory route map. Credit: Con Dao National Park/WWF.*

- IOSEA Site Network Milestone (2019): October 22, 2019, marked a proud milestone when Con Dao National Park was officially recognized and accepted as the 11th member of the IOSEA Marine Turtle Site Network—an earned international accolade honoring persistent, multi-decade stewardship.



Photo 4: *Certificate of Acceptance of Con Dao National Park into the IOSEA Marine Turtle Site Network in 2019. Credit: IOSEA / Con Dao National Park*

- Synergy from Communities and the Private Sector:

+ *IUCN Volunteer Program (2016 – 2025):* Attracted 748 volunteer turns from across Vietnam, contributing over 7,480 workdays alongside rangers to rescue 5,671 nests (639,566 eggs) and release 233,407 hatchlings. This impactful model has been renewed for the 2026–2030 period.

+ *Pioneering Public-Private Partnership at Dat Doc:* Collaborated with Six Senses Con Dao to restore nesting grounds directly within the resort beachfront (2018–2025, renewed for 2026–2030), demonstrating harmonious coexistence between eco-tourism and wildlife protection.

+ *Inter-regional Knowledge Sharing and Relocation:* In addition to technical sharing with Nui Chua, Bai Tu Long, and Hon Cau; Con Dao cooperated with Cu Lao Cham Marine Protected Area to relocate 1,900 eggs incubated for 40 days at Bay Canh to hatch successfully in Quang Nam.

3. SWEET FRUITS AFTER 33 YEARS: COMPELLING METRICS AND A RESURGENT POPULATION (1993 – 2025)

Reflecting on the 33-year uninterrupted timeline (1993 – 2025), the recovery of Con Dao's marine turtle population is not merely reflected in dry technical records, but thrives vibrantly upon each crashing wave:

- Remarkable Growth of Nesting Females: The 33-year trend exhibits robust growth. During 1993–2007, an average of 290 nesting females was recorded annually; over 2008–2025, this figure more than doubled to an average of 580 females per year. A historic apex was established in 2025 with 987 nesting females, following stellar nesting seasons in 2022 (914 females), 2016 (818 females), 2020 (786 females), and 2023 (754 females). The cumulative total reached 14,788 nesting female encounters.

- Feats in Egg Rescue: A cumulative total of 43,340 clutches containing 3,759,651 eggs was successfully rescued and relocated to protected hatcheries (with 2025 setting an all-time record of 2,961 clutches and 282,558 eggs). Bai Cat Lon (Hon Bay Canh) remains the largest rookery, hosting over 72% of total nesting activities.

- Nearly 3 Million Ocean Ambassadors Released: Over 33 years, 2,863,932 hatchlings were successfully incubated and released into the sea. The average hatching and release rate reached over 76.18% (maintaining a stable 79.67% during 2008–2025). The year 2025 set an absolute record with 217,266 hatchlings safely entering the ocean.

