

On 6 occasions throughout January and February 1980, I saw Prairie Falcons apparently hunting close to actively hunting Harriers. On these occasions, I saw a Harrier hunting over open grassland and cultivated grainfields in their typical low flying manner, while a Prairie Falcon flew approximately 30–50m above and 50–100m behind. As the Harrier coursed across the fields, the accompanying falcon stooped on rising birds which were flushed by the hawk. Although I saw neither species take prey, the association appeared deliberate. Bourne (1960) and Watson (1977:92) observed similar relationships between the Hen Harrier (*C. c. cyaneus*) and Merlin (*F. columbarius*).

These incidents may be an example of a behavioral symbiosis. Prairie Falcons often capture prey that flushes out in front of them (Enderson 1964). However, potential prey in good cover is often hesitant to flush due to the falcon's flying ability. Conversely, the Harrier's low flight pattern and long legs enable it to most effectively capture prey on, or very close to, the ground (Watson 1977:87). For avian prey, the apparent response to a Harrier overhead would thus be to flush ahead of the hawk. It is apparent then, that a Prairie Falcon could facilitate its own hunting by utilizing a hunting Harrier as a flusher. By hunting in association with a Harrier, a Prairie Falcon may actually increase its encounter rate with prey items. The benefit which the Harrier receives from this relationship is less apparent. Perhaps the hawk benefits by taking birds which are hesitant to flush in the presence of the falcon.

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FOOD OF THE SPOTTED OWL IN UTAH

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In this paper we report a sample of prey of the Mexican Spotted Owl (*Strix occidentalis lucida*) from southern Utah. Food habits of this species are poorly known compared to many other North American owls (Earhart and Johnson 1970). Diet of the Mexican race is least well known. A few casual records are available from Arizona and New Mexico (Huey 1932, Ligon 1926) but only seven prey individuals were previously reported for Utah (Kertell 1977). Forsman (1976) and Barrows (1980) have reported the only comprehensive analysis of Spotted Owl foods from Oregon (*S. o. occidentalis*) and California (*S. o. caurina*), respectively. Reports of other, mostly very small collections of prey, were reviewed by Barrows (1980) and Zarn (1974).

The Spotted Owl is listed as a rare permanent resident in Utah (Behle and Perry 1975) and is found in habitats very different than the dense, old growth forests occupied by other races. Kertell (1977) felt that cool retreats were necessary for roosting and nesting in the hot summers of southern Utah; these are found in narrow, steep-walled canyons.

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In view of the difference in habitat, comparative studies of the 3 races of Spotted Owl could prove valuable in terms of trophic divergence. Accordingly, we present here additional food data for the Mexican race. Even though this sample is limited in size and locality, some interesting comparisons are possible with diets of Spotted Owls from other areas.

Spotted Owl pellets were collected in 1977 from below roosts in Capitol Reef National Park, Utah, where Spotted Owls were observed. The collection site was a deep, narrow sandstone canyon. Water in this, and the main canyon it adjoins, was ephemeral. Vegetation in the canyon bottom was a mixture of grasses, forbs, cacti and sparsely scattered boxelder (*Acer negunda*), cottonwood (*Populus* spp.) and bigtooth maple (*A. grandidentatum*) trees. Vegetation on the plateau above the canyon was dominated by Utah juniper (*Juniperus osteosperma*), Colorado pinyon (*Pinus edulis*) and mixture of shrubs (*Shepherdia*, *Cercocarpus* and *Ephedra* spp.). Prey identified are presented in Table 1.

Table 1. Prey of the Spotted Owl from southern Utah.

Prey species	Number	Percent frequency
<i>Antrozous pallidus</i>	1	0.9
<i>Peromyscus</i> spp.	16	15.2
<i>Neotoma cinerea</i>	14	13.3
<i>Neotoma lepida</i>	53	50.5
<i>Neotoma</i> spp.	9	8.6
Orthoptera	1	0.9
Arachnida (scorpion)	1	0.9
unidentified invertebrates	10	9.5
Total	105	100.0

In California (Barrows 1980) and Oregon (Forsman 1976), nearly all prey was characteristic of forest habitats. Interestingly, even though the habitat in southern Utah is very different, consisting of desert canyons and plateaus, the major prey was woodrats (*Neotoma* spp.) as it was in California. Woodrats ranked second overall in diet biomass of Oregon Spotted Owls and were the most important prey in drier habitats there. Fewer mammalian species occurred in the Utah diet and no birds were found. These differences could be attributable to the smaller sample size from Utah. Obviously, much more study is needed to elucidate the feeding ecology of this species in the distinctly different areas of its distribution.

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