



A close-up photograph of a Mediterranean monk seal swimming in the ocean. The seal's head is above water, showing its eyes, nostrils, and whiskers. The water is a deep blue with gentle ripples.

| THE WORLD'S *rarest seal*

The Mediterranean monk seal is the most endangered mammal species in the world. In Madeira and the nearby Desertas Islands, researchers estimate that less than 25 individuals remain. What is being done to protect them?

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“We saw one just now, right here in the bay. You should make your way down as soon as possible,” says João Martins excitedly through the phone. Martins is a local diving instructor who has sworn to share any monk seal sightings with us. We hop in our rental car and drive straight to Pedra D’eira beach in Caniçal. There, in the middle of the bay, just metres from a busy beach where people are enjoying their Sunday afternoon with drinks and music, we spot its short snout and large head bobbing in the water. Just as quickly as it appeared, it dives back down and disappears in the azure water. “If it stays in the bay, it should come up for its next breath of air within 12 minutes,” says Nuno Vasco Rodrigues, a marine biologist and underwater photographer who I’m on this assignment with. Having spent days on the water without any luck, we have finally seen a glimpse of our first elusive monk seal.

One of the largest seals in the world, monk seals can reach 3m in length and can weigh up to 350kg. As females only have one pup per year, the species is especially vulnerable to extinction. Like elsewhere around the world, seeing a monk seal around Madeira is incredibly rare. First spotted by Portuguese navigators as early as the 15th century around the Portuguese archipelago, monk seals were extensively hunted for their skin and blubber. Today’s major threats to these mammals include “displacement and habitat deterioration, deliberate killing by humans, and fisheries bycatch and entanglement”, according to information shared by the National Oceanic and Atmospheric Administration (NOAA).

As of 2022, it was estimated that only 600 to 700 Mediterranean monk seals remain across its distribution range, encompassing the eastern Mediterranean and some parts of the Northeast Atlantic, such as Cabo Blanco and Madeira. In Cabo Blanco, for example, the current abundance of monk seals is thought to represent a mere 3% of its historic abundance. Here in Madeira and the nearby Desertas Islands, researchers believe that only around 20 to 24 individuals remain.

Located around 26km from the eastern tip of Madeira, the Desertas Islands are made up of three small uninhabited islands - Ilhéu Chão, Deserta Grande and Bugio - which together form the Desertas Islands Nature Reserve, a classification awarded in 1995. Since then, the islands that are part of the Natura 2000 Network, have enjoyed full protection status.

On a bright, sunny morning, we board our motorboat to visit this special place with our guide for the day, Pedro Gomes, who runs a local diving centre. After a choppy two-hour crossing, imposing red, orange and brown cliffs suddenly rise up sharply in the middle of the ocean amidst the bright morning light. When we get closer, I marvel at the clarity of the dark blue water, while

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| PREVIOUS: A monk seal comes up to breathe.

| RIGHT: A curious monk seal investigates the camera.



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extensive basalt mantles tower above us. At the foot of the steep, inhospitable island, numerous small caves and indents reveal hidden stony beaches that act as resting places for the resident monk seals.

We anchor at Doca on Deserta Grande where a small wooden house is the only refuge for the two Nature Wardens that are stationed here for two-week stints at a time. The building of the house in 1988 marked the beginning of conservation efforts for the Mediterranean monk seals and its habitat. Since then, two Nature Wardens have consistently been present on the island. A large landslide behind the house exposes the island's volcanic origins in the tall rocks. Between 2 and 5 million years old, the island's geology is characterised by horizontal basaltic layers, red brown and yellow tufts which resulted from explosive volcanic eruptions, and lighter grey seams or dykes that resulted from flowing magma streams that passed through the rock.

One of the Nature Wardens, Lourenço Alves, welcomes us and joins us on our boat to drive around the islands to run us through his daily chores: "First thing in the morning, we usually take the boat out and, depending on the weather conditions, try to go around all three islands to find and monitor the monk seals. If we spot some, we take some photos which we later analyse to try to ID the individuals." Other tasks include clearing plastic from the rugged beaches, looking after abandoned seal pups, and the surveillance of the surrounding areas from land and sea. "We check boats to ensure that no illegal fishing is happening in the protected zone," explains Alves.

Scuba diving and visits to the main island are only permitted with prior authorisation, he adds, while handing us a map of the three islands. The eastern part of Deserta Grande and Bugio are considered a strict reserve which means that any access is forbidden without a permit, while the west of Deserta Grande and Ilhéu Chão are a partial reserve. Domestic animals, spearfishing and the use of fishing nets are not permitted anywhere, while lobster traps have also been banned after a monk seal pup got caught in one and drowned.