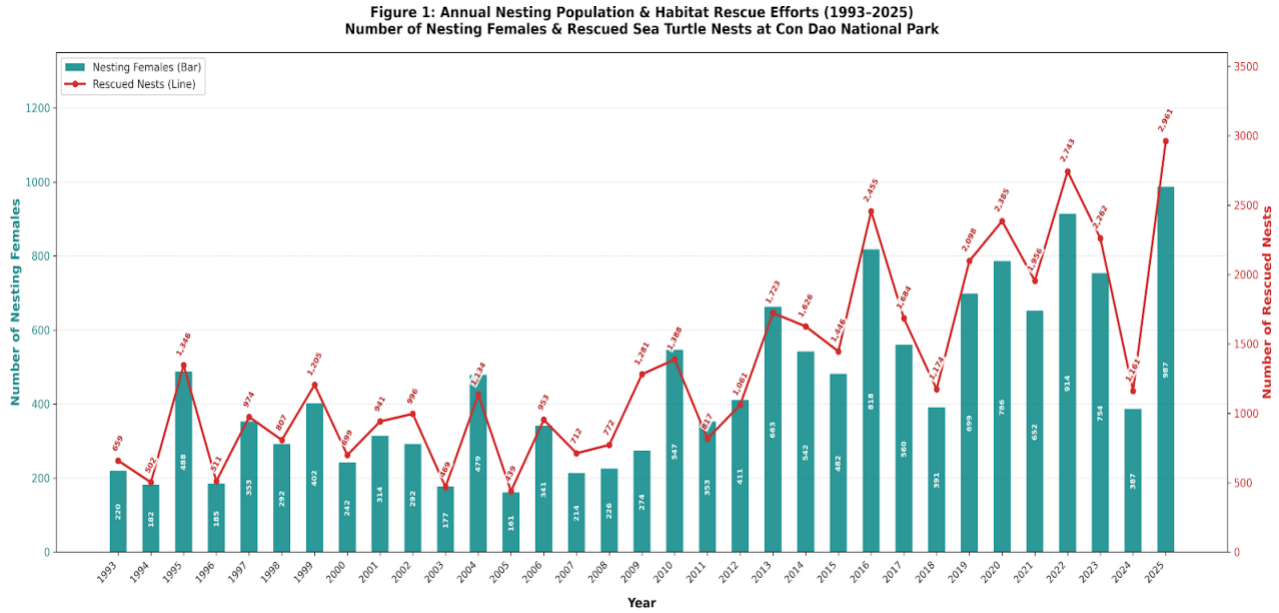

Figure 1: *Annual Nesting Population & Habitat Rescue Efforts (1993–2025) - Number of Nesting Females & Rescued Sea Turtle Nests at Con Dao National Park*

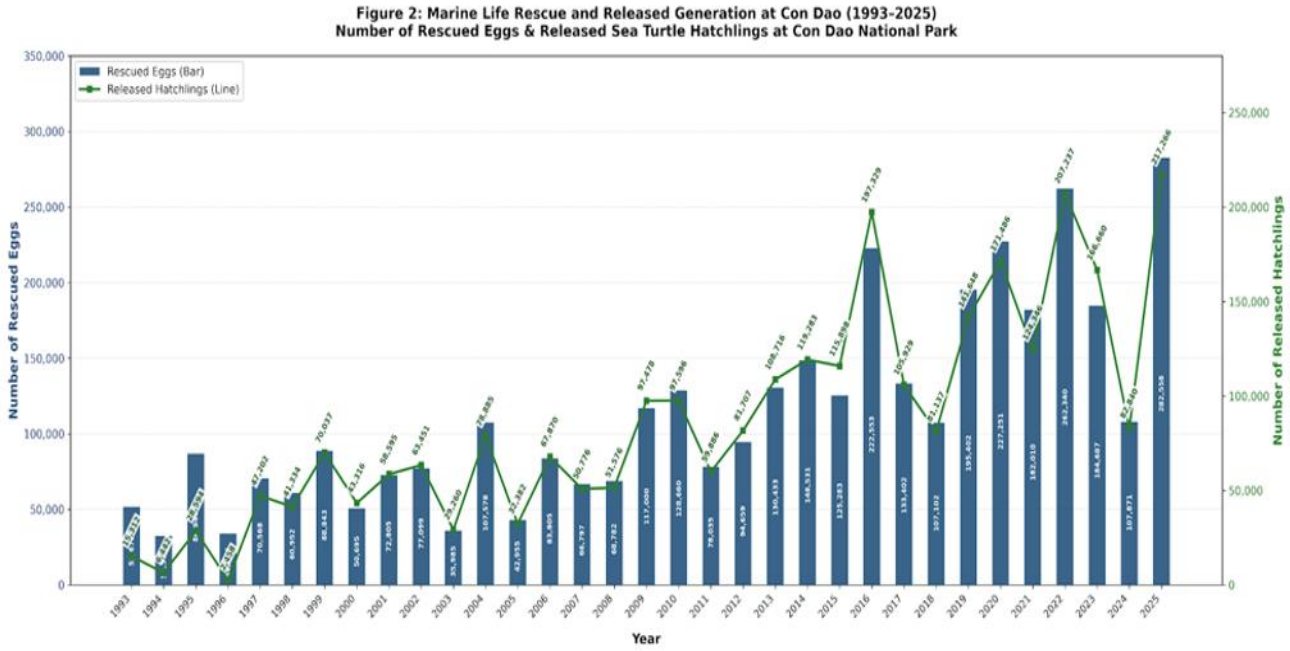

Figure 2: *Marine Life Rescue and Released Generation at Con Dao (1993–2025) - Number of Rescued Eggs & Released Sea Turtle Hatchlings at Con Dao National Park.*

