

Panama – Voluntary National Cetacean Conservation Report 2024

Country: Panamá

National Governmental Authority submitting the Report (full contact information):

1. Legal developments (laws, regulations and other regulatory measures related to cetaceans).

Panama is making progress in updating its national whale watching regulations, which are in the process of implementation. Improving management strategies for stranding's and untangling for the implementation of the network of care and response to standings, efforts are being made to approve the regulations to approve the protocols to proceed in case of standing and entanglement.

2. Information on whale watching operations (scale, target species/populations and relevant management issues).

3. Current Government programs related to cetacean conservation.

There is a scientific research permit database for cetacean surveys.

Megafauna Project by Sea and Coastal Division for Environmental Ministry

The establishment of a Caribbean and Pacific Marine Megafauna Species Monitoring Program will help us generate scientific data that contributes to updating a Database regarding the different species present and that allows establishing protection strategies. Conservation and management of these resources and fulfill the functions of the Directorate of Coasts and Seas.

This survey focuses on conducting a baseline evaluation of the "cetacean" resource, to explore aspects of occurrence and distribution within the limits of the Coiba National Park, RVS Isla Iguana, RVS Pablo Arturo Barrio, Golfo de Chiriquí and Bocas del Toro, This has allowed the collection of data on the diversity of species and the areas where they are found in these waters, since, until now, except for data from Aguilar et. to the. (1997) and Castroviejo & Ibáñez (2001), the biodiversity of the group in these areas is unknown; in addition, this has also helped us identify sites of biological importance for these species in a way that allows recommendation of management strategies.

Activities

Within the project, monitoring of cetacean species in the Panamanian Pacific and Caribbean is carried out. To carry out this, established methodologies are carried out which help to record cetacean sightings.

- Methodology

The monitoring is carried out in a boat, type boat, with an outboard motor, which helps us monitor cetaceans. It sails at a speed between 8 and 10 knots, depending on weather conditions; Monitoring is carried out for a minimum duration of four (4) hours.

- Presence-Absence

A record of the presence of cetaceans is made, taking data on species, geographical position, physical-chemical parameters such as Ph, OD%, salinity, temperature, with the multiparametric probe HANNA 9829, oceanographic conditions such as the condition of the sea will be observed on a scale. Beufort (sea condition, given by wind speed), cloud cover and tide; This entire procedure was repeated every 30 minutes.

- Sighting Log

For each group of cetaceans sighted (a group is considered from 1 individual onwards) the time of encounter, the species, the number of individuals, geographical position, group composition, dominant behavior every 10 minutes and physical-chemical parameters were recorded. The behaviors taken into account were: feeding, movement, rest, socialization, avoidance and diving.

- Fabric samples

In some cases, the possibility of obtaining cetacean biopsies using darts with a modified 0.22 rifle from a distance of approximately 10 m from the research boat is evaluated. The biopsy darts have a hollow polycarbonate body and a small stainless steel tip (5 mm diameter, 9 mm length). The system allows the collection of tissue causing a small wound and a short reaction in the behavior of the individual. In addition to this, the events and individuals from whom the tissue was obtained are recorded and photographed, to allow individual identification.

- Photographic records

The photo-identification of the sighted individuals is carried out, the boat is placed in a stable manner, where the sun does not affect the photography with the reflections in the water. The photo-identification of the dorsal fin of the individuals is recorded and in some possible cases of photography of the caudal fin of the whales sighted.

Results

During the year 2023, six (6) field trips were carried out during the months of March, April, May, June, September and October. With a total of four monitored places: Coiba National Park, Golfo de Montijo, Golfo de Chiriquí National Marine Park and Isla Iguana and Pablo Arturo Barrios Wildlife Refuge.

