



Ferruginous Hawk

Buteo regalis

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Written by Scott Richardson, Morie Whalen, Dinah Demers, and Ruth Milner

GENERAL RANGE AND WASHINGTON DISTRIBUTION

Ferruginous hawks inhabit the arid, open country of 17 western states and 3 Canadian provinces during the breeding season. They winter primarily in Mexico and the southwestern and southcentral United States (American Ornithologists' Union 1983, Olendorff 1993).

Ferruginous hawks breed in the Lower Columbia Basin and surrounding arid lands of southeast Washington (see Figure 1). The Washington breeding range includes Adams, Benton, Columbia, Douglas, Franklin, Garfield, Grant, Kittitas, Lincoln, Walla Walla, Whitman, and Yakima counties.

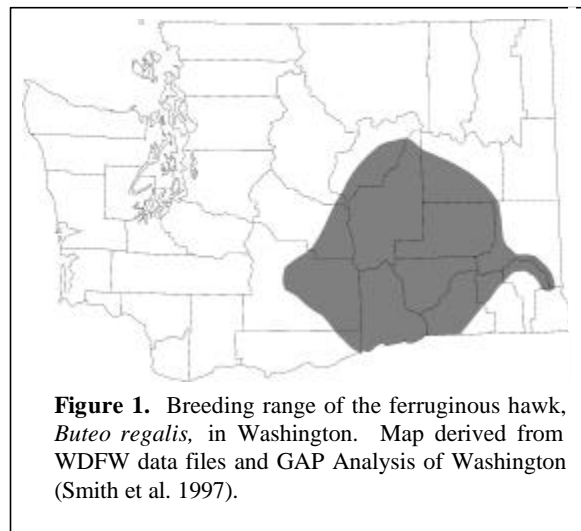


Figure 1. Breeding range of the ferruginous hawk, *Buteo regalis*, in Washington. Map derived from WDFW data files and GAP Analysis of Washington (Smith et al. 1997).

RATIONALE

The ferruginous hawk, a State Threatened species, is an uncommon breeding species and rare winter visitor east of the Washington Cascades (Washington Department of Fish and Wildlife 1996). Uncultivated land is a major component of ferruginous hawk habitat (Lokemoen and Duebbert 1976; Schmutz 1984, 1987; Olendorff 1993). Loss of uncultivated land and the prey base it supports (Howard and Wolfe 1976, Woffinden and Murphy 1977) may limit the frequency and success of ferruginous hawk nesting efforts. This species is also sensitive to human disturbance, particularly early in the breeding cycle (Smith and Murphy 1978, Schmutz 1984, White and Thurow 1985, Olendorff 1993). The amount of undisturbed natural habitat within the ferruginous hawk's Washington range has been reduced, which may make the population vulnerable.

HABITAT REQUIREMENTS

Ferruginous hawks are obligate grassland or desert-shrub nesters (Woffinden and Murphy 1989). In Washington, they frequent shrub-steppe in the channeled scablands, as well as juniper-savannah areas of the Columbia Basin.

Nesting

Landscapes comprised primarily of shrub-steppe, native prairie, haylands, and pasture are favored for nesting, while cropland is avoided (Howard 1975, Gilmer and Stewart 1983, Schmutz 1984, Roth and Marzluff 1989). Most nests are found in areas with a high proportion of grassland, shrubland, and juniper forest and a low proportion of wheatland, although nests can be found in areas with 50% to 100% wheatland within 3 km (1.9 mi) (Bechard et al. 1990). Ferruginous hawk populations decline consistently once cultivated land exceeds 30% of the area (Schmutz 1987, 1989). This species' nesting requirements may not be adequately accommodated in areas where native grasses are replaced by dense and tall cultivated crops (Schmutz 1987).

In Washington, ferruginous hawks nest on rock outcrops, steep low cliffs, ledges on hills, in some canyons, in isolated trees [juniper (*Juniperus* spp.), black locust (*Robinia pseudoacacia*) and others], and on powerline towers or other artificial structures (Washington Department of Fish and Wildlife 1996).

