

Friends of the Island Fox, Inc.
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Island Fox Research 2008

Island Fox and the Channel Island Ecosystem

The interconnectedness of the Channel Island ecosystem continues to unfold. Several studies presented at the Seventh California Island Symposium and the Tenth Annual Meeting of the Island Fox Working Group revealed interconnections between the island fox and other island species. The following are summaries of research findings on:

- ◆ Island Foxes and Spotted Skunks
- ◆ Island Foxes and the San Miguel Island Ecosystem
- ◆ Introduced Animals and Island Plants
- ◆ Island Fox and Insects
- ◆ Nonnative Plant Invasions

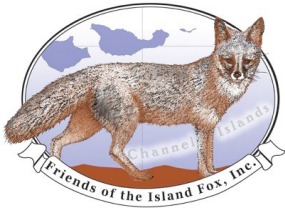
Island Foxes and Spotted Skunks

A recent study of the Channel Island spotted skunk on Santa Rosa Island reveals that the population increased during the past decade while island fox numbers were reduced. During the Sept. 2006 to Feb. 2007 trapping season for island foxes, the spotted skunk population was discovered to be dense. Skunks were found in traps five times more frequently than foxes. A total of 342 skunks were captured, examined, and PIT tagged with a microchip for identification. Three quarters of the skunks captured were male and three quarters were adults. Research on the skunk population will continue as the island fox population recovers (Dennis & Coonan, 2008).

References:

Dennis, M.H., & Coonan, T.J. (2008, February 5-7). *Channel Island spotted skunk status on Santa Rosa Island*. Paper presented at Seventh California Island Symposium, Oxnard, CA.





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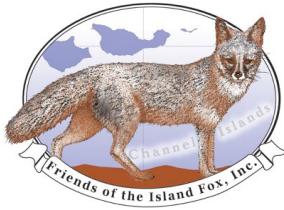
Island Foxes and the San Miguel Island Ecosystem

In 2000, when the island fox population on San Miguel Island dropped to just 15 animals and those surviving foxes were taken into the captive breeding facility, the island ecosystem experienced what it would be like if the San Miguel Island fox went extinct. In a short time changes occurred in the ecosystem. Researchers found that the deer mouse (*Peromyscus maniculatus*) population was dramatically changed (Drost, Schwemm, Coonan & Richards, 2008). Without their primary predator, the deer mouse population transformed from typically stable, low numbers to “multi-year fluctuations, with sharp peaks of over 1,000 mice per ha. and lows of less than 10 per ha.” The mice are seed consumers and the rodent fluctuations affected seed production of plants, like the giant coreopsis. Nonnative black rats (*Rattus rattus*) which had previously lived along the island’s coastline expanded their territory in the absence of the island fox. The northern harrier (*Circus cyaneus*), a hawk which had previously been a transient winter visitor, became established as a year-round resident. Five pairs of these ground-nesting hawks currently breed on the island. Similarly, western gulls (*Larus occidentalis*) had historically nested on offshore islets and hard to reach rocky areas. Without the island fox as a possible predator, nesting colonies have established themselves at several sites on San Miguel. As the island fox recovers and reclaims its territory, these changes should reverse themselves.

References:

Drost, C.A., Schwemm, C.A., Coonan, T.J., & Richards, D. (2008, February 5-7). *Ecosystem-wide responses to extirpation of island foxes on San Miguel Island*. Paper presented at Seventh California Island Symposium, Oxnard, CA.





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Introduced Animals and Island Plants

In 1998, the National Park Service removed introduced cattle and reduced introduced Roosevelt elk and mule deer populations on Santa Rosa Island. Researchers evaluated the native plant communities, chaparral and coastal sage scrub, to see if they are recovering. In general, native cover has increased and the number of elk and deer using the observed areas has declined. However, the density of the native plants in the coastal sage scrub has still decreased. Individual plants have grown in size, but there is an absence of young plants. While native plants are recovering with the reduction of grazing, browsing by elk and deer continues to have an effect on the island chaparral ecosystem (Christian, Zedler & McEachern, 2008).



References:

Christian, J.A., Zedler, P.H., & McEachern, A.K. (2008, February 5-7). *Native shrub recovery nine years after reduction of intensive grazing on Santa Rosa Island, CA*. Paper presented at Seventh California Island Symposium, Oxnard, CA.

Island Foxes and Insects

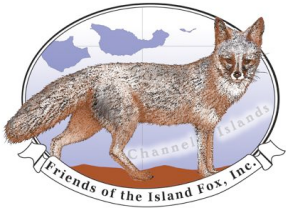
At specific times of the year, insects play a major role in the island fox's diet. The dominant insect prey is the Jerusalem cricket (*Stenopelmatus fuscus*) which can be found in 72 to 80% of scat samples collected in spring, fall and winter (Collins, 1980). New research has shown that Jerusalem cricket abundance is greatest where leaf litter depth and plant canopy height are greatest. Their population is least where nonnative grasses proliferate (Vandergast & Weissman, 2008). Damage to native plant ecosystems and the advancement of nonnative grasses may cause a reduction in Jerusalem cricket populations and therefore a dramatic reduction in an important prey species for the island fox.



References:

Collins, P.W. (1980) Food habits of the island fox (*Urocyon littoralis littoralis*) on San Miguel Island, California. In *Proceedings of the Second Conference on Scientific Research in the National Parks: Vol. 12. Terrestrial biology: Zoology* (pp.152-164). National Park Service: Washington DC. NTIS. PB81-100133.

Vandergast, A.G., & Weissman, D.B. (2008, February 5-7). *Multiple origins of California Channel Island Jerusalem crickets (Orthoptera stenopelmatinae stenopelmatus)*. Paper presented at Seventh California Island Symposium, Oxnard, CA.



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Nonnative Plant Invasions

Santa Barbara Island is the second smallest in the Channel Island group, only 2.6 square km., and too small for island foxes to survive there. Feral rabbits were removed from the island approximately 30 years ago. Studies of the flora, both the recovery of native plant species and the identification of new species, provide valuable information on how plant species have arrived on the island over the past three decades. Thirty-two new species have been identified on the island, 17 of which are nonnative to the Channel Islands. The majority of the exotic species were first documented at the cove landing area, along trails and other locations most frequented by human visitors. This suggests humans are the primary introduction carrier for nonnative plants. Most of the native plants, however, appear to have been introduced away from human areas. (Drost & Junak, 2008)

References:

King, J. (2008, June 24). *Catalina Island update*. Paper presented at Tenth Annual Meeting, Island Fox Working Group, Ventura, CA.



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Peter Pendergest; Cathy Schwemm; Keri Dearborn, Keri Dearborn, & Keri Dearborn