Of a total of 12 months that passed in this period of time, it has been possible to review the number of monitored days, which indicates that 24 field monitoring outings (days) and 112 hours and 30 minutes have been achieved in the of which 973 individuals have been obtained, with 5 species reported, *Stenella attenuata*, *Tursiops truncatus*, *Megaptera novaeangliae*, *Physeter macrocephalus* and *Steno bredanensis*. The group composition of the cetaceans was composed of adults with 542 individuals, 55.7% juveniles 216 individuals, representing 22.2%, and offspring 89 individuals, corresponding to 9.1%.

For *Stenella attenuata*, 761 individuals were observed, the group composition was composed of Adults (51.6%), Juveniles (25.4%) and offspring (8.8%). For *Tursiops truncatus*, 170 individuals were observed, the group composition was composed of Adults (71.2%), Juveniles (11.2%) and offspring (7.6%). *Stenella attenuata* was the species with the most individuals sighted. *Steno bredanensis* was recorded on one occasion, consisting of 12 individuals, in terms of group composition, adults (58.3%), juveniles (25%) and hatchlings (8.3%). *Physeter macrocephalus* only one (1) adult was recorded.

For the *Megaptera novaeangliae* species, 33.3% of offspring with a mother were recorded in the monitored areas. As for adults, 62.5% and one (1) youth are recorded 4.2%. For this year it is observed that the dominant species was *Stenella attenuata*, followed by *Tursiops truncatus* and finally, *Megaptera novaeangliae*.

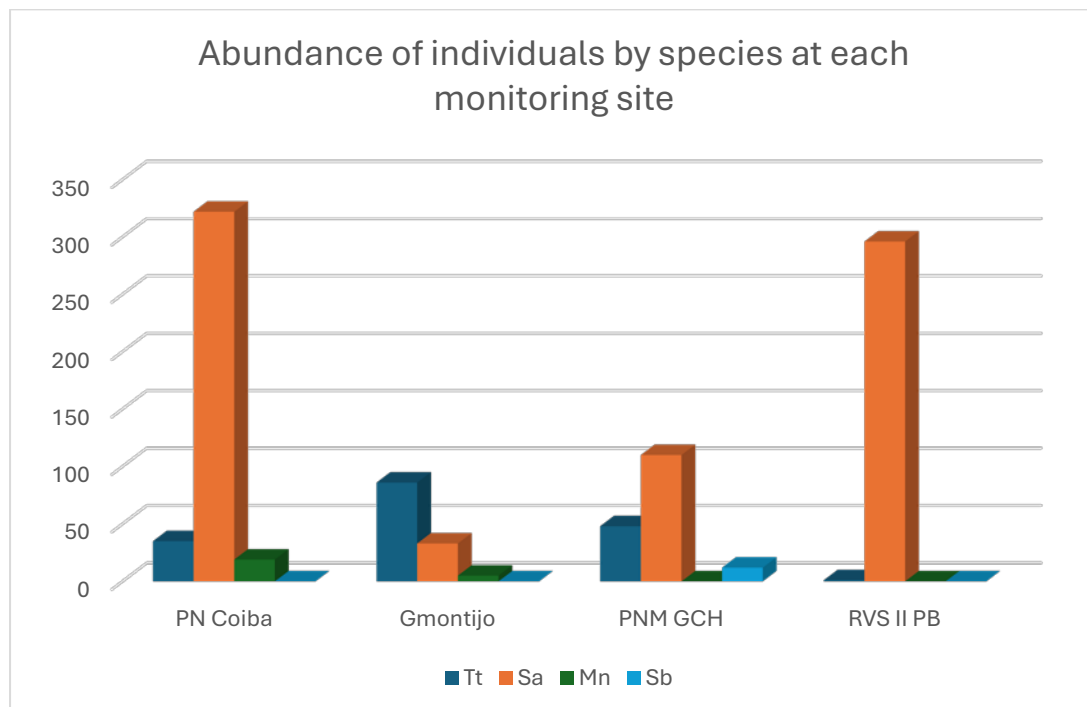


Fig. 3. Abundance of individuals by species at each monitoring site

It is observed that the highest abundance of *Stenella attenuata* individuals is recorded in the Coiba National Park, followed by the Isla Iguana and Pablo Arturo Barrios Wildlife

