



# BAT RESEARCH NEWS

Volume 11: Numbers 1–4

1970

---

Original issues were compiled by Dr. Wayne H. Davis (Vol. 11: Nos. 1–3) and Dr. Robert L. Martin (Vol. 11: No. 4), Editors of *Bat Research News*.

**Copyright *Bat Research News*. All rights reserved.** This material is protected by copyright and may not be reproduced, transmitted, posted on a Web site or a listserve, or disseminated in any form or by any means without prior written permission from the Publisher. The article is for individual use only.

*Bat Research News* is ISSN # 0005-6227.

# BAT RESEARCH NEWS

## Table of Contents for Volume 11, 1970

---

### Volume 11: Number 1, January 1970

The Cover .....	1
Second International Bat Research Conference .....	2
Here and There .....	2
Recent Literature .....	7
Editor to Retire .....	12

### Volume 11: Number 2, April 1970

The Cover .....	13
Here and There .....	13
Correspondence .....	14
Recent Literature .....	19

### Volume 11: Number 3, July 1970

The Cover .....	27
The News .....	27
Recovery of a Banded <i>Lasiurus cinereus</i> .....	30
Recent Literature .....	30

### Volume 11: Number 4, October 1970

The Cover .....	33
Editorial .....	33
Recent Literature .....	36

## BAT RESEARCH NEWS

Volume 11, No. 1

January, 1970

### THE COVER

This is the photo of the big-eared bat, Plecotus townsendii, which appears at the beginning of the account of that species in our new book on the Bats of America. In add-

ition to a set of color plates there is at least one black and white photo for each species. Other photos show distinguishing characteristics and comparisons with similar species. The key is also illustrated with photos of the characteristics it mentions.

The book appeared December 19. We were pleased with the final result after such a long struggle to keep the quality up. The latest delay was when the people who made the color plates printed them in such a way that when folded into a signature to be stitched into the book the plates were out of order. They wanted to cut them all apart and glue them in. When we found out about it we howled loud enough that they did them over. Previous delays resulted last fall when we saw that they had done poor quality reproduction of the black and whites. The university print shop had done the best they could, but they were not equipped to do book quality work. They do the student newspaper, the catalogue, BRN covers, etc. The quality showed especially in the skull photos. We howled persistently enough that they were all done over by a company with the finest of equipment. Another delay was with the layout. They had some student art major who had never done anything like this before work on it. She had no imagination and the results were really insipid. I kept insisting that the entire layout be redone until finally they did it; we were pleased with the results that time.

We were determined to avoid having any legends or pictures reversed or photos upside down. In the process we learned that if anything can possibly be fowled up this way it will be. Not only did we have to correct many such mistakes at every step of the way, but we also had to catch them when they crept back in. For example, in the key where we had photos of the incisors of the two eastern Plecotus, after we had checked final copy someone decided to make these pictures slightly larger and pasted new photos over the ones we had checked in the dummy. Fortunately, we had insisted on having a weekend to check the final printed pages before they went to the binder and we caught this one in time to give them another delay.

We did not win them all though. After I had checked the final layout of the color plates to see that the names were spelled right and went with the right pictures, the layout man decided that Tadarida macrotis and T. femorosacca would look better on the page reversed. Naturally, he forgot to switch the names. As the color was done in Louisville, I did

---

Bat Research News appears quarterly: January, April, July and October. Subscription rate is \$1.00 for two years. Wayne H. Davis, Department of Zoology, University of Kentucky, Lexington, Ky. 40506  
U. S. A.

---



not see it again until the plates had been printed. I pointed it out to Barbour; we decided not to try to get it redone at that time.

## SECOND INTERNATIONAL BAT RESEARCH CONFERENCE

The second international conference will be held in Amsterdam March 18-22, 1970. Forty seven papers are on the program. Session topics include echolocation; systematics, zoogeography, evolution; morphology; physiology; parasitology; general biology & ecology.

Proceedings will be published in Beaufortia by the Zoological Museum, University of Amsterdam, or in Bijdragen tot de Dierkunde.

A preliminary list of participants contains 84 names, including most of the distinguished names in the field.

