

Management of invasive plant species on the Mediterranean cliffs of Costa Brava

The LIFE medCLIFFS project

What is the project about?

LIFE medCLIFFS is a nature conservation project funded by the European Union's LIFE programme. It is being carried out in the coastal area of north-eastern Catalunya, specifically in Costa Brava and in the Cap de Creus Natural Park.

What are the objectives of the project?

The main objective of the LIFE medCLIFFS project is to improve the current management of invasive alien plant species that cause serious damage to the conservation of plant biodiversity on Mediterranean sea cliffs. These habitats are home to a number of endemic plant species; that is, plant species that only grow in a specific place, such as the Cap de Creus Seseli (*Seseli farrenyi*), found only in the Cap de Creus Natural Park.

To achieve this goal, from October 2021 to September 2026, a total of 16 actions will be carried out in the following working areas:

1. Prevention of the introduction of new invasive or potentially invasive plant species.
2. Implementation of two participatory networks for the early detection and monitoring of invasive plant species (IAPS) in priority areas.
3. Improvement of the response to the evolution of the distribution of detected IAPS.
4. Control, containment, and eradication of the most problematic invasive plant species in Cap de Creus.

Illustrations by Pau O. C.



European paper wasp
(*Polistes dominula*)

This wasp pollinates many of the endemic plants of Cap de Creus. Follow it to find out what happens when it meets invasive plants.



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The cliffs and endemic species of Cap de Creus

One of the habitats most affected by invasive alien plant species in the Mediterranean basin are the **Mediterranean cliffs with endemic sea lavender (*Limonium sp.*)**. This habitat is formed by coastal cliffs and rocky shores influenced, to a lesser or greater extent, by the action of seawater.

The Mediterranean cliff habitat includes a supralittoral area with small ponds dug into the rocks that are filled with seawater and populated by plankton, lichens, small snails, and crustaceans. As we move away from the water, we find a land area, where several flowering plants grow. In general, the vegetation covering here is poor, consisting mainly of populations of small bushes with more or less fleshy leaves and stems, often with salt-secreting glands. The plant species commonly found here are sea fennel, and in areas where more saline soil can accumulate, sea lavender and sea plantain.

