

A photograph of a lynx peering through a hole in a tree trunk. The lynx is silhouetted against a bright, hazy background, possibly sunlight filtering through the forest. The tree trunk is textured and shows signs of decay or insect damage.

The Almost-Missing Lynx

Spain's Doñana National Park shelters
one of the world's most endangered cats.

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Enfoque 10





As recently as a century ago, the Iberian lynx ranged throughout Spain and Portugal, but relentless hunting has brought its present population down to about five or six hundred.

same resemblance to outsized snowshoes—probably an adaptation to southern Europe’s warm climate. Recent genetic studies also confirm that the Iberian lynx is a distinct species. Even where the ranges of two types of lynx overlap, interbreeding was rare.

As recently as the last century, the Iberian lynx ranged throughout Spain and Portugal. It was routinely hunted, with as many as 300 skins a year arriving in Madrid from all parts of the peninsula. By the early twentieth century, the lynx had disappeared from northern Spain, and by the 1950s, it was confined to small populations in the central and southwestern parts of the country. The animals have now disappeared from 80 percent of the habitat they occupied in 1960 and are found in only nine isolated populations, only two of which are considered genetically viable.

Gloria lives in what might be called the epicenter for lynx in Spain—the heart of the Coto del Rey, a small part of Doñana that lies between the marshes and

FOR the past thirteen years, Spanish field zoologist Francisco Palomares has been studying the lynx in Doñana National Park, a reserve of Mediterranean forests, scrub, and wetlands near Spain’s Atlantic coast. Using radiotelemetry, he has been tracking the daily movements of about ten individuals since 1992. His is the most comprehensive study of the Iberian lynx, the area’s top predator, since his countryman Miguel Delibes’s groundbreaking research almost three decades ago.

“The Iberian lynx,” Palomares says, “is one of the most endangered wildcats in the world—its continued existence is much more precarious than the tiger’s.” Found only on the Iberian Peninsula, this lynx’s total population is down to about five or six hundred, or half of what it was only six years ago. “The prospect is *bastante mala*,” Palomares sighs. “Pretty bad.”

Following the signals from his radio antenna, he locates Gloria, a radio-col-

ored female hiding about fifty feet from where we stand. This year she has had kittens, so we cautiously approach the clump of bushes to peek at the new family. From below the *taraje*—a kind of tamarisk tree with scalelike foliage—Gloria utters a throaty and menacing growl. Soon she slinks out from the cover and exits behind the tree through tall, dry grass. One kitten bounds ahead of her. Gloria slowly pads along behind, her white rump flashing in the low autumn sun. Her short, erect tail looks cropped, like that of a bobcat. A quick leap and she is gone.

Following Gloria with telemetry, we find her beneath a nearby bush, where she is nursing her two kittens. After a moment, she emerges, keeping a watchful eye on us and on the cavorting youngsters. Her reddish fur, spotted with black, glows like pounded copper in the October afternoon sunlight. A full ruff ornaments her cheeks and chin like Victorian muttonchops. Tufts of fur on her pointed ears—an earmark, as it were, of lynx—wave in the evening wind. As she rests in the grass, her young romp around and over her, giving vent to their playful exuberance.

The lynx once roamed throughout Europe, from Scandinavia to the Mediterranean. Until recently, the Iberian lynx (*Lynx pardinus*) was considered a subspecies of the Eurasian lynx (*L. lynx*). Recent studies of its morphology and paleontology, however, have established its unique status. Males are typically 24 to 44 percent smaller than their northern cousins. The Iberian lynx is stockier, and its fur is not as thick as that of the Eurasian variety, nor do its paws have quite the



Mediterranean scrub and that was once the favorite hunting grounds of Spanish nobles and kings. Now totaling about 125,000 acres, Doñana was set aside thirty years ago as a national park on the southern coast of Spain, just east of its border with Portugal. Protecting the estuary of the Guadalquivir River, Doñana is an austere flatland of marshes and brush, of sandy soil and dry scrublands; its highest peaks are sand dunes along the Atlantic coast. The park provides a protected habitat for a huge number of nesting and migrating bird species. With such residents as flamingos and mongooses, it seems like a chunk of Africa tucked away just across the Strait of Gibraltar. In Doñana, the noon sun is searing, and the sunsets are spectacular.

