

Cliff



Peregrine Falcon nest cliff near Lake Mead, Clark County. Photo by Elisabeth Ammon.

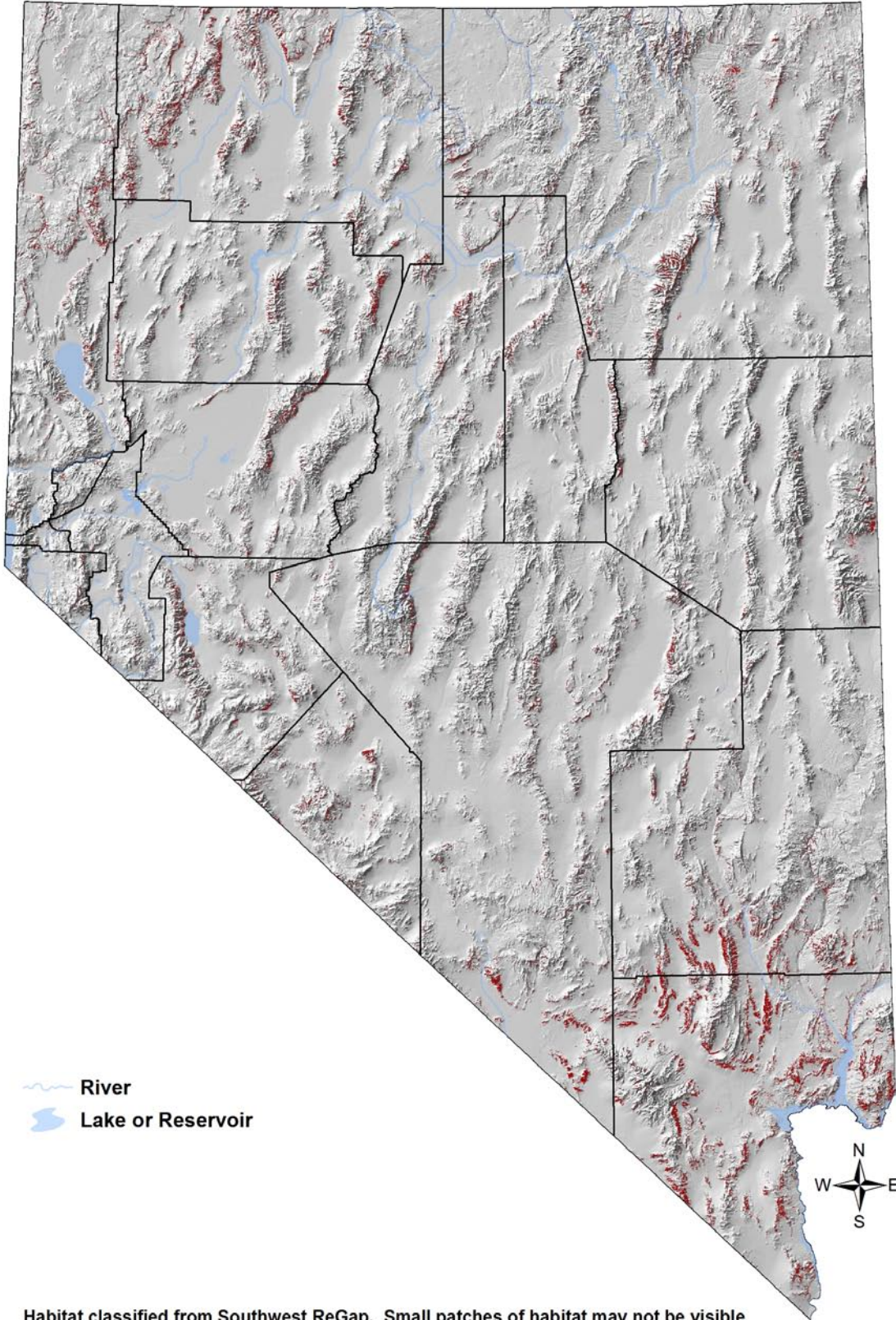
Key Bird-Habitat Attributes

Physical Structure	<p>Golden Eagle: 25.5 (\pm 14.8) m [80 \pm 50 ft]; multiple ledges preferred</p> <p>Peregrine Falcon: 12 – 200 m [40 – 640 ft] tall, mean height 100 m [330 ft] tall, with ledges ~ 1/3 down, usually oriented to north or west; some overhead cover preferred</p> <p>Prairie Falcon: 25 m [80 ft] to 100 m [325 ft], usually ~ 30 m [100 ft]</p> <p>White-throated Swift: Estimated at \geq 40 m [130 ft]</p>
Ideal Scale for Conservation Action	Whole cliff and surrounding lands within 10 km [6 mi] or more for prey populations
Mosaic	Cliffs with undisturbed adjacent landscapes most suitable, including sagebrush, salt desert, riparian, open water, marsh, or wet meadows
Distance to Water	Proximity to water increases habitat value
Other Features	Cliffs that are at least 1 km [0.6 mi] away from regular anthropogenic disturbances most suitable