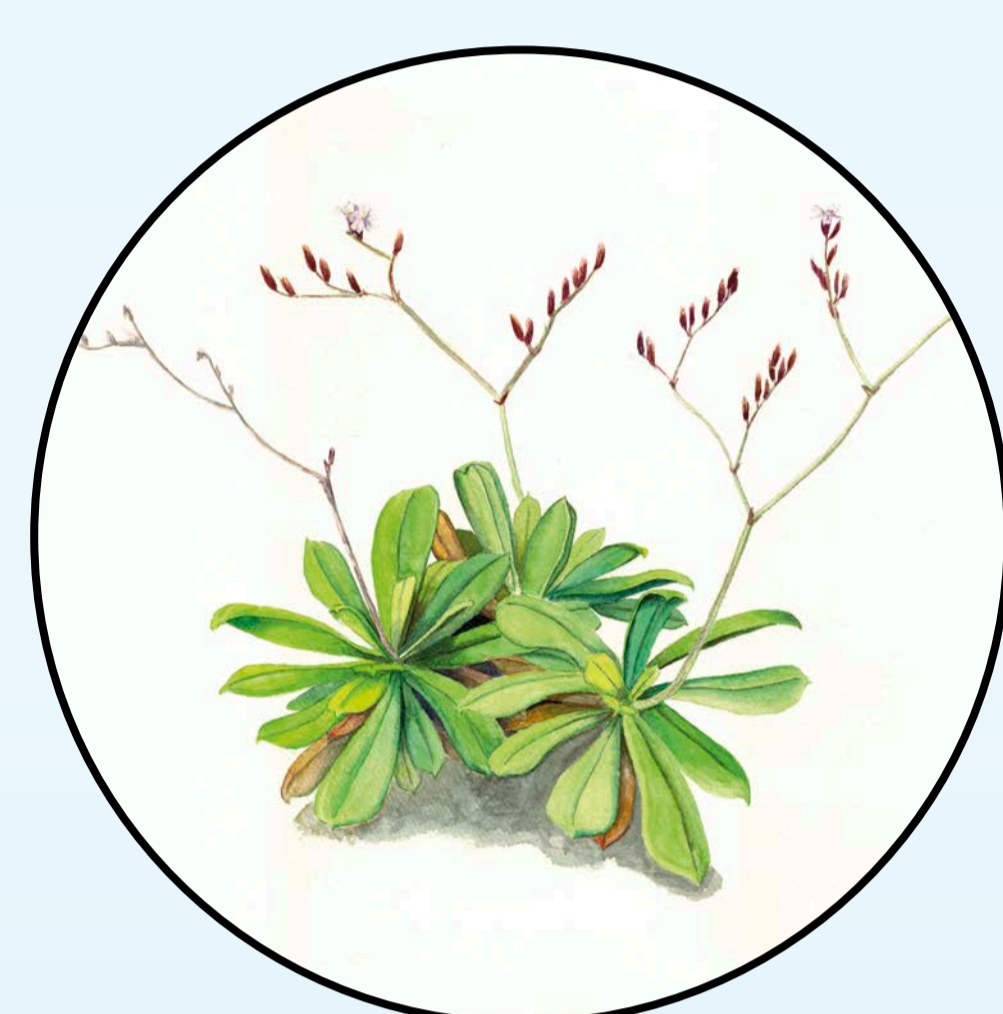
Thanks to the geological features and the rich vegetation of the coastal cliffs of Costa Brava and the Cap de Creus Natural Park, these places are home to numerous rare and unique species, some of which are endemic. The most characteristic endemic plant species, which the LIFE medCLIFFS project aims to favour, are sea lavender (*Limonium geronense* and *Limonium tremolsii*) and the Cap de Creus or Farreny Seseli (*Seseli farrenyi*). The Cap de Creus Seseli, a true botanical gem of this natural park given its worldwide uniqueness, is considered one of the most endangered plant species in Catalonia.

This wasp uses clays to build its nest, that is why the Cap de Creus Natural Park protects some particular areas that are rich in these materials.



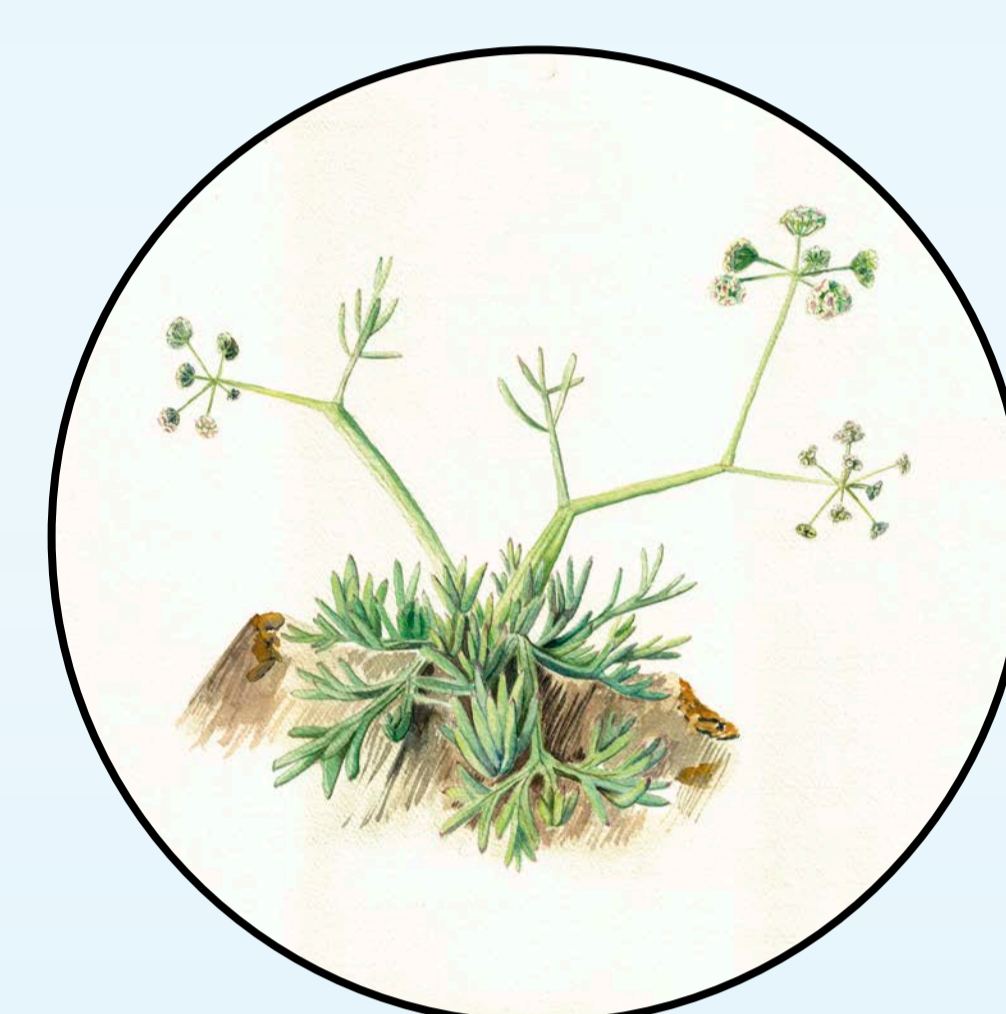
Sea lavender
(*Limonium geronense*)

