

An Ancient Landscape Faces New Challenges

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At day's end, two dozen of us worked our way through olive and almond trees to the base of a bluff near the hamlet of Almorchón in southwestern Spain. Our hosts led us up the steep face of the bluff toward the ruins of a 9th-century Moorish fortress. For the Moors, the site served as a strategic post between the hills of Córdoba to the south and a large grassy plain (known as "La Serena") to the north. Medieval Christians inherited the fortress and transformed it into a monastery. For we modern visitors, mostly members of the European Crane Working Group, the ruins offered a commanding view of a valley through which wintering Eurasian Cranes passed between their daytime feeding areas and their evening roosts.

As the sun fell toward the Portuguese border, we stationed ourselves among the ancient battlements, with binoculars, cameras, and notebooks at the ready. First came the calls from the hills behind us, faint at first, then swelling with the cranes' approach. Finally the flocks emerged out of the dusky background into the sunset, swept through the valley, and disappeared into the broad interior of La Serena.

People and cranes have shared Iberia's woodlands, wetlands, and skies for millennia. Long before even the Moors and monks lived here, prehistoric cave dwellers painted Eurasian Cranes on cave walls. Today, the Spanish region of Extremadura boasts some of Europe's wildest landscapes, and provides a haven for Great Bustards, Golden Eagles, Griffon Vultures, and other rare species. From October to March, it is home to the cranes that breed in Scandinavia, Germany, and Poland. It was an appropriate site, then, for January's meeting of the European Crane Working Group.

Grus grus in Europe

Although the Eurasian Crane is not among the world's threatened crane species, its status and fate in Europe—and especially in Extremadura—raise issues of global importance for conservation. These issues revolve around the question of whether the age-old coexistence of cranes and people can continue in the face of rapidly changing economies, land uses, and landscapes.

With an estimated global population between 150,000 and 250,000, the Eurasian Crane is the third most abundant of the world's crane species, after the Sandhill and Demoiselle. Its breeding range stretches across the Eurasian landmass from Scandinavia to eastern Russia, while its wintering

grounds are found in the Iberian Peninsula and Morocco, northern and eastern Africa, the Middle East, India, and China.

Across much of its historic range, the Eurasian Crane continues to flourish. Europe, however, is the main exception. Cranes were extirpated from the British Isles in the mid-1600s. Since then, the species has steadily withdrawn along the edges of its range in southern Europe due to hunting, loss of wetlands, and other pressures from expanding human populations. Cranes last bred in Italy, France, Bulgaria, and Slovakia in the late 1800s. In the 20th century, one country after another lost its breeding populations: Austria (1900), Hungary (1952), Spain (1954), Yugoslavia (1965), Greece (1968), and Romania (1969).

Today, Europe's cranes breed only in the northern countries—Norway, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, eastern Poland, and northern Germany—with occasional or scattered nestings in Denmark, France, and England. Especially in the Scandinavian countries, the cranes still find the large, isolated wetlands they prefer. In other areas, however, they are adapting to the presence of people, and increasingly use smaller natural wetlands, as well as artificial and restored habitats.

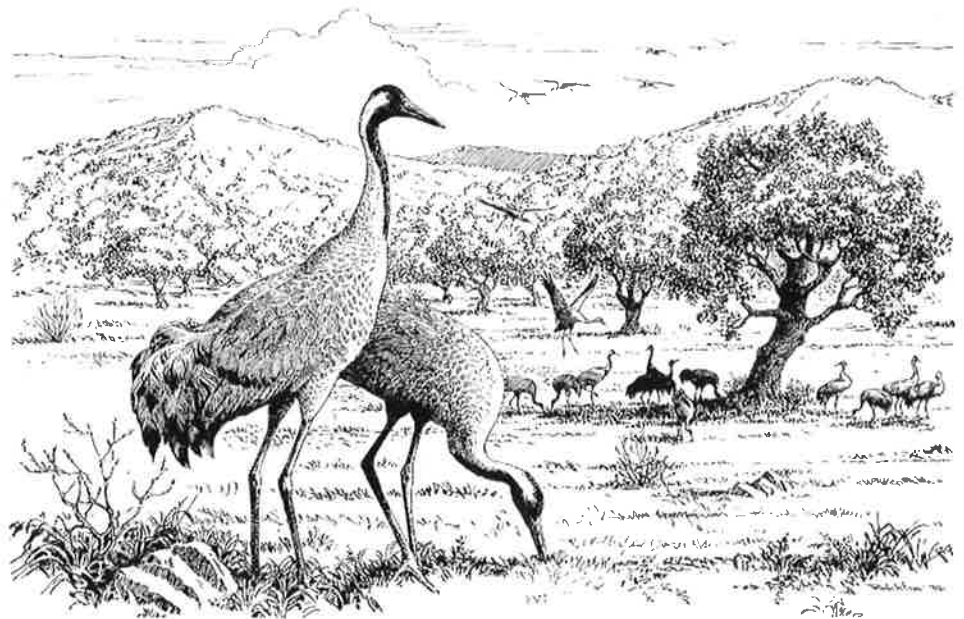
During migration, Europe's cranes split into two main wintering populations, each of which is believed to number more than 60,000 (see map). Those from the more western breeding areas migrate through Germany, Belgium, and France. Some overwinter in southwestern France, but most cross the Pyrenees into Spain, pausing at Laguna de Gallocanta, a critical migration

