Journal of the Minnesota Academy of Science

Volume 9 | Number 1 Article 15

4-1941

Abstract Papers

tering in this particular cave caused them to continue their search for a means of entry until they succumbed.

It was somewhat of a surprise to find the large brown bat to be the most common wintering species, for it is not frequently encountered in summer. In some of the caves, a thousand or more were to be seen, ordinarily clustered together; although many hung singly. A record was made of the sexes of all bats handled, and it was apparent that a tendency toward sex segregation existed. Of 134 bats taken from clusters, 117 were males and but 17 were females. Nearly all single hanging individuals proved to be females.

This bat has been found inhabiting only the sandstone caves, and here they take up positions in the colder and drier portions, not infrequently roosting near the entrances where the temperatures are subject to severe fluctuation in accordance with external conditions. In one instance the temperature recorded next to a group of this species registered 20 F.

By many it has been assumed that bats remain in a state of profound hibernation during the winter months while in the caves. This is far from the truth; banding of individuals clearly showed that they moved about considerably, especially the large brown bats. During these periods of activity, they search for food and take of the moisture condensed upon the walls and ceiling. On several occasions I have observed them lapping up droplets of moisture, and all that have been taken as specimens have dropped well-formed scats containing particles of chitin.

Although this species is social with those of its own kind, I have never seen any of the other species of cave bats clustered with the large brown bats. Perhaps the greater strength and ferocity of the large brown bats is an important factor.

The first large brown bats to be seen abroad this spring were observed in flight on April 12, although they disappeared from the caves at least a week before this date.

AMPHIBIANS AND REPTILES OF MINNESOTA

W. J. BRECKENRIDGE
Minnesota Museum of Natural History

ABSTRACT

Herpetological work in the state is reviewed.

The present work is based largely on the collections of several University departments, plus collections of numerous individuals, including the writer, now assembled as the collection of the Minnesota Museum of Natural History. Material in several smaller institutions in the state was also examined.

A resume of the following groups of animals treated is given with brief notes on ranges of special interest:

Salamanders	5 species.
Toads	3 species.
Frogs	9 species.
Lizards	3 species.
Snakes	15 species and 2 subspecies.
Turtles	8 species.

Four comparatively recent additions to our herpetifauna, *Acris crepitans,* Cricket Frog; *Bufo cognatus,* Great Plains Toad; *Bufo hemiophrys,* Manitoba Toad; and *Diadophis punctatus edwardsi,* Ring-necked Snake, are discussed.

Special work on the black-banded skink, *Eumeces septentrionalis,* is reported. Hibernation experiments indicated a definite choice of sand as soil type. Growth experiments carried on with marked, wild skinks indicated their maturing in two years. Food studies indicated *Orthoptera* and *Arachnida* as their major foods.

THE USE OF HEAVY CARBON FOR STUDIES OF PLANT METABOLISM

R. O. BELKENGREN AND G. O. BURR, U. OF M.

ABSTRACT

The use of a stable "tracer" isotope demands:

1. Separation of the isotope.
2. Introduction into the biological system.
3. Subsequent analysis for the isotope.

The thermal diffusion column has made available small quantities of the heavy carbon isotope. It is obtained in the form of methane which is burned to carbon dioxide in which form it is fed to the plant. By utilizing photosynthesis to introduce the heavy isotope into the metabolism of the plant the inorganic carbon is converted into an organic food whose course can be traced through the subsequent transformations that take place in the plant. Subsequent isolation of these materials gives a substance in which a certain amount of the isotope is present. By combustion to carbon dioxide and analysis of this gas by means of the mass spectrograph the amount of material formed from new photosynthate can be determined.

The rate of transport of the newly formed photosynthate can be determined by suitable apparatus and experiments.

That the plant can perform a partial fractionation of the isotopes is also reported.

THE DEVELOPMENTAL HISTORY OF A LAKE

RAYMOND L. LINDEMAN, U. OF M.

Published Amer. Midl. Nat. 25:101–112. 1941.