This plant is endemic to the Girona coastline, from Cap de Creus to Portbou, and is mainly threatened by urban development and the overcrowding of the areas it inhabits. It is listed as an endangered and therefore protected species. This herb can grow up to 15 cm in height, it is perennial; it has simple, reddish leaves and an elongated shape reminiscent of a spatula. Its flowering season lasts from July to September and it produces spikes with two to four flowers that are purple to red in colour. Its fruits grow from August to October. Although these sea lavenders are pollinated by insects, they can also produce seeds asexually, without the need for pollination. Once the seeds have formed, they fall down the cliff, allowing other sea lavenders to grow.



Sea lavender
(*Limonium tremolsii*)

It is a perennial herbaceous plant, with simple leaves, which does not usually exceed 40 cm in height. It has the shape of a small pillow, with small leaves, a margin folded towards the bottom, and a spike at the tip facing downwards. The leaves come out in the shape of a rosette at the end of each branch. During the flowering season, from June and August, this plant produces small reddish-purple flowers measuring 7 to 8 mm that cluster together to form inflorescences. Unlike other plants in the genus *Limonium*, these flower clusters are short and scattered in the *Limonium tremolsii* and can be found on coastal rocky areas, forming small populations in the Cap de Creus Natural Park, the Montgrí Natural Park, the Medes Islands and the lower Ter River.



Cap de Creus or Farreny Seseli
(*Seseli farrenyi*)

It is a perennial herb 6 to 30 cm tall, highly branched from the base. It usually blooms from July to September, although there are years when the flowering season can last from February to November. It produces a set of small, umbrella-shaped white flowers called *umbel*. In strong episodes of Tramontane wind, it dries out and its fruits disperse more quickly. The Cap de Creus Seseli is listed as an endangered species. There are only three known populations of this plant, very close to each other and located in the northern part of Cap de Creus, with a total of just over 800 individuals.



Cat's claw

(*Carpobrotus edulis*)

Characteristics

Its common name *cat's claw* comes from the shape of its leaves, which are reminiscent of the claws of this animal. This plant has evergreen, fleshy leaves, which are triangular in section, and opposite to each other. It has large flowers up to 10 cm in diameter, with a pink to purple colouring, and its fruits are fleshy inside and edible. It blooms from late spring to late summer. This plant can reproduce sexually, by pollination by insects and fruit generation, or asexually, by spreading its branches along the substrate as if it were a carpet and generating new individuals by means of stolons. Given that this plant grows horizontally, it does not usually exceed 20 cm in height.