Ferruginous hawks are sensitive to disturbance; pairs may abandon nests even when mildly disturbed during nest building or incubation (1 March through 31 May) (Smith and Murphy 1978, White and Thurow 1985, Olendorff 1993, Washington Department of Fish and Wildlife 1996). Furthermore, disturbed nests fledge fewer young, and they often are not reoccupied the year following disturbances (White and Thurow 1985). Rather than becoming acclimated to repeated disturbance, ferruginous hawks become sensitized and flush at greater distances (White and Thurow 1985), which may result in increased clutch or brood mortality due to exposure, predation, starvation, or nest desertion.

Ferruginous hawks typically nest farther from human habitations than closely related raptor species (Schmutz 1984, Gaines 1985). In South Dakota, occupied nest sites were significantly farther from human activity as opposed to sites selected at random (Lokemoen and Duebbert 1976). Nests located in physically remote areas or on posted land tend to fledge more young than nests in areas where human access is not limited (Olendorff and Stoddart 1974).

Food

The diet of ferruginous hawks consists primarily of small- to medium-size mammals and, to a lesser extent, snakes, birds, and insects (Olendorff 1993). Northern pocket gophers appear to dominate the diet of Washington ferruginous hawks. Other rodents, snakes, and insects are also common prey (Washington Department of Fish and Wildlife 1996).

Density of major prey species may influence productivity and limit ferruginous hawk populations (Howard and Wolfe 1976). In years of food scarcity, many nesting territories may be left vacant, territorial pairs may fail to nest, clutch sizes may be reduced, or productivity may decline (Woffinden and Murphy 1977, Smith et al. 1981).

Home Range

The average home range for ferruginous hawks in the western states is 7.0 km² (2.7 mi²), but size varies with habitat conditions and prey availability (Olendorff 1993). Some home ranges in Washington are considerably larger (i.e., mean = 79 km² [49 mi²] for 7 males), mainly due to long-distance foraging flights (Leary 1996).

LIMITING FACTORS

Ferruginous hawks may be limited by availability of suitable nesting sites in undisturbed habitats supporting adequate prey populations (Olendorff and Stoddart 1974, Lokemoen and Duebbert 1976, Smith and Murphy 1978, Schmutz 1984, Schmutz et al. 1984, Schmutz 1987).

MANAGEMENT RECOMMENDATIONS

Habitat Protection

Landowners should protect at least half of the native shrub-steppe within ferruginous hawk home ranges (Gilmer and Stewart 1983, Schmutz 1984).

Disturbance

Brief human access and intermittent ground-based activities should be avoided within a distance of 250 m (820 ft) of nests during the hawks' most sensitive period (1 March to 31 May) (White and Thurow 1985). Prolonged activities (0.5 hr to several days) should be avoided, and noisy, prolonged activities should not occur, within 1 km (0.6 mi) of nests during the breeding season (1 March to 15 August) (Suter and Jones 1981). Construction or other developments near occupied nests should be delayed until after the young have dispersed (Konrad and Gilmer 1986), which generally occurs about a month after fledging (Olendorff 1993; A. Jerman, unpubl. data).

Spatial and temporal buffers should be tailored to the individual hawks involved (Knight and Skagen 1988), based on factors such as line-of-sight distance between nest and disturbance, nest structure security, history of disturbance, observed responses, and nest elevation in relation to the disturbance.

Natural Nest Structures

Isolated trees should be protected from cattle rubbing by surrounding them with stick piles or fences. Old, unoccupied nest trees should not be cut for at least 10 years after they have been abandoned by ferruginous hawks. Junipers and black locusts may be planted to provide future nest sites.

In areas where natural nesting materials are in short supply, sagebrush stems and other large sticks may be provided in the vicinity of potential nest structures.

After the dispersal of young, the amount of material in nests may be reduced to avoid having nest-site competitors (e.g., great horned owls) usurp the nests prior to the hawks' return.

Artificial Nest Structures

Artificial nest structures are an effective tool for encouraging successful ferruginous hawk nesting (Tigner et al. 1996). Such structures can be especially valuable if prey populations are adequate, disturbances are minimal, and nest sites are thought to be limiting. However, they may also enhance populations or productivity under other conditions.