Refuge. However, the Gulf of Montijo reflects that *Tursiops truncatus* were dominant; We can note that the bottlenose dolphin (*Tursiops truncatus*) was observed mainly within the gulf, while the pantropical spotted dolphin was observed outside the gulf. The morphological characteristics of *Tursiops truncatus* tell us about very well-fed (chubby) individuals and this relates them more to a mangrove environment, such as the Gulf of Montijo.

4. Current threats to cetacean conservation and management measures taken/proposed.

- Mandatory use of the responsible whale watching code at national level.
- Committed to conservation, we have approved our national ocean policy and we are about to approve the national marine litter and plastics policy. We continue with the mandatory use of the traffic exclusion device for vessels that are users of the Panama Canal, to mitigate the risks of collision with vessels. In this regard, we must mention that the users of the canal have taken it as mandatory use throughout of the year with the reduction of traffic speeds within the marked lane; for this year, it is planned to update the effectiveness of this measure, evaluating whether it has reduced the number of whale collisions.
- We have two IMMAs at the national level, one for the Gulf of Chiriqui and the other for the Gulf of Panama and we participate in regional Humpback Whale IMMAs.
- We developed the proposed Management and Conservation Plan for the Central American Humpback Whale, throughout the distribution region that corresponds from the United States to Panama.

5. Reporting systems for cetacean injuries/mortality/strandings.

We continue with efforts to update the national stranding and disentangling database, which is contributed and entered into the IWC database.

6. International cooperation activities (includes bilateral or multilateral cooperation, assistance and funding programs and appropriate contact information, and other international activities of the Country submitting the Report).

Towards an integrated and ecosystemic management of the Large Marine Ecosystem of the Central American Coastal Pacific (PACA) under GEF-UNDP financing, two pilot projects are carried out in regional collaboration to be implemented in Panama, Marine Space Planning: Marine spatial plan for the area of influence of the Coiba National Park and its Special Zone for Marine Protection and Conservation of cetaceans: Study of the Acoustic Landscape of the habitat of cetaceans and anthropogenic impacts. Both projects will be implemented by MarViva.

Under the leadership of the CPPS we are collaborating with the Save Project of The Five of German cooperation IKI and the coordination and joint work of the countries that belong to the Permanent Commission of the South Pacific, to develop actions and strategies that allow us the comprehensive regional conservation of whales and dolphins.

7. Other (at the discretion of the Authority submitting the Report).

Additionally, we find ourselves studying noise through underwater recorders of AMPs that are important for the biological functions of cetaceans within the Panama Marine Corridor, which are all jurisdictional waters.

Panama's Initiatives and Strategies for Plastic Pollution Reduction

In response to the growing environmental concerns associated with plastic pollution, Panama has implemented legislative measures to address this issue. Two of the most prominent laws in this effort are Law 187, which regulates single-use plastics, and Law 1, which focuses on the reduction and management of plastic bags.

Law 187 of 2021, known as the Single-Use Plastics Law, is a key component of Panama's strategy to reduce plastic pollution. This law prohibits the importation, and commercialization of various categories of single-use plastics, including straws, cutlery, plates, among others. The primary goal is to minimize plastic waste generation and encourage the use of more sustainable alternatives, such as biodegradable or reusable materials.

Law 1 of 2018, referred to as the Plastic Bags Law, establishes a regulatory framework to reduce the use of plastic bags in the country. This law imposes restrictions on the free distribution of plastic bags by commercial establishments and promotes the use of reusable bags. Additionally, it requires that the plastic bags still in use meet specific recyclability and biodegradability standards. Law 1 also encourages the implementation of recycling systems and the promotion of sustainable business practices to mitigate the environmental impact of plastic bags.