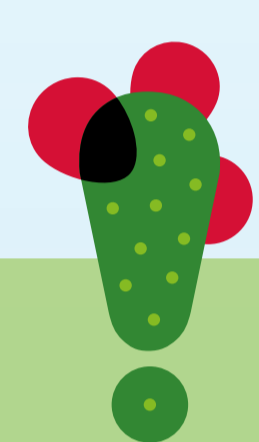


Distribution

This plant is native to South Africa and can be found on the Costa Brava forming large carpets next to built-up areas, where it has jumped over fences and has managed to colonise natural ecosystems. It can grow on beaches and sandy soil, as well as on rocky shores, pine groves and scrubland areas.



The big and bright coloured flowers of invasive alien plants, such as cat's claw, attract the wasp more than the small flowers of the endemic sea-lavenders and seseli of Cap de Creus, so the endemic flora are not pollinated and do not produce enough seeds, compromising its long-term survival.



Issues

The main factor in the spread of this plant is humans. This species has been intentionally planted for landscaping and slope containment, as it can spread rapidly and cover the entire substrate. Furthermore, it has the ability to generate new individuals from cuttings or plant pieces that generate new roots. Also, it is very easy to maintain due to the fact that it is not very demanding in terms of substrate characteristics. Due to its large

and eye-catching flowers, the cat's claw is highly appreciated for its aesthetic value and is not perceived as a threat to natural habitats. However, thanks to its great propagation capacity, this plant can cover the soil with a dense bush that prevents other plant species from developing. Besides, its eye-catching flowers attract more pollinating insects, preventing them from fertilising native plant species.

Prickly pear cactus (*Opuntia maxima*)

Characteristics

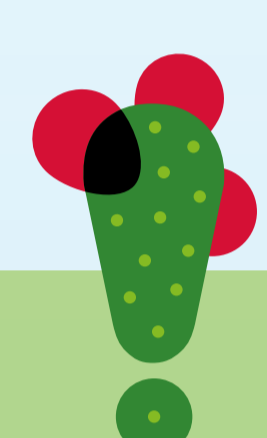
The prickly pear cactus is a shrub with fleshy, spade-shaped stems covered with thorns. This plant can reproduce asexually, as the fragments that separate from the mother plant have the ability to take root, germinate and form a new individual. However, these plants can also reproduce by seed, once they have been pollinated by insects. The seeds are scattered by animals such as lizards and can remain dormant and retain their capacity to germinate until the right conditions are met, with temperatures of around 21 °C. The seedlings tend to grow rapidly during the summer months, with high viability rates due to their resistance to drought, which ensures the success of this species in invaded areas.



Distribution

Originally from semi-arid habitats in Central America, it arrived in Europe in the mid-16th century through the Spanish conquerors. It was introduced intentionally for agricultural cultivation, as it was used as food for cochineals, producers of carmine pigment.

They were also grown to be used for human consumption. Later, it has also been used as an ornamental plant and to form protective plant fences in arid areas. In Costa Brava it is widespread in areas with intense human activity: next to housing developments, under power lines, etc., as well as in slashed areas, where these plants have been cut into pieces from which new individuals have been able to grow.



Issues

The rapid development and drought resistance shown by prickly pears give them advantages when competing with native plant species. In addition, these invasive plant species can affect the habitat of the invaded areas, thus modifying the availability of resources such as light, water and nutrients or minerals, among others. Therefore, the presence of prickly pear cactuses alters the structure and abundance of native and



endemic species, which become displaced and cannot regenerate. The thorns of these plants also pose a danger, as they can cause damage to wildlife as well as those animals that ingest young stems.

On footpaths where prickly pears are widespread, they make it difficult for people to pass and can even cause damage.



