



Monitoring Cliff-nesting Raptors at Pinnacles National Monument

The Question: Are the numbers of nesting pairs of cliff-nesting raptors or the young they produce changing over time at Pinnacles National Monument?

Pinnacles National Monument was established in 1908 to protect the spectacular rock formations, caves, and other natural features for their scientific value and for public enjoyment. The volcanic cliffs and spires delight many thousands of hikers and rock climbers each year but also provide an ideal environment for cliff-nesting raptors to raise their young. The three species of cliff-nesting raptors at Pinnacles are Prairie Falcons (*Falco mexicanus*), Peregrine Falcons (*Falco peregrinus*) and Golden Eagles (*Aquila chrysaetos*). Each year approximately a dozen pairs of these raptors nest among the Pinnacles rocks.

Studies show that Prairie Falcons, Peregrine Falcons and Golden Eagles are highly sensitive to human disturbance, especially during the breeding season. The density of nesting



Prairie Falcons (top), Peregrine Falcons (bottom left) and Golden Eagles (bottom right) are three species of raptors that nest at Pinnacles National Monument.



A raptor biologist posts an advisory sign warning hikers and climbers that raptors are nesting beyond the sign.

Prairie Falcons—

Pinnacles most abundant raptor—is among the highest known anywhere despite the fact they share their cliffs and peaks with hikers and climbers. Their success is due to data from the Breeding Raptor Monitoring Program which allows managers to place temporary voluntary closure advisories in areas only when necessary to protect cliff-nesting raptors, leaving open as many areas as possible for public enjoyment. The closures are not mandatory, but rather kind advisories that impress upon visitors their responsibilities in helping to protect the nesting raptors.

The Project: Park staff visit cliff-nesting raptor territories regularly throughout the breeding season to locate nests and track the status of the nestlings.

The Santa Cruz Predatory Bird Research Group initially carried out the Pinnacles Breeding Raptor Monitoring Program, but since 1988 the program has been conducted on a yearly basis entirely by National Park Service (NPS) staff. The program was initiated in response to the

perception that visitor use was negatively impacting cliff-nesting raptors. The original intents were to collect data on the timing and success of breeding, to observe the effects of human-raptor interactions, and to discourage human entry into cliff-nesting raptor territories whenever possible. The program continues to focus on management, but as part of the NPS Inventory & Monitoring Program has shifted to also analyze long-term falcon occupancy and productivity.

The raptor monitoring season begins in January when advisories are placed on all historic raptor territories. Field biologists visit all known territories on a regular basis as the breeding pairs select nest sites and lay eggs, and the young hatch and eventually fledge. Data collected during the season include the number and location of occupied nest sites; number of eggs laid, hatched, and fledged; and the extent of human entry into occupied territories. If a territory is not occupied by a certain date or as soon as all the young have left the nest, the advisory is lifted.

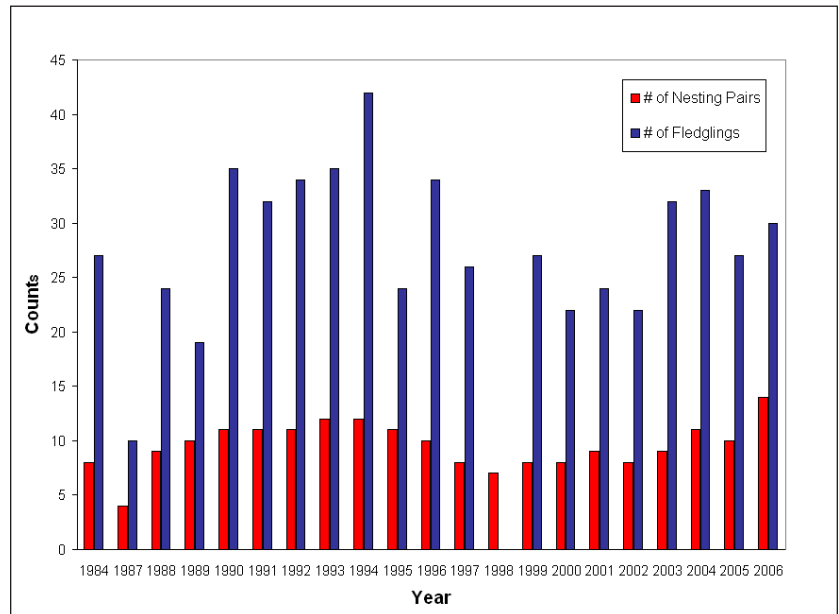


Figure 1. The numbers of Prairie Falcon nesting pairs and their fledglings have stayed stable over a twenty year period. In 1998, there were no fledglings because no Prairie Falcon eggs hatched.

The Results: Although numbers of Prairie Falcon pairs and young produced vary, the overall trend appears stable. Additionally, most visitors appear to be complying with advisories.

Although the park monitors all cliff-nesting raptors, Prairie Falcons are the only species for which there is enough data to evaluate long-term trends. Looking at over twenty years of data, the overall trend seems to be one of stability, even though the number of nest sites fluctuates from year to year (Figure 1).

Prairie Falcons had a fairly average year in 2010, fledging 27 young from 7 nests. Four other nests failed, likely due to predation by great-horned owls. The nest at South Chalone Peak fledged 3 young, representing the first successful falcon nest documented in that territory in 25 years of monitoring. Twenty three other raptor species nested in the park this year as well—the second-highest numbers on record for raptor species diversity at Pinnacles in a given season.

Falcons occasionally respond to the presence of hikers on open trails, but these responses—including circling and wailing above their territories—are considered minor and do not threaten nesting success. To their credit, no climbers were observed in advisory areas in 2010. The full Prairie Falcon fledges seen in closure areas at popular climbing sites like Discovery Wall and Machete in the last couple years are largely due to improved communication with climbers.

Additional Resources:

Pinnacles National Monument raptor webpage <http://www.nps.gov/pinn/naturescience/raptors.htm>

For More Information:

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