The park lynx are divided into two groups, totaling about fifty animals. One group lives in the Coto del Rey scrub, and the other, smaller one inhabits the marshes nearer the sea. Lynx avoid the pine and eucalyptus plantations outside the park, except when they must travel

through them to reach more suitable habitat. I had always associated lynx with snowy boreal forests and had never pictured them living in an arid, Mediterranean climate that swelters in the summer and floods during winter rains. Yet the lynx in Doñana prosper in the Coto del Rey scrub, where the extensive cover includes dense bushes, shrubs, *taraje* trees, and a kind of tree called lentiscus; both trees provide favored lynx hiding places. The most common bush is the *jaguarzo*, or *Halimium*, which sports pale leaves and huge yellow flowers. Among the taller trees are the *frasino*, a type of ash; and the *alcornoque*, or cork oak, whose bark is used to cork the fine wines of Andalusia.

While Coto del Rey makes up only about 230 square miles of parkland, the Iberian lynx probably reaches its greatest concentration here. When I visited during the fall, the area contained about seventeen animals—three pairs of breeding adults, the year's young, and some born the year before. It is possible to encounter lynx frequently here, fostering the false, if

delightful, illusion that these rare animals are common.

Female lynx divide their habitat into territories that may remain stable for years. Palomares has painstakingly mapped the feline geography of Doñana and found that the average female lynx's territory is about 3.5 square miles. Both males and females are usually solitary and maintain their separate territories, which overlap and connect in complex ways. A female will mate with whichever male has won the adjacent territory, and a male will mate with as many females as he can. In Doñana, since each male's range overlaps with that of only one female, the mating



Wildlife biologists weigh and measure a lynx cub, top, in Spain's Doñana National Park. Scientists track the cats with antennae mounted on their vehicles, above, then home in on the lynx with binoculars. At left, a young lynx that has just been radio-collared sprints across the scrubland to rejoin its siblings.



system appears to be monogamous. Pairs typically come together briefly to mate, usually in January. After a gestation period of sixty to seventy days, the female finds a hollowed-out tree trunk—cork oaks are favorites—in which to have her cubs. They remain there for some weeks in the early stages, but as the cubs get older, the mother moves them frequently.

Three pairs of lynx have contiguous territories in Doñana. Gloria has occupied the middle territory since her arrival there in 1992. Escarlata occupies the easternmost territory and has produced a litter every year—the only female in the Coto del Rey to have done so. Nuria,

territory and that of Escarlata. Palomares thinks the male established himself in the area because he was Escarlata's new mate. He was a striking creature, bold and confident, with a penetrating gaze. Rows of dots stretching into lines on his tawny fur flowed from his shoulders to his rump. He would saunter into the nearby fields about sundown to begin his nightly hunt.

Iberian lynx need cover for hiding, water holes to visit daily in this dry climate, and lots of rabbits, which are their staple food. By examining more than a thousand feces samples, Palomares found that most lynx consume an average of two rabbits a day. In the Coto, the abundant

ious, hopped into the bushes, Gloria broke into a graceful lope. With rump high, stubby tail erect, and paws outstretched, she disappeared into the brush in close pursuit.

Nearby, we found her kittens' footprints, which told us Gloria had taken her nearly year-old cubs along on the hunt. They would soon be out hunting on their own. The cubs would need all the survival skills she could teach them, as they would likely be forced to find territories outside the park's protective boundaries. According to Palomares, half of these "dispersers" would be dead within two years. In 1994, Escarlata gave birth to five



Her eyes were fixed on a rabbit that had carelessly wandered onto the path. Semicrouched and moving forward in short spurts, Gloria began stalking it. As the rabbit, seemingly oblivious, hopped into the bushes, Gloria broke into a graceful lope in pursuit.

who occupied the territory to the west, died in 1997, at nine years of age. Her territory is up for grabs. When the females have young, their ranges shrink considerably, perhaps to one square mile or less, because mothers do not go far from their kittens.

Male lynx typically have larger territories than females do; each male that Palomares studies claims about seven square miles. Gloria's mate, Barro, established his territory at the beginning of 1996. Escarlata's previous mate died in 1997, leaving his territory open. Males fight for territory, and females probably do so as well. Nuria's mate, Borja, died in 1996 at the age of ten. His torn body bore witness to a battle with another male.

Visiting for just over a week, I got to know the daily patterns of a male that was new to the area and had not yet been radio-collared or named. Every evening at about 7:00 P.M., he would emerge from the brush to sit on the dirt road that serves as the boundary between Gloria's

rabbits are also prey for mongooses, foxes, the catlike genet, and the rare imperial eagle. As Palomares puts it, "The whole world eats these rabbits." However, rabbits are not always reliably plentiful. In the late 1950s, the myxomatosis virus swept through the rabbit population, and a decade ago hemorrhagic pneumonia wiped out thousands. Both epidemics, in turn, caused major declines in the lynx population, as many of the cats starved. Earlier research by Miguel Delibes showed that in the fall and winter, marsh-dwelling lynx supplement their diet of rabbits with ducks, young deer, and partridges.

