FIGURE 1. Distribution of Barred and Spotted Owls in northwestern North America. Solid dots indicate recent records of Barred Owls outside the previously known range (lined area). Stippled area indicates range of the Spotted Owl. Locations, authorities and dates for numbered Barred Owl records are presented in text.

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LITERATURE CITED


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POLYGYNY IN THE WESTERN WOOD PEEWEE

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Although families closely related to the Tyrannidae exhibit diverse breeding systems, simple pair bonding appears to predominate among the tyrant flycatchers. Skutch (Pacific Coast Avifauna 34, 1960) pointed out that while monogamy is the most common breeding system in the tropical representatives of the family, "in a few genera the birds appear never to mate and the males have not been seen to take any interest in nest, eggs, or young . . .". It is thought that, in these few genera males may copulate with more than one nesting female, but form no pair bonds with them and take no part in any other breeding function. Among tropical tyrannids which form permanent or semi-permanent pair bonds, Skutch also noted that no instances of polygyny had been reported.

I know of only two reports of polygynous behavior in temperate flycatchers. Mumford (Misc. Pub. 125, Univ. Michigan Mus. Zool., 1964) observed two polygynous male Acadian Flycatchers (Empidonax virescens), both of which tended two nests and two females simultaneously, but only one of which was pressed by circumstances to feed young at both nests during the same period of time. W. J. Smith (pers. comm.) observed a single case of polygyny in the Eastern Wood Pewee (Contopus virens) in 1967 near
CANNIBALISM IN THE PINON JAY

RUSSELL P. BALDA AND GARY C. BATEMAN

Cannibalism has been observed in an array of vertebrates spanning the gamut from fishes through humans. In cases involving highly preaceous species which normally feed on life forms similar to their own, one might expect to find cannibalism occurring rather regularly since what constitutes normal prey is not markedly different from the prey selected during the cannibalistic act. As an example, Large-mouth bass (Micropterus salmoides) may eat their young or even other conspecifics of approximately their own size (Minkley 1973:224). One suspects that evolution would favor mechanisms tending to prevent this behavior from becoming rampant.

Reports of cannibalism among raptorial birds are not especially uncommon. Ingram (1959) listed 21 species of hawks and owls having "convincing records" as cannibals. In most cases such cannibalism has been directed towards nestlings (but see Clevenger and Roest 1974) and has been observed post hatching, rather than during the incubation period. Armstrong's (1959) caveat is especially perti-

The event described below occurred on the morning of 1 April 1970, on the colonial breeding grounds of the Pinion Jay (Gymnorhinus cyanocephalus) described by Balda and Bateman (1971, 1972). In 1970, the jays began building nests in late February and the mean date of laying the first egg was 9 March (n = 22 nests; Balda and Bateman 1972). During 5 years of study, this was the earliest attempt at nesting, and followed the production of a huge crop of pinyon pine (Pinus edulis) cones and seeds the preceding autumn.

On 31 March temperatures recorded on a Bendix hygrothermograph in a white weather shelter adjacent to the nestling area ranged from a low of -14°C to a high of 1°C (X = -7°C). During the morning of 1 April the temperatures were as follows: -17°C at 06:00; -11°C at 08:00; and -5°C at 10:00. Snowfall was measured at Flagstaff Pulliam Airport, 21 km southwest of the study site. Snow fell in the afternoon of 29 March, continued for all of 30 March and subsided in the afternoon of 31 March. The total accumulation for this 3-day period was 56 cm. The breeding grounds were covered with a continuous layer of snow except for small patches of open ground at the base of some of the trees. The litter, duff, and soil were tightly frozen.

At 09:00 on 1 April, nest number 21, situated 3.2 m off the ground in a ponderosa pine (Pinus ponderosa), was visited and found to contain three pink, featherless nestlings no older than 1 day of age. At this age, nestlings roughly weigh between 5.3 and 9.4 g (Bateman and Balda 1973). The age was determined by the fact that the length of incubation is 17 days (Bateman and Balda 1973), and the third egg was known to have been laid on 14 March. In an attempt to determine the amount and type of food brought to these young, they were fitted with collars made of short pipe cleaners. The female left the nest at our approach but returned to brood within a few minutes; the male was absent.

On the following day, and on 27 and 29 July, the male was observed without interruption feeding at one nest, foraging from lodgepole pines, and then feeding at the other nest. By 30 July the young in one nest had fledged and moved into the dense vegetation, precluding any further observations of the male feeding two broods.

The prevalence of polygynous behavior in tyrantids is still an open question. As far as I am aware, this is only the fourth flycatcher reported to exhibit polygyny. Is the rarity of such reports simply indicative of the frequency of occurrence in nature, or is it merely a product of the small number of substantive studies on tyrantids? My experience with the behavior and ecology of certain flycatchers in the Rocky Mountains, and the observations of W. J. Smith (pers. comm.) suggest that polygyny may be more common in this family than we suspect.

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