
OBSERVATIONS ON THE CALLS OF THE GRASSHOPPER
MOUSE (*ONYCHOMYS LEUCOGASTER*)¹

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ABSTRACT

Calls of grasshopper mice include squeaks, chirping, a single high-pitched call, and a two-phase high-pitched call. The latter two are a means of intraspecific localization and are not a hunting call as previously supposed. A variable range of postures are assumed during the calls.

Several authors have noted the calls of grasshopper mice (Genus *Onychomys*), and anyone who has kept them in the laboratory is aware of the noise a group of these nocturnal rodents can make. Bailey and Sperry (1929) described the call as a long, fine, shrill whistle given in a high key—a wolf howl in miniature. Bailey (1931) also stated that, as regards certain qualities, it was similar to the hunting call of a timber wolf. Many authors have repeated these descriptions, and Seton (1909) described it as being similar to the call of a calling hare, only slightly higher pitched.

Hildebrand (1961) reported that the oscillograph curve for the call showed 10,000 vibrations per second, and stated that it could easily be distinguished from the wolf call. Young and Goldman (1944) described four calls for the wolf, none of which is like the call of *Onychomys*, which cannot be easily compared with that of any other mammal.

During this study of the behavior of the northern grasshopper mouse (*O. leucogaster*), observations were made on the nature and use of the calls. Four types of calls were recognized: (1) a squeak call emitted by animals less than four days old and by adults during some fights; (2) a high-pitched, chirping call—*ech, ech, ech, ech*—was an alarm note given by individuals during an intense fight or when they were being removed from a cage; (3) a high-pitched, piercing call

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which lasted 0.8 seconds (mean of 183 records); and (4) a call similar to type-three, but broken so that it sounded like two shortened type-three calls, one immediately following the other, and lasting 0.9 seconds (mean of 71 records). Call types three and four are those referred to in the preceding paragraphs and will be the subject of this report.

Calls 1, 2, and 3 were also reported by Bailey and Sperry (1929), but to my knowledge, the type-four call has not been previously reported. At times, postures seemed to indicate that calls were being given which were inaudible to me.

The type-three call was a means of intraspecific localization. This call was given by individuals which had been recently placed alone in a 15 by 15 foot observation enclosure, or which were otherwise newly separated from other grasshopper mice. It was given more frequently during the first half hour, directly after introduction, than during the third half hour. The type-four call was given only when a mouse had become aware of another grasshopper mouse of either sex, but was unable to make direct contact with it, or to exactly locate it. This was the same function suggested for the type-three call by Olin and Cannon (1954); it was not a hunting or mating call as suggested by Bailey and Sperry (1929).

The posture assumed while a type-three or type-four call was given varied considerably. Bailey (1931), Svihla (1936), Hill (1944), and Olin and Cannon (1954) each reported that the mouse giving the call threw his head back, pointed his nose up, and opened his mouth very wide. Hill (1944) even compared it to the posture of an opera singer. Although I have observed this posture, it was not the most usual one. Individuals of both sexes held the body in various positions ranging from a prone position on all four feet to a posture standing upright on the hind legs. Occasionally the head was held back, with the ears back, and the eyes partially closed while a call was given. But more often the head was stretched forward, only slightly raised, with the eyes partially closed, the ears lying back, and the mouth slightly opened, exposing the teeth.

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LITERATURE CITED

- Bailey, V. 1931. Mammals of New Mexico. N. Amer. Fauna 55, 416 p.
 ——— and C. C. Sperry. 1929. Life history and habits of the grasshopper mice, Genus *Onychomys*. U. S. Dept. Agr. Tech. Bull. 145, 19 p.
 Hildebrand, M. 1961. Voice of the grasshopper mouse. J. Mammal. 42: 263.
 Hill, J. E. 1944. Singing mice. Nat. Hist. 53: 436.
 Olin, G. and J. Cannon. 1954. Mammals of the southwest deserts. Southwestern Monuments Assn., Popular Series. 8: 1-112.
 Seton, E. T. 1909. Life histories of northern animals. New York: Charles Scribner's Sons. 2v. 1263 p.
 Svihla, R. D. 1936. Breeding and young of the grasshopper mouse (*Onychomys leucogaster fuscogriseus*). J. Mammal. 17: 172-173.
 Young, S. P. and E. A. Goldman. 1944. The wolves of North America. Washington, D.C.: American Wildlife Institute. 636 p.