stopover point northwest of Madrid. From there they scatter to their wintering grounds. Some go as far as Morocco, and others spill over into Portugal, but about 75% of the western population—between 50,000 and 55,000 cranes—settle into Extremadura's open woodlands, steppes, and wetlands.

Over the last several decades, intensive conservation work has stopped the centuries-long decline of Europe's crane populations. However, many threats remain. The northern wetlands in Scandinavia and eastern Europe where they breed, although relatively isolated, are still subject to degradation. Important resting areas along their migration routes, especially wet meadows and smaller wetlands, have been lost as the scale of European agriculture has increased. Habitat loss, in turn, has concentrated the flocks, increasing the risk of crop damage. In Eastern Europe and the Balkans, political and economic instability hinders cooperative conservation efforts, while changing land use may increase pressures on vital crane habitats. Finally, changes in traditional agricultural practices—especially in Extremadura—are altering the conditions under which cranes and people have coexisted for so long.

The dehesas of Extremadura

Extremadura's cranes belong to a unique type of ecosystem. The landscape in Extremadura and neighboring portions of Portugal is dominated by what appear to be natural savannahs—great expanses of tawny grassland dotted by evergreen oaks. But in the Mediterranean, where natural woodlands were long ago altered (or even completely eliminated) by human beings, the distinction



The semi-natural "dehesas" of southwestern Spain and Portugal host 50,000-55,000 Eurasian Cranes during the winter. For centuries, these open landscapes have provided safety and food for cranes, plus a variety of products for humans. But now, with economic pressures from a more integrated Europe, dehesas are being converted to more intensive agricultural systems. Illustration by Victor Bakhtin.

between natural and man-made landscapes is not so easily drawn. These semi-natural oak savannahs, known as "dehesas" (day-hay-sus), are in fact the product of centuries of intensive human use of the land.

The dehesas are a type of agroforestry system that combines the raising of crops, trees, and livestock on the same land. Such systems are increasingly encouraged and promoted in developing countries due to their social, economic, and environmental benefits. Extremadura's dehesas have the distinction of being the only widespread agroforestry system still in use in Europe.

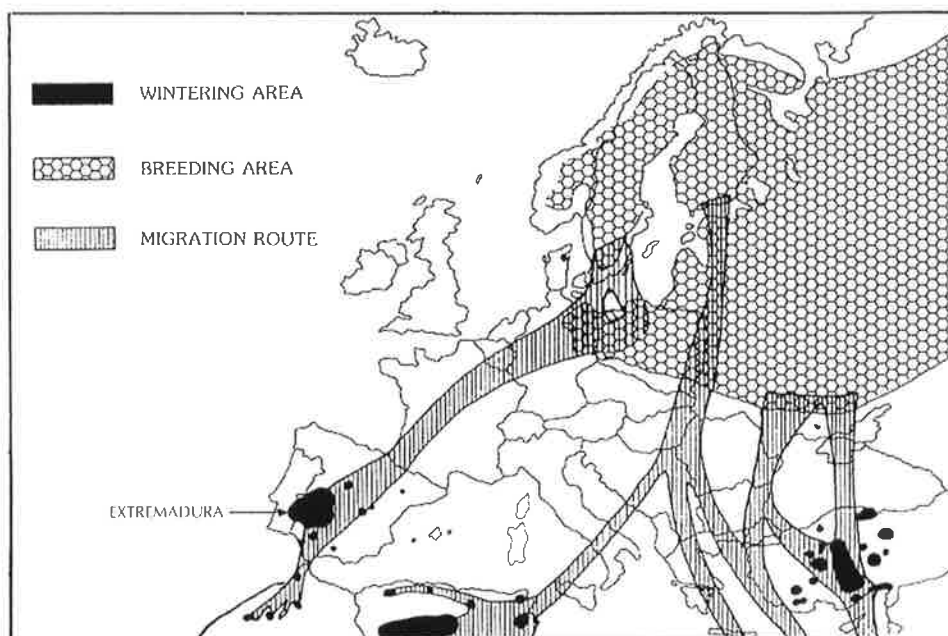
Evergreen oaks, principally the holm oak *Quercus rotundifolia*, are the dominant trees of the dehesas. Although modest in size compared, for example, to the massive oaks of eastern North America, oaks of the dehesas are in fact hundreds of years old, a consequence of their slow growth.

