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## FISH REMAINS DOMINATE BARN OWL PELLETS IN NORTHWESTERN NEVADA

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*Key words:* Barn Owl, *Tyto alba*, diet, food habits, fish.

The foraging ecology of the Barn Owl (*Tyto alba*) has been studied extensively, both in the New World (Marti 1988, Castro and Jaksic 1995, Van Vuren and Moore 1998, and others) and the Old World (Glue 1967, Yom-Tov and Wool 1997, and others). Small rodents, insectivores, and small birds are generally the most common prey taken by Barn Owls. Additionally, reptiles, amphibians, and arthropods have been reported as prey of Barn Owls (Knight and Jackman 1984, Marti 1988, Pokines and Kerbis Peterhans 1998). Gallup (1949) observed Barn Owls foraging on California grunion (*Leuresthes tenuis*) on a southern California beach, but no other authors have reported fish in the diet of Barn Owls. Here we report the first documented case in which fish remains are the dominant constituents of Barn Owl pellets.

Our collection site was an abandoned barn at Bitner Ranch in northern Washoe County, Nevada (41°44'13.4"N, 119°28'00"W). Bitner Ranch lies within a Great Basin landscape dominated by big sagebrush (*Artemisia tridentata*) at the south end of an elongate (10-km) meadow. Badger Creek, an ephemeral stream that is generally dry by midsummer, runs through the meadow, approximately 100 m east of the ranch. A small spring that feeds Badger Creek is located approximately 50 m east of the barn.

After observing skeletal remains of fish in several regurgitated pellets in July 2002, we collected 14 whole or partially decomposed pellets from the floor of the barn. We bagged and labeled the pellets as a collective sample and returned them to the Zooarchaeology Laboratory at California State University, Chico,

for preliminary analysis. The pellets were then transferred to the Zooarchaeology Laboratory at the University of Utah for final analysis and quantification. Although Barn Owls were not observed at the time of our collection, this species had been recently observed inside the barn by archaeologists and biologists from the Bureau of Land Management (P. Van Ornum and E. Flores, Jr., personal communication). Additionally, our identification of these pellets was based on the size and shape of intact pellets and the presence of the glossy, somewhat cemented saliva coating one typically finds with pellets regurgitated by tytonids (König et al. 1999).

Dry pellets were dissected using forceps under 5X magnification, and all osteological materials were separated and identified to the most specific taxonomic level possible. Osteological identifications were made using vertebrate comparative collections at California State University, Chico, and the Utah Museum of Natural History.

Pellet remains were quantified as the minimum number of individuals (MNI) needed to account for the distribution of elements in our sample (White 1953). MNI values provide an estimate of the actual number of organisms consumed based on the number and orientation of bone elements in an animal's body (i.e., 2 left opercles and 1 right opercle from a given species of fish would result in an MNI value of 2 individuals).

Tui chubs (*Gila bicolor*), a native minnow (Family Cyprinidae), were the most abundant prey in the pellets, comprising 72.7% of all identified prey items (MNIs; Table 1). No other

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TABLE 1. Prey items identified from Barn Owl pellets ( $n = 14$ ) collected at the Bitner Ranch, Washoe County, Nevada, July 2002.

Taxon	Frequency (MNI)	% of Prey Items
Fishes		
<i>Gila bicolor</i>	48	72.7
Mammals		
<i>Sorex</i> spp.	1	1.5
<i>Thomomys talpoides</i>	5	7.6
<i>Microtus</i> spp.	6	9.1
<i>Peromyscus</i> spp.	3	4.5
Birds		
Unidentified Passeriformes	2	3.0
<i>Sturnella neglecta</i>	1	1.5
TOTAL	66	99.9 <sup>a</sup>

<sup>a</sup>Rounding error

fish taxa were present in the diet. Sheldon tui chubs (*G. bicolor eurysoma*) typically attain adult lengths of 63.8 mm and 70.6 mm for males and females, respectively (Flores personal communication). Osteological remains from our Bitner Ranch sample were consistent with fish of this size range. Other prey identified from the pellets included voles (*Microtus* spp.), northern pocket gophers (*Thomomys talpoides*), deer mice (*Peromyscus* spp.), passerine birds (Order Passeriformes), and shrews (*Sorex* spp.; Table 1).

Badger Creek and its feeder spring provide habitat for the Sheldon tui chub, the only fish species identified in this system during recent surveys (Flores personal communication). During dry periods chubs are restricted to springs and deep pools. Results of our diet analysis suggest that Barn Owls foraging in the Bitner Ranch area are probably preying opportunistically on tui chubs stranded during low-flow periods from midsummer through early fall or during winter freezes.

We wish to thank P. Van Ornum, archaeologist, and E. Flores, Jr., wildlife and fisheries biologist, Surprise Resource Area, Bureau of Land Management, Cedarville, California, for showing us the Bitner Ranch and for allowing us to collect our owl pellet sample. We also thank F. Bayham for allowing us access to the zooarchaeology comparative vertebrate osteology collection at California State University, Chico.

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