



Friends of the Island Fox, A Program of the Channel Islands Park Foundation
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Island Fox Update 2011

The island fox offers a dramatic example of how people can come together to make a positive difference for an endangered species. In 1998, island fox populations were plummeting on four of the California Channel Islands due to predation by golden eagles and introduced disease.

Since the height of the crisis, the Integrated Island Fox Recovery Team (formerly the Island Fox Working Group) has met annually to update population status, discuss problems, consider strategy, and plan for the upcoming year. Friends of the Island Fox supports the Integrated Island Fox Recovery Team and participates in their annual meeting. The following is an update from June 2011 on current island fox status and conservation efforts. The population numbers represent the official numbers reported at the June meeting.:

San Miguel Island	island fox population
<p>Captive breeding of the San Miguel Island fox (<i>Urocyon littoralis littoralis</i>) ended in 2007 and all foxes were returned to the wild. The population continues to increase at ~60% a year with a high annual fox survival rate, 90%. (Coonan, 2011a). As the population has reached known historical levels, biologists are watching to see how the population stabilizes.</p>	<p>Historical estimate:</p> <p style="text-align: center;">450</p> <p>Low point: 15</p>
<p>Concerns: There is no current evidence of disease but serology testing is needed to evaluate the population for signs of possible disease exposure. Any visitation to the island by domestic dogs or introduced wild animals, like raccoons, could introduce unexpected, and possibly fatal, disease.</p> <p>Genetic inbreeding remains a concern for this population. Only eight of the 15 survivors produced pups during captive breeding creating a small founder group for a population. The National Park Service continues to watch for evidence of genetic problems in the recovering population (Coonan, 2008a).</p>	<p>Population estimate: 516</p> <p>Status: Endangered, but successfully recovering</p>
<p>Positive Note: The San Miguel Island fox's recovery success is greater than similar figures reported by other canid reintroduction programs (Coonan & Schwemm, 2008). As of 2010, the San Miguel population has reached historically documented numbers (Coonan, 2011a). Predation by golden eagles caused the major impact on this subspecies. Reducing the threat of predation by relocating golden eagles away from the islands has allowed the San Miguel population to rebound. Monitoring foxes via radio telemetry collars has also provided early identification of predation or disease threats. Annual vaccination of 60 - 100 individual foxes is protecting a larger potential survivor group in the event of introduced rabies or distemper virus (Coonan, 2011a).</p>	



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Santa Rosa Island	island fox population
<p>Captive breeding continued for the Santa Rosa Island fox (<i>Urocyon littoralis santarosae</i>) until 2008 when all foxes were returned to the wild. The annual survival rate climbed to 90% in 2007-2009, but the incidental arrival of three juvenile golden eagles in spring 2010 caused the predation deaths of seven island foxes. Six of the preyed upon foxes were young adults and their reproductive loss dramatically impacted the population (Coonan, 2011b). In 2010, two yearling male island foxes died from kidney failure caused by a parasite, <i>Leptospira</i> (transmitted directly via ingestion or indirectly through prey, still water or contact with sea lions). Currently, the parasite appears limited to foxes and spotted skunks on Santa Rosa Island. The occurrence may be decreasing (Guglielmino, 2011).</p>	<p>Historical estimate:</p> <p style="text-align: center;">1,780</p> <p>Low point: 15</p> <p>Population estimate: 292</p> <p>Status: Endangered, but slowly recovering</p>
<p>Concerns: The hunting of introduced deer and elk continues to attract migrating golden eagles and predation continues to threaten the recovery of this population. (Coonan, 2011b). Unknown fox deaths in 2009 may have been connected to leptospira and the parasite can impact humans (Guglielmino, 2011).</p>	
<p>Positive Note: The population continues to increase slowly. Deer and elk are scheduled to be removed by the end of 2011 (Coonan, 2011b).</p>	
Santa Cruz Island	island fox population
<p>Captive breeding ended in 2008 for the Santa Cruz Island fox (<i>Urocyon littoralis santacruzae</i>) and all foxes were returned to the wild. In 2010 two foxes were preyed upon by transient golden eagles, but the island fox population continued to grow and recover. Some areas now show less increase (fewer pups) as the population nears historical density (Boser, 2011).</p>	<p>Historical estimate:</p> <p style="text-align: center;">1,465</p> <p>Low point: 80</p> <p>Population estimate: 1,302</p> <p>Status: Endangered, but recovering</p>
<p>Concerns: Transient golden eagles still pose a threat to the Santa Cruz Island foxes. Fox density near campgrounds has increased and there is growing concern regarding people feeding foxes and fox-on-fox aggression for territory. Any visitation to the island by domestic dogs or introduced wild animals, like raccoons, could also introduce unexpected, and possibly fatal, disease.</p>	
<p>Positive Note: Approximately 60 foxes are monitored with radio collars and 100 are vaccinated against rabies and distemper (Boser, 2011). Procedures are in place to respond to fox mortalities due to golden eagle attacks.</p>	