Both laws reflect Panama's commitment to environmental protection and the promotion of a circular economy. Effective enforcement of these regulations aims not only to reduce plastic pollution but also to foster a cultural shift towards responsible resource use and environmentally friendly practices.

While the implementation of these laws marks a significant step towards reducing plastic pollution, ongoing studies and research play a crucial role in supporting and refining these legislative efforts. Research initiatives provide valuable insights into the extent and impact of plastic pollution, helping to guide policy decisions and enhance the effectiveness of current regulations. Below is a non-exhaustive list of key studies and

investigations that have been conducted in Panama, aimed at understanding and mitigating the effects of plastic pollution on marine and coastal environments.

Studies and Research on Plastics in Panama

1. INT7021 - Contributing to the Global Monitoring of Marine Plastic Pollution under the IAEA NUTEC Plastics Initiative.
2. RLA 7028 - Strengthening Regional Capabilities on the Application of Nuclear and Isotopic Techniques to Increase Knowledge about Stressors Affecting Marine and Coastal Sustainable Management (ARCAL CLXXXIX).
3. CRP (2023-2025) - "Presence of Microplastics in Marine Sediments; Quest for New Methods," focusing on optimizing nuclear techniques to assess microplastic pollution in coastal areas.
4. FID23-029 (2023-2025) - A study on the contamination profile of microplastics in Lake Alhajuela.
5. FID22-089 (2022-2025) - Evaluation of persistent organic pollutants adsorbed to microplastics in marine-coastal ecosystems of Panama.
6. RLA 1020 (2022-2025) - "Radiation technology in natural and synthetic polymers for developing new products with emphasis on waste recovery."
7. Inventarios Veracruz (2022-2023) - A citizen science project conducting inventories of marine debris and microplastics on a beach in Veracruz, Panama.
8. Redes SICA/CSUCA (2021-2022) - Evaluating marine plastic waste in Central America through the formation of a regional research network.
9. Proyecto SBR (2021-2023) - Institutional strengthening for controlling transboundary movement and environmentally sound management of plastic waste in Central America.
10. RLA 7025 (2020-2024) - Strengthening capacities in marine and coastal environments using nuclear and isotopic techniques, coordinated across 18 countries in Latin America and the Caribbean.
11. IEEE (2018-2022) - Assessment of the environmental presence of pesticide residues in intensive agriculture areas in Panama.
12. FID 16-044 (2017-2020) - Analytical determination of microplastics in water and sediments.
13. RLA 7022 (2016-2019) - Strengthening regional surveillance and response for sustainable marine and coastal environments.
14. Proyecto Daugava (2017) - Preliminary studies on microplastics in water samples from the Daugava River.
15. Placental concentrations of xenoestrogenic organochlorine pesticides, polychlorinated biphenyls, and assessment of their xenoestrogenicity in the PA-MAMI mother-child cohort.
16. Exposure to Bisphenols, Parabens, and Benzophenones in Colostrum Breast Milk of Panamanian Women: Results from the Pa-Mami Cohort.

Publications on Plastics in Panama

1. **2022** - Fábrega J.; Delvalle D.; Baúles A. "WSPDR 2022 Report," available on the United Nations Industrial Development Organization (UNIDO) website.