Conservation Profile

Estimated Cover in Nevada (Cliffs and Talus)	455,000 ha [1,123,000 ac] 1.6% of state
Landownership Breakdown	BLM = 62% USFS = 10% USFWS = 7% DOD = 7% Private = 6% NPS = 3% Other = 5%
Priority Bird Species	Golden Eagle Peregrine Falcon Prairie Falcon White-throated Swift
Most Important Current Threats	Human disturbance Mining Climate change (temperature change)
Habitat Recovery Time	N/A
Regions of Greatest Conservation Interest	All suitable cliff habitat near sagebrush, Mojave scrub, or salt desert shrublands, or rivers, marshes, lakes, or meadows
Important Bird Areas	Bilk Creek-Montana Mountains Carson Range Goshute Mountains Great Basin National Park High Rock Resource Area Jarbidge Mountains Lake Mead Mount Grant Northern Snake Range Ruby Mountains Sheldon NWR Spring Mountains Toiyabe Range Wellington-Pine Grove Hills

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Habitat classified from Southwest ReGap. Small patches of habitat may not be visible on this map, and some areas may be misclassified.

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Overview

Besides being a spectacular part of the Nevada landscape, cliffs also provide essential habitat elements for several Priority bird species. Peregrine Falcons, Prairie Falcons, and Golden Eagles nest almost exclusively on cliffs, and availability of these sites may limit some populations of Golden Eagles and Prairie Falcons (Suter and Jones 1981). White-throated Swifts nest in large colonies on cliffs overlooking rivers or reservoirs. In addition to nest sites, cliffs also provide many bird species with protection from predators and weather extremes, and suitable thermal conditions for soaring (Ward and Anderson 1998).

Few land uses affect cliffs directly, but human disturbance may cause nest abandonment, render a nest site less productive, or prevent a nest site from being occupied. Rock climbing is one of the most proximal disturbances (Camp and Knight 1998), but industrial noise or motorized recreation in the immediate area of a cliff nest may cause similar problems. All cliff-nesting birds also require access to adjacent foraging areas where prey is sufficiently abundant, and they often range far from their nest or roost site while hunting. For our large birds of prey, this may include hundreds of square miles of rangeland, and healthy prey populations in the surrounding landscape may be more important in nest site selection than the physical attributes of the cliff itself (Grebence and White 1989). In Nevada, the highest Golden Eagle densities have been observed in long stretches of cliffs located along river systems (Herron et al. 1985), and Peregrine Falcons in Nevada are concentrated around the Lake Mead NRA, where they nest on earthen and rock cliffs. Figure Hab-4-1 illustrates an example of a cliff landscape that includes surrounding habitat types that are suitable for some Priority species. Others are more likely to be found in more mesic landscapes that include wet meadows, open water, and riparian vegetation.

Main Concerns and Challenges

The following top three conservation concerns were identified in our planning sessions for Cliff habitat in Nevada:

- Human disturbance (non-motorized and motorized recreation, industrial operations)
- Change in temperature due to climate change
- Mining

Cliff nesters are potentially vulnerable to human disturbances, either from recreational activities or from motorized equipment or vehicle traffic operating nearby. Although some cliff nesters appear to tolerate highways and dirt road traffic, they are generally less tolerant of unexpected disturbances, such as off-road-vehicle traffic, new infrastructure development, and recreational visitors. Increasing temperature is a conservation concern for cliff nesters because they generally select nest site ledges based at least in part on thermal conditions. We expect that birds could mitigate increased temperatures to some degree by selecting cooler sites, but these responses

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should be monitored for developing adaptive management strategies. Finally, in some cases mining activity could directly alter cliff habitat, although those situations appear to be relatively infrequent.