For the local farmers and herdsman, the dehesas provide multiple benefits. Oak acorns are an important food for pigs, which are turned into premium Iberian hams. Oak limbs are sometimes trimmed for fuelwood and charcoal. The bark of the cork oak, which also occurs in the dehesas, provides high quality cork. Once every several years, the land between the trees is plowed and planted to grains or forage grasses. Sheep, goats, horses, and cattle also graze the dehesas.

In the dehesas, cranes find food in abundance—acorns, bulbs, waste grains, invertebrates, other small animals—as well as the shallow wetlands and solitude they require. In early winter, they subsist almost entirely on the nutrient-rich acorns, breaking the shells with their bills and extracting the meat. As the acorn supply declines, they switch to other foods in the dehesas, and to grains and seedlings in agricultural fields.

On occasion, large flocks of cranes have caused crop damage, and crop depredation was an important topic of discussion during the Extremadura meeting. A variety of responses to the problem were proposed, including changes in agricultural policies to reward farmers who protect crane habitat, increased research, closer cooperation between farmers and conservationists, and special campaigns to promote traditional agricultural products.

Periodic grazing and plowing are needed to maintain the dehesas. In the absence of these activities, the acorns sprout and other woody vegetation takes hold. When the system loses its savannah-like character, it becomes less attractive for cranes. Ever wary of people and predators, the cranes need the



Europe's Eurasian Cranes split into two wintering populations, each numbering more than 60,000. The western group pauses during migration at Laguna de Gallocanta, then scatters as far as Morocco and Portugal. Most cranes, however, winter in the Extremadura region of southwestern Spain. Map reproduced with permission from *La Grulla Común en Extremadura*, by Grupo de Investigación de Conservación, Universidad de Extremadura.

open vistas that the dehesas provide, and are rarely found in overgrown areas.

The dehesas have proven to be economically and environmentally sustainable, providing food, fuel, forage, and wildlife habitat for generations. They are changing, however, under increasing pressures. In recent decades, many landowners have cut the ancient oaks to make way for more intensive land uses. Nuclear and hydroelectric power facilities, transmission lines, and other public utility projects have appropriated extensive portions of the dehesas. Large-scale irrigation schemes have transformed traditional agricultural practices, while diverting scarce water from the region's wetlands. An even more subtle threat is posed by the recent changes in European agricultural and economic policy, which may make it more difficult for the local farmers of the dehesas to survive economically.

Fortunately, Extremadura's cranes, other wildlife, and environment have strong supporters. Since 1978, a private organization in Spain called the Asociación Para la Defensa de la Naturaleza y los Recursos de Extremadura (ADENEX) has had as one of its principal goals the protection of the dehesas. Through education programs, the establishment of reserves, and active participation in the political process, ADENEX has focused attention on crane conservation, and has made the cranes a source of local concern and pride. With the support of Extremadura's Environmental Agency, ADENEX organized

the January meeting of the European Crane Working Group.

Toward a long-term strategy

The conservation of the dehesas in Extremadura is only one of the challenges that cranes and their defenders face within the highly developed European landscape. In a summary statement of their findings and recommendations, the members of the Working Group noted that many measures will be required in the coming years to ensure a safe future for Eurasian cranes and their habitats. These measures include: stronger legal protection for breeding, migration, and wintering habitats; habitat restoration, especially to provide alternative resting areas along migration routes; marking of utility lines to reduce accidental collision; new programs and policies to help balance the needs of farmers and cranes; better coordination of banding programs to improve our understanding of crane migration routes; and greater cooperation with colleagues working with Eurasian cranes in Eastern Europe, Africa, and Asia.

Such actions may allow cranes and people to coexist in Europe for millennia to come. While the historical decline of crane populations in western Europe reminds us of the need to remain vigilant, the recent stabilization of crane populations provides reassurance. Although wild things are vulnerable, they can recoup losses, if given the opportunity. The view from Extremadura's ancient ruins offers us that lesson, and that hope.