2. **2022** - J. Olmos, C. Hernández, J. Lloyd, D. Delvalle Borrero. "Presence of pesticides in the Chiriquí Viejo river in agricultural areas of Cerro Punta Chiriquí, Panama." [Conference paper](<https://doi.org/10.1109/IESTEC54539.2022.00104>).
3. **2022** - Carlos Mazariegos Ortiz, Rebeca Quintanilla, Denise Delvalle-Borrero, Oscar Amaya-Monterrosa, Marvin Xajil-Sabán. "Academics from Central America create a research network and monitor marine litter using citizen science." Published in *Ecosistemas* Vol. 31 No. 2 (2022). [Link](<https://doi.org/10.7818/ECOS.2397>).
4. **2022** - Delvalle-Borrero D., Medina J., & Fuentes K. "Floating artificial wetlands and their landscape value in urban rivers - Panama City." *Prisma Tecnológico* 13(1) 39. [Link](<https://doi.org/10.33412/pri.v13.1.2871>).
5. **2022** - Denise Delvalle Borrero et al. "Guide for Marine Litter Inventories/ Application to Citizen Science." [UNDP Panama](<https://www.pa.undp.org/content/panama/es/home/library/guia-para-inventarios-de-basura-marina-y-microplasticos.html>).
6. **2021** - Winnie Courtene-Jones et al. "Source sea and sink—A holistic approach to understanding plastic pollution in the Southern Caribbean." Published in *Science of the Total Environment*, Volume 797. [Link](<https://doi.org/10.1016/j.scitotenv.2021.149098>).
7. **2021** - Carlos Mazariegos-Ortiz, Marvin Xajil-Sabán, Elisa Blanda, Denise Delvalle-Borrero. "Occurrence of microplastics in the digestive tract of fish from the Multiple Use Natural Reserve of Monterrico, Guatemala." Published in *Revista Ecosistemas*. [Link](<https://doi.org/10.7818/ECOS.2188>).
8. **2021** - Ostin Garces-Ordoñez et al. "Short-term response of water physicochemical parameters to the hydrological rehabilitation of channels in mangroves from Cispata, Colombian Caribbean." [Link](<https://doi.org/10.25268/bimc.invemar.2021.50.2.1106>).
9. **2020** - Fábrega J.; Delvalle D.; Baúles A. "World Small Hydropower Development Report 2019," published by the United Nations Industrial Development Organization-China.
10. **2020** - Denise Delvalle de Borrero et al. "Distribution of plastic debris in the Pacific and Caribbean beaches of Panama." Published in *Air, Soil and Water Research*. [Link](<https://journals.sagepub.com/doi/full/10.1177/1178622120920268>).
11. **2019** - José Fábrega et al. "Microplastics and other contributions to the Chapter in Perspectives of the Academies of Sciences." IANAS/UNESCO.
12. **2019** - Alexis Baúles Aguilar et al. "Vulnerability to Natural Disasters in Selected Hydrographic Basins in Panama Using GIS and Remote Sensing." E-proceedings of the 38th IAHR World Congress 2019. [Link](<https://doi.org/10.3850/38WC092019-6662>).
13. **2017** - Delvalle Denise. "Rainwater harvesting and stormwater control measures in rural and urban environments." Published in *Prisma Tecnológico* Vol. 8. [Link](<http://revistas.utp.ac.pa/index.php/prisma/article/view/1524>).
14. **2016** - Fábrega J.; Baúles A.; Delvalle D. "World Small Hydropower Development Report 2016," published by the United Nations Industrial Development Organization-China.
15. **1987** - Delvalle D., Schwenker G. "Preisocalamenediol: A constituent of *Schinus molle*." Published in *Planta Medica*. [Link](<https://www.thieme-connect.com/products/ejournals/pdf/10.1055/s-2006-962687.pdf>).

These publications and projects demonstrate Panama's commitment to addressing plastic pollution through comprehensive research and policy implementation, fostering sustainable practices and collaborations at both national and regional levels.

In addition to the legislative measures and research efforts, Panama is also engaged in the development of impactful projects aimed at further addressing plastic pollution. Notably, the country is part of the National Plastic Action Partnership (NPAP) platform by the World Economic Forum (WEF), which fosters collaboration across sectors to

implement comprehensive strategies for reducing plastic waste. Moreover, a Global Environment Facility (GEF) project focused on reducing plastic pollution is underway, aiming to create new instruments and concrete actions to tackle the plastic crisis. These initiatives are expected to generate additional tools and targeted measures that will enhance Panama's capacity to combat plastic pollution and promote a more sustainable future.