Gloria's territory is adjacent to the park boundary. One overcast Sunday morning, Palomares and I found her among high weeds near a trail just inside the park. We hid in the bushes, and soon Gloria appeared on the road. Her eyes were fixed on a rabbit that had carelessly wandered onto the path. Semicrouched and moving forward in short spurts, Gloria began stalking it. As the rabbit, seemingly obliv-



males whose mortality rate was even higher than the norm. By the summer of 1997, two had disappeared, one was killed by a car, and another was shot by a hunter. Only one is presumed still alive.

Over the last few decades, the lynx has become a symbol of national pride for many Spaniards, yet local rural people still hunt this animal. Lynx also succumb to traps set for foxes and rabbits or are killed in highway accidents. Young lynx, seeking

At the moment of capture, a rabbit thrashes helplessly in the grip of a lynx's jaws, below. The abundant rabbits are also prey for foxes, genets, eagles, mongooses, and local villagers.

water, sometimes drown in artesian wells.

Gloria had two kittens in 1994, a male and a female; both found their fates entwined with cats from Escarlata's litter. Gloria's young male wandered widely just outside the park for three years before he found a territory—the area left vacant when his contemporary, Escarlata's offspring, died. In the fall of 1995 and into the winter of 1996, Palomares and his assistants tracked Gloria's female cub Nati, which had paired up with Barbaro, the sole surviving male from Escarlata's 1994 litter. Moving through a forest of pines that parallels the Atlantic, the two animals left Doñana and headed toward the in-

dustrial town of Huelva, along the Portuguese border, where the forest gives way to a long stretch of commercial farms. The area outside the park had once been good lynx habitat, but now the cats encountered mile upon mile of strawberry fields. The rows of berries, covered with long sheets of black plastic, resembled waves on a shimmering plastic sea.

Barbaro and Nati settled at the edge of the fields in a tangle of arroyos—which can be serviceable habitat. Although Palomares thought the two were getting ready to form a pair and mate, he suddenly was unable to track Nati. She had disappeared and was almost certainly



dead. Soon after, in the spring, Barbaro left the arroyos and ventured into the black-plastic-covered strawberry fields, his odyssey still monitored by radiotelemetry. Barbaro wandered for miles among fields and factories and eventually found himself on the outskirts of Huelva. There he gave up his quest for a new home and mate and turned back to the arroyos, where we found him.

Barbaro is one of only two survivors of the seven monitored lynx born in 1994. As the lynx population continues to cling to a precarious existence, officials have stepped up their efforts to improve the habitat and to persuade locals not to kill lynx outside

the park. Some pine and eucalyptus areas inside the park's boundaries have been cut so that more scrubland will be available for rabbits and lynx. The park has also acquired 131,000 additional acres, which lynx have begun to occupy, and small tunnels are being built under dangerous roads to afford the animals safe crossing.

According to Delibes, the number of lynx in Doñana is stable but not growing. What is needed is effective protection outside the park. One major difficulty in achieving this has been that in Spain, management of threatened species is the responsibility of the various regional governments, not a central agency. As a



Ever on the alert, a Doñana lynx prowls its territory, above, usually searching for rabbits, although lynx may also hunt ducks and young deer. It stalks slowly, but when its prey begins to flee, the cat sprints to make the kill, below.



My frequent encounters with lynx in the Coto del Rey fostered the false if delightful illusion that these rare animals are common.

member of the European Union, Spain is required to prepare a new plan to protect the lynx and has spent \$3 million on various projects since 1995. Recently, however, the Spanish Ministry of Environment called a meeting of biologists and

officials to develop a coordinated strategy for saving the lynx. Such efforts may prove to be too little too late. As Palomares admitted in an unguarded moment, "My study may be one of the few done on how a species in a fragmented population goes extinct."

No one knows whether Barbaro has found a new mate to replace Nati. My last glimpse of him was memorable. After watching me carefully for a long moment, he turned slowly and walked into a thicket of wild rose bushes. Just before he vanished, his short tail with the black tip lingered for a moment, like an exclamation point. □

Travel Notes

Doñana National Park, one of the largest nature reserves in Europe, encompasses marshlands, dunes, lagoons, scrub land, and Mediterranean forest within its 125,000 acres. Doñana's fauna includes the red deer, Iberian eagle, and flamingo. The park is a stopover for hundreds of thousands of birds that migrate between Europe and Africa, arriving in autumn and winter. For information on guided tours, contact the Marismas del Rocio cooperative, tel: (959) 43 04 32.



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