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DISTRIBUTION AND HABITAT CHARACTERISTICS
OF MEXICAN SPOTTED OWLS
IN ZION NATIONAL PARK, UTAH:

MANAGEMENT IMPLICATIONS

Submitted to: Zion National Park
Springdale, Utah 84720

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INTRODUCTION

The Mexican spotted owl (Strix occidentalis lucida) has been the focus of considerable attention in recent years due to the lack of knowledge and the controversy over the Northern subspecies (S. o. caurina) in the Pacific Northwest. Following on the heels of this controversy, the Mexican subspecies is currently under consideration for federal listing as threatened (U. S. Department of the Interior 1991). Most Federal agencies have policies to protect state threatened or endangered species and some also protect Federal candidate endangered species, such as the Mexican spotted owl. Most agencies, however, lack specific guidelines to implement these protection policies (U. S. Department of the Interior 1991). Since Mexican spotted owls have been known to inhabit forested areas within the southwest, most of the listing interim guidelines have been initiated by the National Forest Service. Although disturbances such as logging do not pertain to National Park Services, impacts occur from recreation activities such as climbers and hikers. We know little of the impact of spotted owls in areas that are isolated (i.e., are extinct prone) such as Zion National Park and receive heavy human use (Gutiérrez 1985). A need exists to suggest management implications for spotted owls in Zion National Park for current and future management plans.

An investigation of the distribution and habitat characteristics of Mexican spotted owls in Zion National Park was conducted from May - August 1989 and April - August 1991. Owls

were widely but patchy distributed around the park. All owls were found in canyons despite survey efforts on the plateau areas within the park. Features such as high percent humidity, high levels of vegetation strata and high snag basal area described Mexican spotted owl habitat in the canyons.

This report represents suggested management implications to the Final Report submitted to Zion National Park. The Final Report (Rinkevich and Gutiérrez 1991) should be referred to for owl locations within the park as well as for detailed descriptions of study design, methods, results and conclusions. Although it may be too early for formal management implementations, suggestions can be made from what is currently known about spotted owls in Zion National Park.

The strong association between Mexican spotted owls and canyon habitat within the park indicates that owl use canyons should be closely monitored during the breeding season. Survey and monitoring work should begin in March and continue throughout the nesting season (March - August). Spotted owls should be monitored during this period of time to assess reproduction. I recommend centering monitoring activities around the nest site or favored roost sites if the nest site cannot be located. Resource managers may want to monitor the number of visitors hiking through owl use canyons. Examples of owl use canyons with moderate to high human use are Echo Canyon, Hidden Canyon, Refrigerator Canyon, Canyon Overlook Trail and The Narrows.

The order of priority for surveying should be (1) historical sites, (2) canyons not yet surveyed that contain potentially

suitable habitat and (3) all other accessible canyons in Zion Park. Since few owls (three adults and three juveniles) were color banded during the 1989 and 1990 survey season (Rinkevich and Gutiérrez), information obtained from most areas will be limited to the presence or absence of spotted owls rather than known individual owls. A demography study should be suggested but may be extremely difficult due to Zion's rugged canyonland terrain.

At this time, I am unaware of the number of canyons and size of canyons needed to support an adult pair of spotted owls. Results from the current radio telemetry study will indicate preliminary estimates of home range and foraging data (Willey 1990). The study will also follow the birds into the winter thus, migrational movement data will be obtained. Baseline foraging data should be used to begin a large-scale small mammal study. According to Craighead and Craighead (1954), reproduction in Strigiformes is positively correlated with prey abundance. Data on Mexican spotted owl food sources is lacking and needs to be intensively studied.

During the 1991 field season, helicopter time proved to be instrumental for gaining access onto isolated mesa tops. If an owl is heard within an isolated canyon network, survey crews can attempt to access the area at a later date. These canyons may be important for testing my habitat model by using an entirely new set of data, finding pellets and assessing reproduction.

Caution should be used in using the model developed in the 1991 final report (Rinkevich and Gutiérrez 1991) since it has not

tool rather than predictive. Thus, the potential value of a model lies in its ability to objectively describe suitable habitat. At present the utility of this model is limited to Zion National Park but may be applied to areas with similar canyonland terrain.

If the model proves successful in predicting spotted owl habitat within the park, it may (1) redefine and improve prioritizing survey areas and (2) further assist park employees to make sound management decisions in areas of high recreational use. These decisions will obviously be important to ensure population viability of the Mexican subspecies.

Long term studies of Mexican spotted owl's ecology are necessary to provide ecologically based management plans in Zion National Park. Further studies are needed to investigate the habitat requirements of spotted owls in the northern region of the its range. More information is also needed to speculate on the effect of the high visitor use in Zion Park on the owls. Data is lacking on prey densities and distributions, home range size and seasonal movements of spotted owls in the canyon country (Rinkevich and Vieira 1991). This data will then be used for comparative purposes of spotted owls in different geographic areas.

LITERATURE CITED

- Craighead, J. J. and F. C. Craighead. 1956. Hawks, owls and wildlife. Stackpole, Harrisburg. 443pp.
- Gutiérrez, R. J. 1985. An overview of recent research on the spotted owl. Pages 39-49 in Gutiérrez, R. J., and A. B. Carey [eds]. Ecology and Management of Spotted Owls in the Pacific Northwest. Gen. Tech. Rpt. PNW-185, Pacific Northwest Forest and Range Exper. Stat. Portland, OR.
- Laymon, S. A., and R. H. Barrett. 1986. Developing and testing habitat capability models: pitfalls and recommendations. Pages 87-92 in: J. Verner, M. L. Morrison, and C. J. Ralph, eds. Wildlife 2000: modeling habitat relationships of terrestrial vertebrates. Univ. Wisconsin press. Madison, WI.
- Laymon, S. A., and J. A. Reid. 1986. Effects of grid- cell size on tests of a spotted owl HSI model. Pages 93-97 in Wildlife 2000: modeling habitat relationships of terrestrial vertebrates. Univ. Wisconsin press. Madison, WI.
- Marcot, B. G., M. G. Raphael, and K. H. Berry. 1983. Monitoring wildlife habitat and validation of wildlife-habitat relationship models. Trans. N. Am. Wildl. and Natur. Resour. Conf. 48:315-329.
- Rinkevich, S. E. and R. J. Gutiérrez. 1990. Distribution and abundance of Mexican spotted owls in Zion National Park. Unpub. semiannual rept. NPS No. PX-1200-9-C820. Zion National Park, Springdale, Utah.
- Rinkevich, S. E. and V. Vieira. 1991. Propossal: Mexican spotted owls in Colorado Plateau park. Unpubl. rept. Zion National Park, Springdale, Utah 84767.
- U. S. Department of the Interior. 1990. Endangered and threatened wildlife and plants; determination of threatened status of the Northern spotted owl. Fed. Register 55: 26114-26194.
- Willey, D. 1991. Movements and habitat use of Mexican owls on the Colorado Plateau: Natural resources special initiatives proposal.