



Home from home

From sea otters and mountain lions to vultures and alligators, animals are turning up in unexpected places. **Isabelle Groc** finds out why

WHEN Brian Silliman found himself face to face with an alligator, he thought he was seeing a ghost. It was night and he was knee deep in mud in a salt marsh in Georgia, searching for crabs and snails. Alligators are freshwater reptiles, so Silliman was not expecting to come across one, but the pair of red eyes watching him was unmistakably real. Thinking fast, he shook a cage between him and the predator to scare it away. “That freaked me out,” he says.

The next morning, haunted by the encounter, Silliman, a conservation biologist at Duke University, North Carolina, couldn’t stop wondering why the alligator was in the salt marsh. Returning to the site, he spotted

more of them – and they seemed to be right at home. Diving into the scientific literature, he discovered that alligators are not the only predators found thriving in places where they are not supposed to live. It was a light-bulb moment. “I started re-evaluating everything I had been taught about large animals,” he says.

It turns out that at least 23 species of predator have been spotted living in surprising habitats. As well as alligators, the list includes otters, mountain lions, wolves and raptors. But the real revelation is that these creatures are actually returning to places they once occupied. This is giving us astonishing insights into the lives of animals we thought we knew. What’s more, these

predators could be conservationists’ best allies, because they can help improve their old stomping grounds.

Sea otters in California were some of the first animals to shake our assumption that predators showing up in unexpected habitats were lost or searching for food. Hunted almost to extinction by fur traders in the 18th and 19th centuries, conservation efforts have seen sea otter numbers increase from about 50 several decades ago to some 3000 now. The recovery was initially limited to coastal areas but, after 1990, otters started turning up in Elkhorn Slough, a major estuary on California’s central coast that is covered in salt marshes and seagrass beds.



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EL PAZALAMY

“When we first noticed that an ever larger number of sea otters were living in the slough, we did not immediately grasp the fact that the slough could provide all their habitat needs,” says Lilian Carswell from the US Fish and Wildlife Service. The remnant population of otters had persisted exclusively on California’s coast, and conservationists had assumed this is where they belonged, foraging in kelp beds. But the fact they were thriving in Elkhorn Slough forced a rethink. “We wiped out these species from most of their range long before we had ecology as a science,” says Carswell. “There is so much we don’t know.”

The story of California’s sea otters is not a one-off. Earlier this year, Silliman and his colleagues revealed a wider trend in a paper aptly titled “Are the ghosts of nature’s past haunting ecology today?”. As a result of conservation efforts, a variety of predators are reappearing in ecosystems they were pushed out of by hunting and development. “It is an exciting time for ecologists,” says Carswell, “because these species are coming back to these ecosystems from which they have been absent for many human generations and they are putting their house back in order.”

Mountain lions are another example.

Unsurprisingly, we tend to associate them with mountains. But historical records show that in Patagonia they once lived in open grasslands. As sheep farming became established in South America, they were persecuted – along with their prey, a kind of llama called a guanaco. As a result, mountain lions survived only in the remote Andes away from humans. But in the past 20 years, sheep ranching has declined. “We started to see a change,” says Mark Elbroch from conservation

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society Panthera. “The mountain lions that had been removed from the open grassland began to come back out of the mountains at the same time as the guanaco was beginning to move back into the grassland.”

Such recolonisation is happening in Europe too. Alejandro Martínez-Abraín at the University of A Coruña, Spain, was puzzled to discover that ground-nesting Audouin’s gulls were relocating from archipelagos in the western Mediterranean to the mainland.

It turns out that sea otters don’t need to live in the sea, nor mountain lions in the mountains

These birds were thought to be small-island specialists, so why were they abandoning their homes? His insight came when he visited Castro de Baroña, an Iron Age settlement on a rugged peninsula in Galicia. “I realised it was a terrible place to live, exposed to winter storms and difficult to cultivate. My conclusion was that the Iron Age people built a village there because they were forced to do so,” he says.

Suddenly, Martínez-Abraín saw the connection with the Audouin’s gulls. He realised that human persecution had forced the birds to leave their preferred mainland habitat and eke out a living on the islands. Now, no longer threatened by humans, they are returning to their historical homes – just as the people of Castro de Baroña moved to more hospitable areas once the Roman Empire became peaceful. “We have been studying things from the wrong perspective. If ecologists want to understand the present, they should look at the past,” he says.