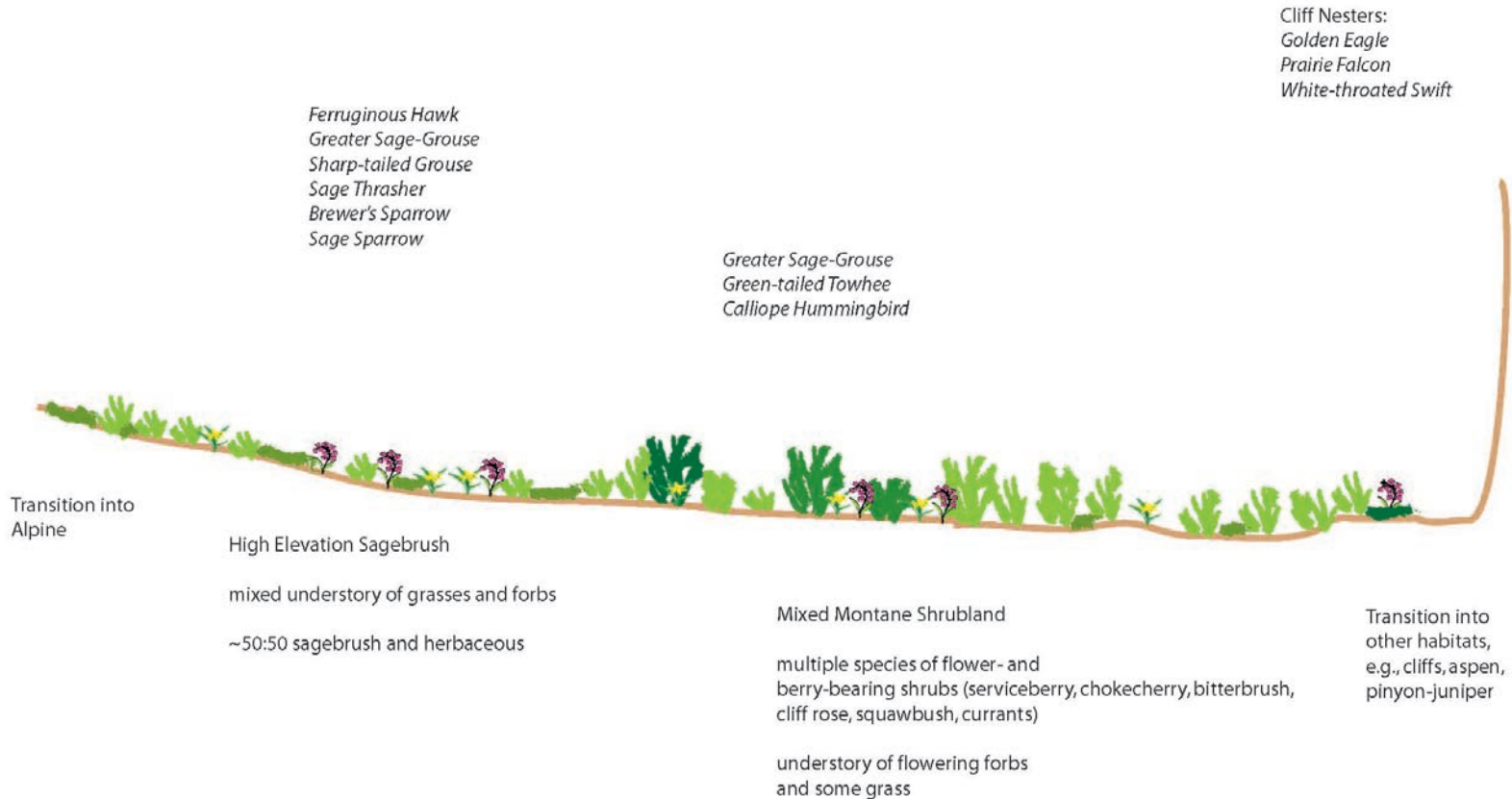
As a general rule, we expect that the conservation concerns associated with surrounding habitats that support prey populations are more important to cliff nesting birds than the conservation concerns affecting the cliffs directly. These concerns are outlined in the habitat accounts for the Montane Shrubland, Sagebrush, Salt Desert Scrub, Wet Meadow, Great Basin and Mojave Lowland Riparian and Montane Riparian, and Open Water habitat types.



Cliff in the Spring Mountains. Photo by John Boone.

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Not To Scale



Suitable Patch Size: > 200 ha (440 acres)

Figure Hab-4-1: Idealized cliffs landscape for some cliff nesters using the example of montane shrublands. Other types of landscape mosaics containing cliffs (which may include open water, wet meadows, riparian areas, sagebrush, or salt desert shrubland) may be more suitable for other cliff nesters.

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Conservation Strategies

Habitat Strategies

- **Manage at a landscape scale (1,000 ha [2,500 ac])** that includes relatively undisturbed adjacent habitat types (montane shrublands, riparian areas, sagebrush, wet meadows, open water) with sufficiently abundant prey populations (jackrabbits, cottontails, ground squirrels, small rodents for raptors, flying insects for swifts) in proximity to potential nesting cliffs that are > 30 m [100 ft] high
- Consult **conservation strategies of adjacent habitat types** for management practices that benefit foraging habitats of cliff nesters
- At actual or potential cliff nest sites, establish **disturbance-free buffer zones of 1 km [0.6 miles]** where possible (Suter and Jones 1981); unexpected disturbances (off-road activities of any sort) are of particular concern
- The majority of priority bird species nest between **April 1 and July 15**, during which disturbances should be avoided

Research, Planning, and Monitoring Strategies

- Research on Nevada **landscape and habitat requirements of all cliff-nesters** is needed. Most of the literature on cliff-nesters is from other regions, and nesting habits and foraging habitats have not been studied in great detail in the central Great Basin
- Spatial modeling or **inventory of cliffs** suitable for nesting by Priority species is needed for Nevada

Public Outreach Strategies

- **Public outreach to rock climbing and OHV groups** would be beneficial for raising awareness of disturbances to cliff-nesting species. Seasonal closures in popular recreation areas may also be needed to protect nest sites, if priority species are nesting.