

## **The study on *Rugulopteryx okamurae* by the University of Seville and Fundación Cepsa seeks a useful outlet for the remains of the alga accumulated on the coastline**

- **Among other initiatives, universities and research groups are studying its use as a possible fertilizer or in neuroinflammatory treatments.**
- **Research concludes that in 81% of cases the Asian alga displaces all other macroalgae from the shared environment**

In its third year, the study project on the Asian alga *Rugulopteryx okamurae* carried out by the Laboratory of Marine Biology of the University of Seville (US) and Fundación Cepsa has resulted in several lines of research aimed mainly at finding a use for the tons of algae washed ashore on the coasts of the Strait of Gibraltar and surrounding areas, in addition to learning more about the Asian alga.

The research group, led by Dr. Jose Carlos García Gómez, has spent the past year working in collaboration with Dr. Daniel Patón from the Department of Plant Biology, Ecology, and Earth Sciences of the University of Extremadura (UEX) to develop a circular economy project that seeks to generate natural fertilizers from the Asian alga through various composting techniques. Three sources of waste are currently being tested for this purpose: fresh, desalted and dried alga. In a similar line of work, together with the By-product Recovery and Waste Treatment research group of the Food Biotechnology Department of the Spanish National Research Council's Fat Institute, a study has been initiated on the treatment and use of the alga for organic fertilizers and biogas.

In addition, a collaboration is underway with the Neurodegeneration and Neuroprotection research group of the Department of Pharmacology, Pediatrics, and Radiology of the School of Medicine and the School of Marine and Environmental Sciences of the University of Cadiz. Its goal is to assess the bioactive substances of *Rugulopteryx okamurae* as a source of neuropharmacological compounds for the prevention and treatment of neuroinflammatory processes.

Elsewhere, in conjunction with the Department of Ecology and Geology of the University of Málaga (UMA), the Marine Biology Laboratory of the University of Seville is studying the physicochemical parameters in the nutrients of the Asian alga in an effort to determine which are the most prominent, their source of emission and to see if their origin is in human activity. Lastly, researchers have begun a line of experimentation focused on the invasion patterns of *Rugulopteryx okamurae* in seafloor ecosystems, incorporating bare artificial surfaces in the environment to determine the behavior of the alga.

Along the same line, throughout the year, the research team of the Marine Biology Laboratory of the University of Seville has studied the colonizing capacity of the species according to lighting conditions, surface orientation, and whether it is artificial or natural, showing that the alga has the ability to colonize a wide variety of surfaces. In addition, the team has concluded that in 81% of cases in which it coexists with other aquatic plants, other macroalgae has been forced out.

José Carlos García Gómez, professor at the University of Seville and project leader, expressed his "gratitude to Fundación Cepsa and the other collaborators, who have been fundamental in promoting research at the University of Seville and other scientific institutions, especially in the applied field and the circular economy, which has already led to significant advances concerning the invasion of *Rugulopteryx okamurae*, some of which have already been published in specialized scientific journals known worldwide. Researchers have produced new knowledge on the ecology of the invasive species, namely its potential to spread through anthropic dispersal vectors, such as plastics, and the characterization of the main mechanisms of competition for space, which have revealed its extraordinary competitive nature. In addition, it has extraordinary adaptive plasticity to establish itself in a wide range of substrates and to successfully colonize very different environments, from the intertidal zone to approximately 40 meters in depth."

On her part, Estrella Blanco, head of Fundación Cepsa, pointed out that this study "demonstrates Fundación Cepsa's commitment to environmental protection and biodiversity. We are pleased that progress is being made in lines of research that not only help us to understand the Asian alga, but can also provide a useful outlet for the alga that washes ashore on the coasts of the Strait and the Bay of Algeciras, which may even become an economic resource for Campo de Gibraltar.

**Fundación Cepsa** is a general interest, nonprofit entity whose aim is to carry out initiatives that serve the needs and priorities of the local communities where its founder, Compañía Española de Petróleos S.A. (Cepsa), conducts its activities. The areas of action for Fundación Cepsa are social, environmental and scientific-educational.

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