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Santa Catalina Island	island fox population
<p>In 2010, biologists caught 489 individual island foxes during the annual population count. The Santa Catalina Island fox (<i>Urocyon littoralis catalinae</i>) continues to recover. Annually, 45-60 island foxes are radio collared for telemetry and mortality monitoring and collared foxes demonstrate a 90% annual survivorship. In 2011, GPS collars were used to monitor the impact of the Catalina Grand Prix motorcycle race on 5 island foxes living in the area of the race course. The GPS collars allowed biologists to track the location and movement of the foxes before, during and after the race. No island foxes were injured and the impact of the one-day event on fox behavior appeared to be minimal. As the population increases, more fox-on-fox injuries are being seen between males. Frequent monitoring led to rapid detection of 17 known mortalities, including vehicular trauma (King, 2011).</p>	<p>Historical estimate:</p> <p style="text-align: center; font-size: 1.2em;">1,342</p> <p>Low point: 103</p> <p>Population estimate: 1,008</p> <p>Status: Endangered, but recovering</p>
<p>Concerns: Threats to foxes on Catalina Island continue to include vehicles, feral cats, domestic dogs, humans, ear tumors and wild animals transported from the mainland. The city of Avalon is visited by over a million people annually. Raccoons stowing away on private boats and being transported to Catalina Island pose a possible vector for disease introduction. A female raccoon was captured on 6/13/11 and a second animal (and possibly a third) is suspected in the Two Harbors area. The island-wide estimate of feral cats is over 700. The trap, neuter and release program for feral cats is currently unmanaged. Cancer (ceruminous gland carcinoma), linked to ear mites, impacts ~33% of the fox population. Topical treatment of ear mites may reduce the cancer threat and but it is still being studied. In 2010, the first evidence of canine adenovirus (origin of “kennel cough” and canine hepatitis) was identified in serology testing and 58% of tested foxes had been exposed to the corona virus. The combination of people, pets and wild animals from the mainland poses a constant threat for the introduction of disease on this island (King, 2011).</p>	
<p>Positive Note: During 2010 annual trapping, 389 island foxes were vaccinated for canine distemper and rabies (King, 2011). Permanent signs regarding stow-away raccoons have been posted in mainland marinas, but more public education is needed (King, 2011). The island fox population continues to be monitored with telemetry and GPS tracking, and annual island-wide trapping. Traffic signs are in place at sections of road frequented by island foxes, but more signs are needed. Research and investigation into the cause and prevalence of ear tumors continues (King, Duncan & Garcelon, 2008). For more on ceruminous gland carcinoma see Island Fox Research 2008 - Island Fox Health pdf.</p>	



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San Clemente Island	island fox population
<p>The San Clemente Island fox (<i>Urocyon littoralis clementae</i>) population was robust in 2010. Biologists believe reproduction on this most southern island is occurring in January (two months earlier than northern islands). Different social behavior has also been observed: polygamous (one male with two breeding females) and females helping raise another female's pups (Booker, 2011).</p>	<p>Historical estimate:</p> <p style="text-align: center;">1,000</p> <p>Population estimate: 1,127</p>
<p>Concerns: Between 2003 and 2007, an average of 33 island foxes were hit and killed by vehicles annually on San Clemente (Andelt, 2008). Unfortunately, along with the population increase has come an increase in vehicular caused fatalities (68 in 2010). Education programs are needed to inform new Naval staff arriving on the island (Booker, 2011).</p>	<p>Status: Increasing, but vulnerable</p>
<p>Positive Note: Sixty-four island foxes were vaccinated in 2010. There is no current disease or predation threat to this population.</p>	
San Nicolas Island	island fox population
<p>Monitoring of island foxes (<i>Urocyon littoralis dickeyi</i>) on San Nicolas Island began in 2000. Historically there has been a high annual survival rate and this island has the greatest fox density of any place in the world. 2010 saw a decline of foxes in some habitats, especially adults. Preliminary studies suggest that the current decline is most likely a natural population adjustment (Hudgens, 2011).</p>	<p>Historical estimate:</p> <p style="text-align: center;">520</p> <p>Population estimate: not calculated</p>
<p>Concerns: The greatest threat to island foxes on San Nicolas continues to be vehicular trauma. Road signs to alert drivers and public education efforts have reduced the number of island foxes hit by cars.</p> <p>The high density of island foxes on San Nicolas, puts these animals at great risk if disease is introduced. Because foxes live closer together, the probability of disease being passed from fox to fox is increased (Ferrara, Hudgens & Garcelon, 2008). The presence of disease could also threaten humans. All captured foxes are vaccinated against rabies and distemper. There are no signs of active disease, but blood tests showed evidence of exposure to adenovirus (origin of "kennel cough" and canine hepatitis) among a large percentage of the population in 2010 (Hudgens, 2011).</p>	<p>Status: Stable, but vulnerable</p>
<p>Positive Note: By 2010 all 55 feral cats on the island were relocated to a private shelter in San Diego, CA. These cats threatened island foxes and other endangered species: island night lizards and snowy plover. Despite recent declines, the island fox population continues to be robust (Hudgens, 2011).</p>	



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