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Island Fox Research 2008

Island Fox and Eagles

The relationship between the island fox and two eagle species is complicated. The bald eagle (*Haliaeetus leucocephalus*) is emblematic of the Channel Islands ecosystem in balance, while the golden eagle (*Aquila chrysaetos*) represents an island ecosystem altered by human impacts. The bald eagle and the island fox prey on different species on the Channel Islands. They do not compete for resources and the presence of the bald eagle helps deter other eagles from colonizing the islands. The golden eagle, on the other hand, hunts island foxes and is the main cause of their population decline on the northern islands. The following are summaries of research findings on:

- ✦ Eagles on the Channel Islands
- ✦ The Golden Eagle Threat to the Island Fox
- ✦ Bald Eagle Recovery on Santa Catalina Island
- ✦ Bald Eagle Activity on the Northern Islands

Eagles on the Channel Islands

Golden eagles are not historically recorded as being present on the Channel Islands. Bald eagles, on the other hand, first appear in the historical record on Santa Catalina Island in 1843 and thereafter on all of the California Channel Islands. Numerous specimens and egg sets were collected from the Channel Islands between 1870 and 1950. (Daily, 2008)

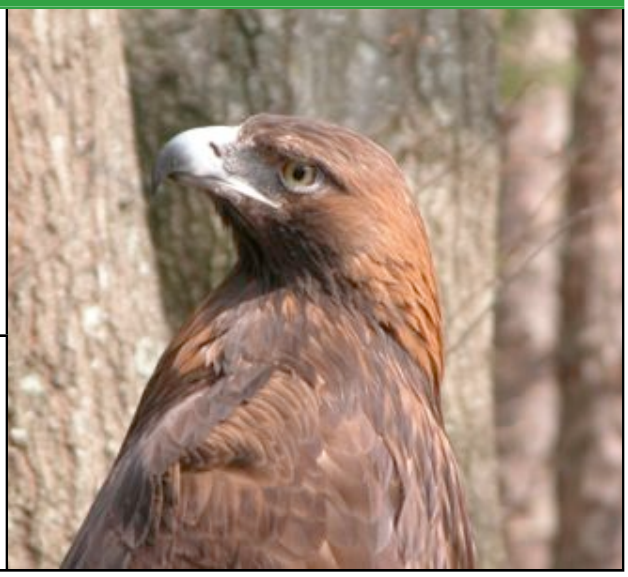

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Photo credits:

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The Golden Eagle Threat to the Island Fox

When golden eagles first arrived on the northern Channel Islands is not specifically known, but their eating habits quickly altered the island ecosystems. Researchers analyzed prey remains found at nest sites on Santa Cruz and Santa Rosa Islands to discern golden eagle dietary habits. An accumulation of prey bones in golden eagle nests revealed the remains of 27-29 prey species during the time when feral herbivores were active on the island and 6-7 species in an active nest after the removal of feral pigs on Cruz. While feral pigs were available on Santa Cruz Island, they constituted the largest percentage of golden eagle prey biomass - 63.2%. The secondary prey biomass was made up of gulls (13.3%) and ravens (8.9%). On Santa Rosa Island, golden eagle diet was primarily introduced deer fawns (34.6%), ravens (25.8%), cormorants (14.2%), and waterfowl (8.6%). Across both islands prior to the removal of feral pigs, island foxes made up 7.2% of golden eagle diet. After pigs were removed from Santa Cruz, predation of island foxes intensified. The diet shifted and island foxes constituted 45.7-57.7 % of golden eagle prey biomass (Collins & Latta, 2008).

The removal of golden eagles on the northern Channel Islands is vital to island fox recovery and the continuation of future populations. As part of the recovery plan, each land management agency will be required to have an eagle management plan. Radio-collared foxes that are attacked provide the first alert that a golden eagle is present on an island. For example, in 2007-08 a radio-collared fox on Santa Rosa was killed by an eagle, but not eaten. A few days earlier, a similar fox death occurred on San Miguel. (Coonan, 2008b). It's believed that 1-2 transient golden eagles travel past the islands in a 12-month period. While nesting golden eagles carry prey back to their nest, typically, non-breeding eagles take a few island foxes as prey in scattered events and leave the carcasses in place. The key to successful preventative action is knowing the least number of fox fatalities that signals a golden eagle in residence on an island (Collins & Latta, 2008).

Biologists also suggest further examination of connections between golden eagle presence and behavior, and the deer and elk hunts on Santa Rosa Island. Studies have shown the golden eagles are attracted to the deer fawns on Santa Rosa.

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Collins, P.W. & Latta, B.C. (2008, February 5-7). *Food habits of golden eagles (Aquila chrysaetos) nesting on Santa Cruz and Santa Rosa Islands, Santa Barbara county, CA.* Paper presented at Seventh California Island Symposium, Oxnard, CA.

Coonan, T. (2008, June 24, b). *Santa Rosa Island update*. Paper presented at Tenth Annual Meeting, Island Fox Working Group, Ventura, CA.

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Bald Eagle Recovery on Santa Catalina Island

Bald eagles were first reintroduced to Santa Catalina Island between 1980 and 1986. The 33 birds formed pairs and bred, but all the eggs broke in the nests due to continued DDE contamination (a DDT residual). Beginning in 1989, biologists managed bald eagles by incubating eggs and returning chicks to nests. Through 2007, 109 bald eagles have been released on Catalina. In 2007, Catalina's bald eagle population included five breeding pairs and approximately 25 individuals. In 2007, two pairs of bald eagles hatched their own chicks on Catalina (Sharpe & Garcelon, 2008).

References:

Sharpe, P.B., & Garcelon, D.K. (2008, February 5-7). *Bald eagle restoration on the California Channel Islands*. Paper presented at Seventh California Island Symposium, Oxnard, CA.

Bald Eagle Activity on the Northern Islands

A program to reintroduce bald eagles to the Northern Channel Islands began in 2002. From 2002 to 2006, 61 bald eagle with GPS transmitters were released on Santa Cruz Island. In 2006, bald eagles nested successfully on Santa Cruz for the first time in 50 years (Sharpe & Garcelon, 2008). Half of the released eagles retained their transmitters and remained on the northern islands for a year or more. Analysis showed that while there was variation between individual birds, the majority of bald eagle time was spent on Santa Cruz and Santa Rosa Islands. There was, however, specific seasonal use of the different islands. While use of Santa Cruz Island was year round, nearly all use of Anacapa occurred during spring and summer. Bald eagle activity on Santa Rosa was primarily in the fall and winter. San Miguel was the least frequently visited island, (only 2% of bald eagle activity), and use occurred mostly during the fall. The seasonal use of specific islands suggests bald eagles are accessing seasonal resources available during the year on different islands. (Dooley, Sharpe & Garcelon, 2008).

References:

Dooley, J.A., Sharpe, P.B., & Garcelon, D.K. (2008, February 5-7). *Bald eagle space use on the northern Channel Islands*. Paper presented at Seventh California Island Symposium, Oxnard, CA.

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