

Decline and Recovery of the Island Fox: A Case Study for Population Recovery

By Timothy J. Coonan, Catherin A. Schwemm, and David K. Garcelon, with Linda Munson and Cheri Asa. 2010. Cambridge University Press, Cambridge, UK. 212 pages. illus.

Decline and Recovery of the Island Fox is a love story and a mystery story. Not in a romantic or detective way, but more in the sense of deep affection and care, curiosity and concern, inquiry and responsibility, and unwavering devotion. Nothing less would have saved the island fox, *Urocyon littoralis* – a rapidly and

recently evolved species of carnivore smaller than its mainland gray fox ancestor (actually the smallest canid in North America), inhabiting only the Channel Islands off the coast of Southern California. Before reading this book, I didn't know this distinct little fox existed.

How did such a unique species evolve so rapidly? Chapter 2, "Evolution and genetics," provides the details. Interestingly, island foxes illustrate both (1) *dwarfism*, a phenomenon sometimes found among island species, which makes them smaller than their mainland ancestors, and (2) the *island syndrome* which makes the life history characteristics of island species different from their mainland relations due to the limiting factors of island environments. The island syndrome not only made island foxes different from mainland gray foxes, it also resulted in morphological distinctions among the foxes inhabiting each of the six individual Channel Islands – San Miguel, Santa Rosa, Santa Cruz, San Nicolas, Santa Catalina, San Clemente – resulting in six *Urocyon littoralis* sub-species!

Chapter 3 deals with social structure, reproduction, population dynamics, and mortality and survivorship of the island foxes. Research has revealed, for example, that island foxes have lower litter sizes, smaller territories, and higher densities than mainland foxes. Their high survival rates result from the high quality of the grassland, scrub and chaparral habitat, as well as the typical absence of predation. Yet those survival rates changed dramatically and mysteriously in the 1990s. Inquiry revealed that disease and golden eagle predation were reducing island fox populations to near-extinction levels.

The discovery called for swift, complex, and dramatic measures, which I will not attempt to represent accurately except to mention that they included capture and captive breeding. The fascinating and inter-related story of foxes, golden eagles, feral pigs, dogs, disease, bald eagles, humans, and more is told in Chapters 5 to 11.

Chapter 4, "Food habits, habitat use, activity patterns, and dispersal," I found particularly interesting because it helped me get to know the island foxes better. They make opportunistic use, not surprisingly, of a wide variety of plant and animal resources on the islands. A curious animal resource is the introduced garden snail, which may provide an easily caught and

consumed food source for older foxes, providing them with essential nutrition they may not be able to obtain otherwise. The authors observe that the snails are particularly abundant on San Nicolas Island, where the fox population age structure is more skewed to older age classes. The authors also note that because island foxes are able to make use of so many different island resources and habitats, the animals may be in a good position to adapt to predicted effects of climate change.

Later chapters in the book discuss social, educational, and political aspects of the island fox recovery story. Environmental groups – in particular "Save our Species" (SOS) and "Friends of the Island Fox" (FIF) – played important roles in raising awareness of island foxes and related issues, in collaborating with government and NGOs, and in raising funds for island fox captive breeding and recovery efforts.

The SOS group is particularly interesting. Organized and operated by children, SOS organized special educational events and raised a total of \$10,000 in support of island foxes. The group generated so much visibility that it gained the attention of Jane Goodall, eventually participating in her Roots and Shoots program. "The once third graders are now in high school," write the authors, "but ... these young adults will always know that they contributed to recovery of an endangered species" (p. 145).

The recovery of island foxes – their return from the brink of extinction – is indeed something these young people, and others involved in the "dramatic, heroic and, at times, controversial" (p. xii) story can be proud of. There is a lot to the story, and so much more to this relatively short, but dense, complex and meticulously referenced little book than I can possibly represent in this book review.

Suffice it to say that *Decline and Recovery of the Island Fox* is indeed a mystery and love story – about a unique little animal in difficulty, and about people who were not only troubled enough to determine the causes of its decline, but concerned enough to perform heroic deeds to bring it back. In the end, the book is a story of hope – hope that species loss is not inevitable, and hope that people can care enough to take positive action.

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