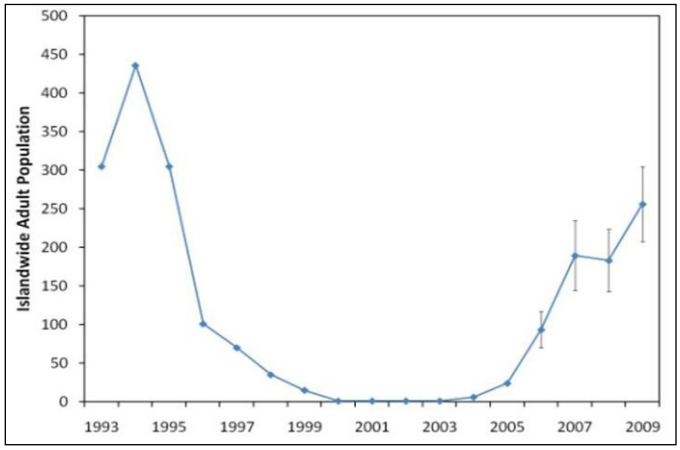
Island Fox

IMPORTANCE

The island fox (*Urocyon littoralis*) is one of the smallest canids in the world. Occurring only on six of California's eight Channel Islands, each island population is recognized as a separate endemic subspecies. Although foxes have always existed at low population sizes, four island fox subspecies underwent catastrophic declines in the 1990s. On San Miguel, Santa Rosa and Santa Cruz Islands at Channel Islands National Park, the decline was attributed to predation by golden eagles (*Aquila chrysaetos*). The presence of non-native ungulates as a food source in addition to the DDT-caused decline of bald eagles (*Haliaeetus leucocephalus*), a natural competitor, facilitated the establishment of golden eagles as resident breeders on the islands. By 2000, predation on island foxes resulted in the population decline to 15 individuals on San Miguel and Santa Rosa Islands, and less than 80 on Santa Cruz Island. In 2004, each of the park's island fox subspecies were federally listed as endangered. A recovery program was begun at Channel Islands National Park that included captive breeding and reintroduction as well as removal of resident golden eagles, re-establishment of bald eagles, and removal of non-native ungulates. Population and mortality are subsequently monitored to ensure that recovery proceeds apace and future threats to the park's island fox subspecies are identified.

OBJECTIVES

- Identify trends in island fox populations
- Ensure recovery program makes progress in increasing wild island fox populations to viable levels



Decline and recovery of San Miguel island foxes (*U. l. littoralis*), as indicated by estimated islandwide population size, with 80% confidence interval.

Remote camera photograph of radio-collared island fox by a box trap.

MONITORING EFFORTS

For island foxes, recovery, or the probability of persistence, depends on population size and mortality rate.

- Population size is estimated annually on each island by extrapolating density from multiple small grids.
- Each grid is trapped for 5 nights and foxes are marked with passive integrated transponder (PIT) tags.
- The mortality rate, or conversely, the annual survival rate, is estimated by continual monitoring of a fairly large (40+) sample of radio-collared foxes on each island.

MANAGEMENT IMPLICATIONS

- Survival of reintroduced foxes has remained high (above 80%) on San Miguel and Santa Cruz Islands and has increased on Santa Rosa since reintroduction began in 2003.
- Excellent reproduction in the wild combined with high annual survival has allowed recovering island fox populations to increase dramatically.
- Demographic modeling incorporating the population and survival estimates now predicts a very low risk of extinction for the recovering island fox populations, provided that catastrophic mortality sources (predation and disease) are successfully mitigated.

For more information:
Tim Coonan, tim_coonan@nps.gov