- Key Monitoring Indicators:

Key Monitoring Indicators *(Annual Average)*	***Phase 1993 – 2007** (15 years)*	**Phase 2008 – 2025** *(18 years)*	**Growth Rate** (%)	**Record Year 2025**	**Cumulative Total (1993 – 2025)**
Nesting females recorded	290	580	**+100.0%**	987 individuals	14,788 encounters
Rescued clutches	823	1,722	**+109.2%**	2,961 clutches	43,340 clutches
Rescued eggs	64,206	155,364	**+142.0%**	282,558 eggs	3,759,651 eggs
Hatchlings released into the sea	42,394	123,779	**+192.0%**	217,266 hatchlings	2,863,932 hatchlings
Hatching and release success rate (%)	66.03%	79.67%	**+20.7%**	76.89%	76.18%
Nesting females flipper-tagged with Inconel	Initiated in 1998	Maintained annually	Stable increase	574 individuals	>7,700 individuals

Con Dao National Park proudly retains the National Record: "*The National Park that has incubated and released the largest number of marine turtle hatchlings into the wild in Vietnam.*"

4. SEASIDE DELIBERATIONS: CLIMATE WARMING AND THE SURVIVAL PUZZLE

Behind these brilliant achievements lie pressing concerns facing our ocean guardians against emerging existential challenges:

- The Unhealed Wound of Hawksbills: While the Green turtle population has staged a powerful recovery, the critically endangered Hawksbill (*Eretmochelys imbricata*) has been absent from nesting beaches since 2002. Only occasional foraging juveniles are encountered around coral reefs—a stern reminder that without persistent vigilance, a marine species can vanish from nesting grounds entirely.

- Feminization Threat Driven by Warming Sands: Continuous thermal monitoring indicates that incubation sand temperatures frequently exceed the critical threshold of 30°C. Under climate change scenarios, female hatchling ratios are projected to reach 85–92% by 2050 and risk approaching 100% females by 2100. A population devoid of males faces inevitable biological collapse. Con Dao National Park is currently testing natural bio-shading canopies to moderate incubation temperatures.

- Beach Erosion and Coastal Degradation: Sea level rise combined with intense winter monsoonal waves is driving severe coastal erosion along northwestern nesting beaches such as Dat Tham, Dam Trau Nho, Bai Ban, and Ong Cau, progressively shrinking natural nesting habitats.

- Marine Plastics and Ghost Fishing Gear: Thousands of tons of drifting marine debris and discarded ghost nets offshore continuously pose lethal threats to foraging turtles through accidental entanglement and plastic ingestion.

5. A MESSAGE FOR THE FUTURE AND ASPIRATIONS FOR THE NEXT 25 YEARS

For conservationists at Con Dao National Park, national records and figures in the millions are not the ultimate finish line. The most cherished reward arrives each dawn: watching hundreds of hatchlings scramble out of the deep sand, propelled by tenacious instinct, swiftly braving initial shoreline breakers to plunge into the open sea.

In the wild, by severe biological probability, it is estimated that only approximately 1 in 1,000 hatchlings survives the perilous journey to return to their natal beach as mature nesting females 20 to 30 years later. Yet it is precisely for that miraculous survivor that generations of Con Dao rangers dedicate their lives to this windward outpost.

Over the next 25 years of the IOSEA Marine Turtle MoU (2026 – 2050), Con Dao National Park pledges to:

- Remain a steadfast beacon within the IOSEA Network, ready to share databases and practical conservation experience with countries across the region.

- Champion climate-adaptive technical solutions: regulating hatchery temperatures to maintain balanced hatchling sex ratios and applying nature-based green solutions to defend nesting beaches against erosion.



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Photo 5: *Thousands of hatchlings embarking on their maiden ocean journey across the sands. Credit: Con Dao National Park.*

- Establish a Rescue Center for Marine Turtles, Dugongs (*Dugong dugon*), and marine mammals, while enhancing inter-agency enforcement against marine plastics and ghost fishing gear

Message to Future Generations: "***Marine turtle conservation is never the lonely crusade of a single individual, island, or nation—it is a symphony of perseverance and international solidarity. Cherish faith and unwavering dedication, for every clutch kept safe is a solemn promise to keep the heart of our blue planet beating forever!***"