



Research investigates marine animal carcass movement and their importance in the coastal ecosystem

Oberdan Rodrigo Schumann / 18 de julho de 2024 / In English

Ecology | Article published on Wednesday (26) details an innovative and low-cost method for analyzing drift patterns, utilizing vehicle trackers and public collaboration

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*Photo: Lucas Antonio Morates

The appearance of marine animal carcasses on beaches may seem peculiar and off-putting, but most of the time it is a natural process of the ecosystem and of species' life cycle. The remains, which serve as food source for various species of vertebrates and invertebrates, have been part of the work and research of Maurício Tavares, biologist from the [Center for Coastal, Limnological and Marine Studies at UFRGS \(CECLIMAR\)](#), for over 20 years.

Between 2017 and 2021, Tavares developed his [doctoral dissertation](#) at the [UFRGS Graduate Program in Animal Biology \(PPGBAN\)](#), supervised by Professor Márcio Borges-Martins. The study observed marine tetrapods – birds, turtles, and mammals – and explored three main axes: drift, which consists of the journey the carcasses undertake after the animal dies at sea; stranding, which occurs when these materials reach the coast; and persistence, that is, the time it takes for the carcasses to decompose on the beach.

In order to gather data on drift, an innovative experiment was carried out along 430 kilometers of the southern Brazil coastline in 2019. Using vehicle trackers and citizen science, the researcher developed a low-cost research method, which resulted in the publication of an [article on Wednesday \(26\) in the journal *Methods in Ecology and Evolution*](#), a journal of the British Ecological Society. As well as serving as a model for future research, the findings of the carcass study are important for developing measures to protect and conserve these animals.

Rio Grande do Sul coast: a biodiversity research hub

The beaches of Rio Grande do Sul are fundamental to the life cycles of various species. Among the entire Western South Atlantic, the state's coastline has the largest number of cetacean species – comprising whales, dolphins, and porpoises. Another relevant example in this context is Lagoa do Peixe, in the municipalities of Mostardas and Tavares, home to around 270 species of birds, 35 of which are migratory.

Tavares' research highlights how carcasses are part of that ecosystem and participate in an essential process of nutrient recycling in that environment. Dead animals serve as food not only for vertebrates such as vultures and hawks, but also for small invertebrates, subsequently becoming a source of food for other species, such as the red-breasted sandpiper (*Calidris canutus*). These endangered birds migrate from Canada and the northern United States to Rio Grande do Sul in order to find food along its coast.

"If we don't conserve this beachfront and the material that is deposited on it properly, we could be indirectly putting at risk an endangered migratory species"
— Maurício Tavares

Carcasses and bottles drifting

One of the species that requires most attention from marine fauna researchers in Rio Grande do Sul is the porpoise (*Pontoporia blainvillei*), a small dolphin that is threatened with extinction, mainly due to accidental capture in fishing nets. Working at CECLIMAR since 2008, Tavares began carrying out weekly monitoring on the coast of Rio Grande do Sul in 2012, assessing the mortality patterns of this and other marine tetrapod species, and leading to the development of a series of research questions that resulted in his doctoral dissertation.

The drift experiment, conducted in 2019 and repeated across all four seasons involved releasing porpoise, turtle and seabird carcasses into the sea at different distances from the coast. The goal was to detect the displacement and stranding patterns of these species. Together with the animals, glass bottles, serving as passive drifters to simulate carcass movement and water circulation patterns, were also thrown into the ocean.



Tavares records the stranding of the porpoise carcass used in the experiment. Trackers and citizen science were the tools used to identify the animals and bottles that washed up on the shore (Photo: Cariane Campos Trigo).

The project focused on citizen science: all the carcasses and bottles had identification and a Whatsapp number so that, upon their finding on the coast, there would be an exact record of the location and the day they were stranded on the beach. Tavares notes, "Since the first experiment took place in the summer, a lot of people got to know the work. There was a fisherman in the Mostardas region who found materials in all seasons. People found it and notified us, and that was very important."

The standout feature in the study, however, was the use of vehicle trackers on porpoise and turtle carcasses. Tavares explains that this technique is very important because it is easy and cost-effective. "Using a tracker for live animals is much more expensive, because it has temperature and depth sensors, for example. We were able to improvise a tracker that was much cheaper," he points out. The biologist emphasizes that by making this technique available in a high-impact journal, other researchers will be able to use the methodology in their studies.

"Americans and Europeans usually have much more money for research, so they can use these more expensive trackers. We're in a very privileged place and by monitoring weekly we have access to a lot of material. What we sometimes lack is resources."
— Maurício Tavares

The biologist indicates that the next step in the research will be a more detailed analysis of the drift patterns detected. According to him, there are many variables to consider, such as, depth at which the animal dies, season, wind, and distance from the coast. Understanding these factors is fundamental for studying accidental capture, as in the case of porpoises, and helping with conservation measures for these animals.

Translated into English by **Rafaela Alexandre de Oliveira**, undergraduate student enrolled in the course "Supervised Translation Training II (English)" of the Undergraduate Program in Language and Literature, under the supervision and translation revision of Professor Elizamari R. Becker (P.h.D.) – IL/UFRGS.

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