

CAVITY COMPETITION AND SUSPECTED PREDATION ON PROTHONOTARY WARBLERS BY *PEROMYSCUS* SPP.

HARLAND D. GUILLORY

Division of Sciences

Louisiana State University at Eunice

P.O. Box 1129, Eunice, Louisiana 70535 USA

Abstract.—Instances of competition for cavities and evidence of predation on Prothonotary Warblers (*Protonotaria citrea*) by *Peromyscus* spp. (white-footed and cotton mice) were observed at Cocodrie Lake, Evangeline and Rapides parishes, Louisiana. Mice destroyed nests, killed adults and nestlings, and cached food in cavities and nest boxes.

COMPETENCIA POR CAVIDADES Y SOSPECHA DE DEPREDACIÓN EN *PROTHONOTARIA CITREA* POR PARTE DE *PEROMYSCUS* SPP.

Síntesis.—En un estudio que se llevó a cabo en varias localidades de Luisiana, se tomó evidencia sobre competencia por cavidades entre *Protonotaria citrea* y ratones del género *Peromyscus*, además de depredación de aves por parte de los roedores. Los ratones destruyeron nidos y lograron matar a aves adultas y juveniles; utilizaron cavidades y cajas de anidamiento de las aves para almacenar nueces y semillas.

While studying foraging and reproductive behavior of the Prothonotary Warbler (*Protonotaria citrea*), I encountered instances of competition for cavities and evidence of predation on the warblers by *Peromyscus* spp. Prothonotary Warblers use cavities, usually over water, for nest sites (Walkinshaw 1953). White-footed Mice (*P. leucopus*) and Cotton Mice (*P. gossypinus*) can occur in swampland (Bates 1958, LeBlanc 1979) and frequently use tree cavities and abandoned birds' nests for nest sites (Davis 1966, Golley 1962, Lowery 1974). These mice are sympatric in Louisiana and common inhabitants of floodplain and upland deciduous forests (St. Romain 1975).

The study was conducted at Cocodrie Lake, in Evangeline and Rapides parishes, Louisiana from March through July 1982-1985. This lake is a 2400 ha water tupelo (*Nyssa aquatica*), bald cypress (*Taxodium distichum*), and buttonbush (*Cephalanthus occidentalis*) swamp. To facilitate data collection, I set out 50 modified cans and 24 wooden boxes. These structures were 15-20 cm high and 10-12 cm in diameter with 2.5 cm diameter entrances. The cans and boxes were attached to trees, usually over water, at a height of 1.5-2.0 m. I examined the artificial nest sites on a weekly basis.

On 18 June 1982, the partial remains of two, one-week old nestlings were found entangled in nest material that was suspended from the nest can entrance. The rear portion of the skull and much of the proximal portion of the wings had been consumed on one. Only some primary feathers and feet remained from another. The partially desiccated musculature of one wing had clearly visible mouse-sized incisor marks.

Before sunrise on 24 April 1983, I observed a fleeing adult *Peromyscus* spp. on the floor of my lakeside cabin. Near where I first observed the mouse, I saw a wing protruding from between the cottage walls at floor

level. I extracted a freshly dead adult, male prothonotary with the rear portion of the skull and some wing musculature detached. The warbler had been constructing a nest between the cottage walls and appeared to have been killed while roosting at the site.

In 1984, I found evidence of cached food, feeding stations, and visitations in 15 nest boxes and cans in the form of stored laurel oak acorns (*Quercus laurifolia*) and water tupelo seeds; laurel oak acorn and tupelo seed cuttings; and urine and fecal pellets. None of these containers were used as nest sites by prothonotaries indicating that *Peromyscus* spp. successfully competed for these sites with the warbler.

In 1985 two nest boxes contained stored or eaten water elm fruit (*Planera aquatica*). In two other boxes, material from two completed nests, that had not received eggs, had been pulled through the entrances. These nests were not repaired by prothonotaries. A *Peromyscus* was flushed from a fifth nestbox that contained the fresh remains of a female prothonotary and four untouched eggs.

Southern flying squirrels (*Glaucomys volans*) were eliminated as possible prothonotary competitors because fecal pellets found in nest containers were too small to be from *Glaucomys* and no flying squirrels were ever found within nest boxes.

Maxson and Oring (1978) have reported destruction of Spotted Sandpiper (*Actitis macularia*) eggs by *Peromyscus maniculatus*. Stone and Cram (1902) noted that *P. leucopus* devoured both eggs and young birds. Nelson (1918) reported that *P. leucopus* sometimes consumed the flesh of dead birds and mice while Hamilton (1941) found bird remains in the stomachs of *P. leucopus* and *P. m. gracilus*. Cotton and white-footed mice have been reported to consume insects (Baker 1968, Bates 1958, Calhoun 1941) and crawfish (LeBlanc 1979).

Walkinshaw (1941) reported nest site competition in Michigan between Prothonotary Warblers, Northern House Wrens (*Troglodytes aedon*) and Black-capped Chickadees (*Parus atricapillus*). Although cavity-nesting Tufted Titmice (*P. bicolor*) and Carolina Chickadees (*P. carolinensis*) nest at Cocodrie Lake, no competition was observed.

Although *Peromyscus leucopus* and *P. maniculatus*-bird interactions have been documented (I know of no *P. gossypinus* documentation), previously they were not known to occur with Prothonotary Warblers. The preference for swampy habitat by Prothonotary Warblers has not prevented the adaptable *Peromyscus* from swimming to their nest sites.

The occasional predation on Prothonotary Warblers and competition for cavities by *Peromyscus* spp. apparently has caused little harm to the overall population of prothonotaries at Cocodrie Lake because they continue to be abundant.

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