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Gazania

(*Gazania rigens*)

🌿 Characteristics

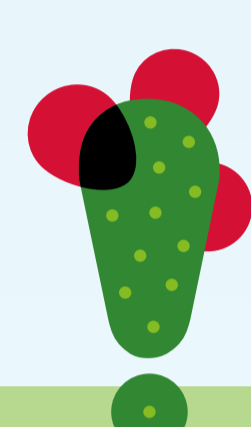
It is a low-growing herb that grows on sandy soils, at ground level, and reaches a height of 20-50 cm. Flowers can have different colours (usually a bright orange or yellow) or different colouring patterns depending on the variety. These flowers open up on sunny days, while they remain dormant at night and on cloudy days. They are resistant to drought and lack of nutrients, so they can easily grow on any type of soil and form a thick carpet.



🌍 Distribution

It is a species of herbaceous plant from South Africa and Mozambique. It was introduced for ornamental purposes and for slope protection.

The blue rock thrush is one of the wasp's predators in the food chain.



Issues

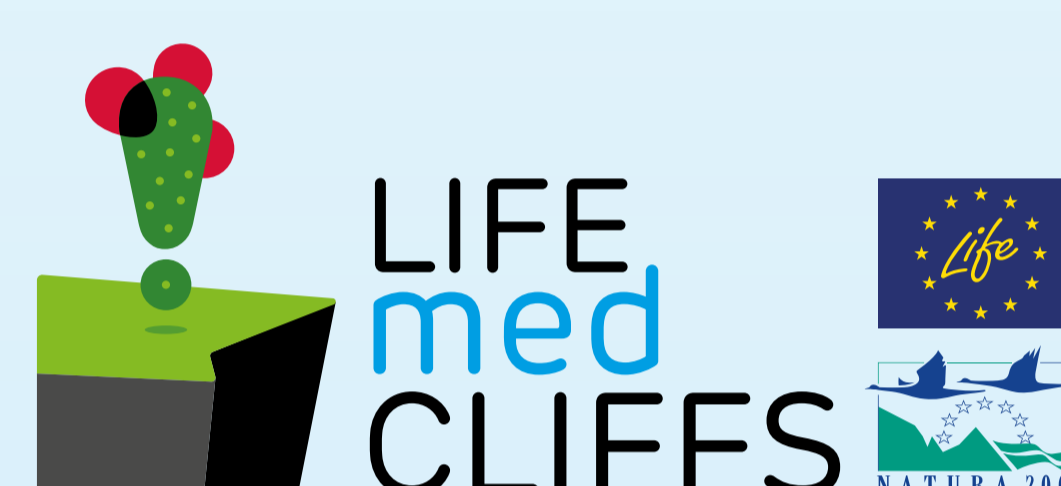
It is a new species in this region and is not yet included in the official catalogues, but it is showing highly aggressive invasive behaviour due to a very effective propagation system, which threatens some of the most important populations of *Limonium geronense*, *Limonium tremolsii* and *Seseli farrenyi*. The Gazania can easily reproduce from cuttings and each flower produces hundreds of seeds that are dispersed with the help of the wind, which causes it to expand rapidly.

Its ability to cover the substrate quickly and its low water requirements give it a competitive advantage over native plants, eventually displacing them. As with *Carpobrotus edulis* (cat's claw), its invasive potential is increased by the fact that this species is highly appreciated for its aesthetic value and because people do not perceive the danger it poses to habitat conservation.



As beautiful as dangerous

Cat's claw, prickly pear and gazania are the most problematic invasive plants in Cap de Creus, but there are around thirty more alien species that can have a negative impact on sea cliffs.



Become a volunteer

Now that you know about invasive alien plant species, can you help us control them? Get involved in the LIFE medCLIFFS project!

- Sign up for free courses to learn how to identify the different plants found in coastal ecosystems and distinguish between native and alien species.
- Sponsor a transect of a stretch of coastline and monitor the data on the abundance and distribution of invasive alien plants twice a year.
- Follow the project on social media and help us spread the word!

Facebook: @LIFEmedCLIFFS
Twitter: @LIFEmedCLIFFS
Instagram: @life_medcliffs
#LIFEmedCLIFFS #joconservoelshabitats #costalliuredinvasores

"Many small people, in many small places, doing small things can change the world."

– Eduardo Galeano



www.lifemedcliffs.org



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