

Addressing the Plastic Pollution Challenge in Uruguay

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A broadly quoted MacArthur Foundation study claims that “by 2050, there will be more plastic than fish in the world’s oceans.” This nightmare scenario could become reality if humans continue to produce plastics at predicted rates, and if we continue to fail to dispose of those plastics properly. The current output of plastics exceeds 300 million tons annually, of which an estimated 8 million tons or more end up in the oceans, an amount roughly equivalent to 500 billion plastic drink bottles every year. This uncontrolled buildup of plastic waste in the ocean threatens marine ecosystems and species in many ways, from lethal ingestion, to bioaccumulation of plastic-based toxins in the tissues of sea life, to entanglement, and much more. These persistent and highly buoyant pollutants fragment into increasingly smaller pieces when subjected to the action of ocean currents and winds, and the minute particles ultimately accumulate into a sickening slurry of plastic waste and biomass in enormous garbage patches that can now be found in nearly every ocean gyre.

Uruguayan waters are considered an important foraging and developmental habitat for marine turtles in the southwestern Atlantic Ocean. In particular, these waters host a mixed stock of early juvenile green sea turtles that feed mainly on macroalgae and gelatinous macrozooplankton, among which small plastic fragments are found more and more frequently and are easily mistaken by turtles as food. The ingestion of plastics can manifest as sublethal effects on turtles’ health, such as a decrease in nutritional gain, but it can also lead directly to their death by starvation by blocking the digestive tract. Not surprisingly, each year dozens of weakened and dead turtles are found stranded along Uruguay’s 710 kilometers (441 miles) of estuary bank, beaches, and rocky shores with clear evidence of plastic ingestion. Based on studies of stranded sea turtles in Uruguay, estimated mortality from plastic ingestion has surpassed bycatch deaths to become the primary cause of strandings.

Since 1999, the Uruguayan nongovernmental organization Karumbé has worked on all aspects of sea turtle research and conservation, and in recent years Karumbé has focused a good deal of its attention on the issue of plastic pollution around three complementary pillars: preservation, research, and education.

PRESERVATION

Karumbé has built a stranding and rescue network that is served by two rehabilitation centers that help weak and injured animals recover to healthy status before being released to the sea. The successful

implementation of this network began with the education and training of specialized technical staff to deal with sea turtles suffering from health effects of plastic ingestion. The network launched information campaigns using social media that were aimed at increasing the number of rescued turtles along the Uruguayan coast, and they have drawn the attention of a significant number of volunteers and concerned citizens. This increase in public engagement has exponentially increased the stranding and rescue alerts received by the organization, and Karumbé now rescues and recovers more than a hundred turtles per year.

RESEARCH

To improve our understanding of the dynamics and impacts of plastic pollution in Uruguayan waters, Karumbé has undertaken a multidisciplinary program that uses hydrodynamic and oceanographic dispersal models to determine the drift trajectories and transport patterns of plastic debris. In addition, necropsies and veterinary observations provide detailed evaluations of the effects of plastic pollution on the health of stranded sea turtles. The results are helping to develop risk assessment protocols for plastic ingestion in sea turtles; such protocols will ultimately help to design effective mitigation strategies and conservation plans.

EDUCATION

Karumbé strongly believes that to have long-term success and public support, all its preservation and research efforts in Uruguay must be closely linked to increased environmental awareness. Karumbé’s education programs and actions address many different sectors of society:

- **Coastal communities.** The Karumbé team provides workshops on topics such as responsible consumption, litter management, and recycling to raise awareness and empower locals to solve the problem of plastic pollution in their own neighborhoods. They also offer specific training (for example, How to Rescue a Stranded Turtle, and First Aid for Injured Turtles) to those sectors with a relevant official presence on the Uruguayan coast, including Coast Guard officials, lifeguards, and fishermen.
- **Schoolchildren.** Educational programs for schools are also offered, in which students learn about sea turtle biology, habitats, and threats. In recent years, some schools have sponsored injured

turtles, with students regularly monitoring the health and recovery of these turtles until they are released to the sea.

- **General public.** Karumbé operates two visitor centers in strategic locations along the Uruguayan coast (at La Paloma and La Coronilla). Through guided tours, visitors receive information about sea turtles while passing through different sections. One section is exclusively dedicated to the theme of Plastic vs. Sea Turtles; in this section, people see explicit examples of the impacts of plastic pollution on turtle health, such as samples of gut contents. Visitors can also observe live turtles in the rehabilitation pools and witness the daily tasks of the veterinary staff. These modest centers receive around 15,000 visitors every year.
- **Special events.** Occasionally Karumbé hosts turtle release events at which recovered animals from the rehabilitation facilities are returned to the sea. All those wishing to participate in these emotionally rewarding events are invited. The ceremonies begin with a general presentation about marine turtles and conservation. Staff explain the story of the individual turtle being released, how it wound up with so much plastic in it, and how the recovery process took place. Participants engage in games, songs, and dances until the culmination of the event, when everyone comes together on the shore to return the turtle to the sea. These ceremonies are the highlight of Karumbé’s work and are without

a doubt the best way to assure that the message of conservation becomes deeply rooted within the Uruguayan people.

Although the threat of plastic pollution in the world’s oceans looms large, the battle is not yet lost. The solutions lie within the power of humans. More and more people are already demanding changes in policies and changes in plastic production and consumption patterns worldwide. Our responsibility as conservation organizations is to spread the message as widely as possible and to raise awareness about marine turtles among as many people as possible. Perhaps this will be a long and arduous path, but as one of Uruguay’s most renowned writers, Eduardo Galeano, once said, “Many small people, in small places, doing small things, can change the world.” ■



TOP: Plastic ingestion is now the leading cause of sea turtle strandings in Uruguay. © KARUMBÉ NGO; BOTTOM: A rehabilitated green turtle is released to the sea after recovering at one of Karumbé’s rehabilitation facilities. © RUTA TORTUGUERA