To ensure that people adhere to these rules, the Nature Wardens use special drones that can land on and take off from the water, Alves tells us. This is especially important during the monk seal pupping season which runs from September to December every year. The past few years only saw a few pups being born, Alves tells us, and the few that were born struggled to survive in the harsh terrain of the Desertas Islands. "Last year, we counted four pups. One died, and we aren't sure what happened to the others," he says. "The pupping season coincides with the winter season that sees large storms hit the islands. The seals then get stuck in the caves where they get injured or drown," he adds that some dead pups had bruising on their bodies that suggests they get pushed

The Desertas Islands from above.



| TOP: Steep cliffs dominate Deserta Grande.
| BOTTOM: A monk seal.

against the rocks during storms. As I scan the islands I notice that the beaches are slim and don't offer much resting space for the seals. As storms are getting more frequent and heavier because of climate change, I can't help but wonder how breeding success will fare in the coming years.

The wardens have recently started to set up camera traps around the islands. The collected data, they believe, will be invaluable in finding out more about how storms affect the population, amongst other things. Despite the many hardships this population has faced and continues to encounter, there are some positive signs. In 1988, only six to eight monk seals were believed to live in and around Madeira. Today, around 20 to 24 individuals are distributed throughout Madeira and the Desertas Islands.

Conservation efforts and a greater degree of cooperation between countries have seen encouraging signs for other populations around the world too. While the sizes of some populations are increasing, like in Desertas, undocumented breeding areas were uncovered in other areas, and monk seals have shown up in entirely new regions such as Egypt, Italy and Libya. Due to these positive signs, the International Union for Conservation of Nature (IUCN) reclassified the Mediterranean monk seal from 'Critically Endangered' to 'Endangered' in 2015. In June of 2023, the organisation went further and elevated the species' status to 'Vulnerable', a less critical category, due to increasing population sizes in Greek waters and around the Aeolian Islands.

By monitoring the population with the new photo traps, working together with scientists, and making sure that no illegal fishing or other illegal activities are carried out around the islands, the wardens hope that more answers can soon be found. "I think the key will be the increased involvement from scientific people to better understand the dynamics and the ecology of the islands. We still find new species across the islands from time to time," explains Alves.

The creation of the Special Protection Area of the Desertas Islands in 1990 and the 1995 reclassification of a Nature Reserve was not only motivated by the urgent need to protect the Mediterranean monk seals, but to also protect other local wildlife. The critically endangered Desertas wolf spider, for example, is only known to live at the north end of the top of Deserta Grande. The endemic spider can reach 8cm in length and is one of the largest spiders of its kind in the world. "We don't know why it only lives in that part of the island. More research needs to be done about that," says Alves and mentions that another spider species has just been discovered on the island. "In one of the caves, a team of scientists recently found a spider species that hasn't been described in science yet. There seem to be new species coming up all the time on this small rock in the middle of nowhere."

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Between spring and autumn, thousands of sea birds such as Bulwer's petrels and Cory's shearwaters come to Desertas to nest. A small, endangered population of Desertas petrels, a species endemic to the islands, also breeds on Bugio. "As the species only lays one egg, we carefully monitor their population annually," says Alves, and adds: "Bugio is free of rats, rabbits and goats because they were never introduced there. That's why the seabird population is quite healthy on that island. On Deserta Grande, the resident goats would eat the seabirds and their chicks."

Even though there are no permanent settlements on the Desertas Islands, people have tried to make use of them throughout the past few centuries. During World War II, four watch posts were built to monitor enemy ships which were later used by whale hunters to spot cetaceans. In 1959 and 1961 two lighthouses were built respectively on Ilhéu Chão and Bugio. From the 15th until the 19th century, birds, rabbits, and goats were introduced to the island by passing seamen to provide fresh food. The impact of that time can still be seen today: Small cisterns and remnants of shelters are located on top of Deserta Grande, and goats have survived in the treacherous terrain to this day. Despite numerous controversial kill campaigns, the goats were able to hide away from humans in nooks and crannies in the steep rock faces of Deserta Grande.

As we circumnavigate the three volcanic islands, we scan the water and beaches for signs of the monk seals – to no avail. Having spotted a monk seal so close to shore on a busy Madeiran beach just a few days earlier, I wonder where they might now be hiding.

With the species having almost been hunted to extinction, much of their natural habitat now occupied by humankind, the remaining few found refuge in and around the rugged and remote Desertas Islands. Here, the population has slowly recovered, thanks to effective protections and committed wardens. But as with many conservation initiatives, 'mission complete' remains some way off. For the wardens on these windswept rock, the work goes on. 