Commonly, artificial structures are platforms mounted on poles, trees, or cliffs. Poles should be buried at least 1 m (3.3 ft) deep and should be located away from watering holes, gates, and other areas where livestock congregate. Platforms should be approximately 1 m² (10.8 ft²) to allow space for 3 or 4 nestlings to lie down during strong winds. The structure should allow adult hawks to anchor nest materials. Shade is not required. Specifications for cliff nest structures are available from the Spokane office of the Bureau of Land Management.

Although largely beneficial, artificial structures may attract undesirable or competitive species and are prone to increased disturbance due to their conspicuousness (Howard and Hilliard 1980, Suter and Jones 1981).

Prey

Ferruginous hawks will benefit from land-use practices that ensure an adequate prey base. Landowners should protect shrub-steppe and grassland habitats that harbor significant populations of small mammals and other prey. Habitat conversions, especially through chemical application, should be discouraged where ferruginous hawks occur. Developments (e.g., oil, gas, or geothermal exploration; pipeline and road construction; campgrounds;

interpretive facilities) should be kept at least 400 m (¼ mi) from important prey concentrations, such as ground squirrel colonies (Suter and Jones 1981). Pesticides and rodenticides should not be used within this 400 m area. Appendix A provides useful contacts to help assess the use of pesticides, herbicides, and their alternatives.

Range management activities such as chaining, disking, and brush burning may be detrimental to prey populations and should be avoided. In areas where chaining cannot be avoided, brush may be windrowed to provide nesting and cover for prey species. Reseeding of native plant species after chaining or burning promotes habitat stability and is beneficial to ferruginous hawk prey populations (Olendorff 1993).

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PERSONAL COMMUNICATIONS

Aimee Jerman, Thesis Candidate
Boise State University
Boise, Idaho

CONTACTS

Bureau of Land Management
Spokane District Office
1103 N. Fancher
Spokane, WA, 99212-1275
Phone: (509) 536-1200
FAX: (509) 536-1275
E-Mail: or130mb@or.blm.gov

KEY POINTS

Habitat Requirements

- Sparse, short vegetation in steppe and shrub-steppe habitats is preferred by ferruginous hawks.
- Ferruginous hawks avoid nesting in heavily cultivated lands.
- Ferruginous hawks in Washington generally nest on rock outcrops, steep cliffs, isolated trees, or artificial platforms.
- Ferruginous hawks feed primarily upon a variety of small- to medium-size mammals.

Management Recommendations

- Encourage surrounding landowners to protect 50% or more of the shrub-steppe within ferruginous hawk home ranges.
- Avoid disturbance within 250 m (820 ft) of nests from 1 March through 31 May.
- Delay development near occupied nests until one month after young hawks fledge.

- Avoid construction within 1.6 km (1 mi) of nest sites.
- Install "No Trespassing" signs to prevent harassment.
- Fence isolated trees which show signs of abuse from livestock (e.g., rubbing, soil erosion).
- Retain trees and shrubs greater than 1 m (3.3 ft) in height and within 1.6 km (1 mi) of one another.
- Plant trees, especially junipers and black locusts, in isolated situations.
- Avoid cutting nest trees for at least 10 years after they are abandoned.
- Construct artificial nest structures where nest sites are limited.
- Remove some material from nests in the autumn to prevent nest loss to competitive species or weathering during the non-nesting season.
- Preserve remaining steppe and shrub-steppe habitat types that harbor significant populations of hares, rabbits, and small- and medium-size rodents.
- Maintain a "no disturbance" buffer of 400 m (¼ mi) around periphery of ground squirrel colonies and other prey concentrations.
- Avoid spray application of pesticides when possible. For spray application near ground squirrel colonies, add additional width to the 400 m (¼ mi) buffer to account for pesticide drift. Refer to Appendix A for contacts useful in assessing pesticides, herbicides, and their alternatives.
- Plant 5 m (16 ft) buffer of rye around edge of agricultural crops to protect against rodent damage.
- Avoid chaining, disking, and brush burning where prey species are concentrated or affected. Windrow brush where chaining or disking is necessary.



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