Martínez-Abraín’s research, published in June, documents a variety of species

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returning to their historical habitats in southern Europe as a result of humans moving out of the countryside and decreasing persecution of wildlife. Eagles and vultures have tended to nest on cliffs to avoid humans, but are now increasingly nesting in trees as their forebears did. Likewise, conservation efforts mean that the critically endangered Mediterranean monk seal, which had retreated to caves to avoid human persecution, is returning to beaches. “Everything we see in the present is an artefact, rather than the animals’ true preferences. They are not where they want to be. They are where they can be,” he says.

Stop the pigeonholing

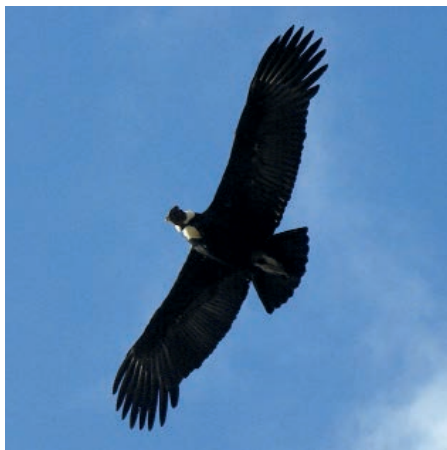
This may pose challenges for conservationists. For example, the archipelagos where the Audouin’s gulls sought refuge are nature reserves, whereas their mainland homes are not always protected. But it also brings opportunities. “We pigeonholed most of these large predators as being habitat specialists: mountain lions love the mountains, sea otters are kelp bed specialists, alligators love the swamp and fresh water,” says Silliman. “This is a paradigm change. The animals are not habitat specialists, they are habitat generalists and can withstand a much wider range of physical and biological conditions.” It means there is more habitat out there in which endangered species can recover.

This provides new hope for species such as the orangutan, whose numbers declined by an estimated 100,000 between 1999 and 2015. Orangutans were traditionally viewed as able to live only in undisturbed forest habitats. However, research reveals that coexisting with humans for tens of thousands of years has left them able to adapt their behaviour to survive in different areas. “Orangutans are ecologically far more flexible than we imagined,” says Erik Meijaard at the University of Queensland, Australia. This realisation presents new conservation opportunities.

To take advantage of this, we need to find out what ecosystems animals used to call home. “We don’t know enough about the natural habitat range for most of these top predators,” says Brent Hughes of Sonoma State University in California. Nevertheless, ecologists may find clues outside their field. For example, historical and archaeological records indicate that sea otters used to live in large numbers in estuaries such as San Francisco Bay. What’s more, their move into Elkhorn Slough makes ecological sense because it protects them from



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MARK ELBROCH / PANTHERA

Alligators are returning to salt marshes and raptors are nesting in trees rather than on cliffs

shark attacks, which are a leading cause of otter death in California.

The move back into historical habitats isn’t just good for the predators, though. Hughes has examined the impact of sea otters on the health of Elkhorn Slough. Seagrass meadows are declining worldwide, partly because of pollution. Yet those in the slough have been expanding. “I couldn’t figure out why the seagrass was recovering in Elkhorn Slough and I looked at every possible driver,” he says. Eventually, he discovered that the presence of some 100 otters was a crucial factor.

In the highly polluted estuary, excessive nutrients from farm run-off spur the growth of algae on seagrass leaves, which kills the plants. But Hughes documented a remarkable chain reaction leading to seagrass recovery. The otters moving to the slough became the apex predator, eating many crabs. With fewer

crabs to prey on them, grazing invertebrates such as sea hares became larger and more abundant. Sea hares feed on the harmful algae growing on the seagrass, leaving the leaves healthy and clean. “The importance of sea otters to estuaries makes me think about all the efforts that people are spending to restore estuary ecosystems and wetlands,” says Carswell. “It makes me think how important it is to have the full complement of species back in those systems to enact restoration.”

In Patagonia, the return of mountain lions to the grasslands is bringing benefits too. Elbroch discovered that they generate far more carrion than do grey wolves – the equivalent top predator – in Yellowstone National Park. “That carrion bolsters the health of ecosystems and creates biodiversity hotspots across the landscape,” he says. As a result, the mountain lions help support the recovery of the threatened Andean condor, which needs carrion to survive.

It seems like a win-win. However, Elbroch emphasises the need to educate local people. “If we truly want mountain lions to be successful in this recolonisation of historic habitat, we need a community of people who are willing to live with them,” he says. And that applies wherever predators are returning to past haunts. “We need to think about building tolerance with people because without tolerance there will be no carnivores.”

Silliman agrees. He is still haunted by his alligator encounter, but sees it as instructive. “The alligators remind us about the past so we can learn from it for the future when these animals return in larger numbers.” ■

Isabelle Groc is a writer and photographer based in Vancouver, Canada