## HERE AND THERE

ROBERT JENNESS of the Department of Biochemistry and his wife KAY spent the past summer at New Mexico Highlands University working with EUGENE STUDIER. They were collecting milk and blood specimens from bats for comparative analyses by Jenness. Studier studied diurnal weight fluctuations and internal parasites. These activities took them to Arizona, Nevada, California, Sonora and Sinoloa together, while Studier went alone to Panama. In New Mexico they were assisted by JAMES FINDLEY and staff, in California by Philip Leitner and in Panama by DON WILSON. They collected blood from 32 species of 6 families and milk from 22 species of 5 families. Milk specimens were obtained from the following:

Balantiopterix plicata	Myotis nigricans
Glossophaga soricina	Pipistrellus hesperus
Leptonycteris sanborni	Eptesicus fuscus
Artibeus jamaicensis	Plecotus townsendii
Artibeus cinereus	Plecotus phyllotis
Vampyroides caracioli	Euderma maculatum
Carollia perspicillata	Lasiurus cinereus
Natalus stramineus	Tadarida brasiliensis
Myotis lucifugus	Tadarida macrotis
Myotis thysanodes	Molossus ater
Myotis yumanensis	Eumops perotis

Jenness and Studier are anxious to extend their collection and would appreciate any suggestions or help in making collections from additional species next lactating season.

HARRY A. GOODWIN of the office of endangered species of the U. S. Fish & Wildlife Service, wrote to thank me for proposing the Ozark and Virginia races of the western big-eared bat for the new list. He says a revised list will be out in the near future.

On 14 December 1969 I found a female Myotis sodalis in Carter Cave, Kentucky carrying a band that John Hall had put on it there on 29

January, 1957.

Speaking of Carter Cave, the Kentucky Department of Parks had fences erected around both entrances to protect the bats. If one wants to see the bats or study them he can do so by calling at the park headquarters. The gate will be open during the summer.

We were at the cave in January, and were disappointed to see that the bat population was down. Hardest hit were the Myotis lucifugus. There used to be about 4000 of these; I doubt if there are 400 now. We estimated the M. sodalis at about 50,000, down from 80,000 of the last time I was there several years ago. Big brown bats and pipistrelles were also noticeably down. A pleasant surprise was a Lasionycteris noctivagans hanging on the wall inside the back entrance. This species had never been seen in the park before to my knowledge.

A note from WILLIAM WIMSATT says that the first two volumes of Biology of Bats has been edited and gone to the printer. Contributors can expect to receive proofs in April; publication date is September or October for the first volume, with the second about 2 months later. Volume III is still in preparation.

J. F. BELL sent me a clipping from December, 1968, Outdoor Life which described bat shooting at a farm house in Missouri.

GLEN KOEHLER captured a bat in September when it flew into his bedroom. It was an Eptesicus fuscus which took well to captivity, feeding on glop, mealworms and waxworms. Waxworms, used for ice fishing, he says are large soft-bodied insect larvae, which are a good variant for the winter diet of a bat.

DICK MILLS sent me a picture of the new bands which he had used on Eptesicus fuscus in Ohio last summer. They were badly chewed after having been on only a month. He has been working with a colony of about 800 big brown bats in Pike County, Ohio.

A couple of people from countries with foreign exchange problems have asked me about obtaining our bat book on exchange. This can be done by contacting the University of Kentucky Library.

BRUCE RICHARDSON is a graduate student at San Diego State. Last summer he did some looking around and found colonies of Antrozous pallidus and Myotis yumanensis. He is looking for an interesting research problem in ecology, behavior or physiology.

I have at hand a new publication called Nyctalus, Mitteilungen zum Fledermausschutz. It is published by the Institut fur Landesforschung und Naturschutz, in Halle, East Germany.

LUTHER LITTLE wrote that he visited some mine tunnels last summer looking for bats without success. He says he has no one to join him on his collecting trips around home at Littlerock, California.

DANIEL WILLIAMS visited the Conejos County Courthouse in Colorado last summer and found 4 species of bats: Eptesicus fuscus, Myotis lucifugus, M. volans and M. yumanensis. We had found the same species there the previous summer, but only one specimen of the latter, which we collected.

DAN SMILEY sent me a couple of clippings from his New Paltz, N. Y. newspaper concerning rabid bats in the state and one in his county.

NIXON WILSON is now at the University of Northern Iowa, Cedar Falls. He writes that he banded Myotis grisescens in Boone's Cave, Taylor County, Kentucky, as follows: 324 in 1966; 383 in 1968; and 34 in 1969. He says the small number in 1969 may have been because it was late August and many had already left, but that he had banded a month later in 1966. He says that it was certainly an active nursery colony in 1968.

I was taken to a cave near Wilmore, Kentucky, last fall, where there had been a colony of gray bats last summer. This is not the well known cave at Dix Dam. It was a new one to me; very close to Lexington. It would be an interesting one to net in late summer. Beautiful spot.

MATTHEW KLUGER is working on thermoregulation in the big brown bat at Illinois. He has a paper in press in Comparative Biochemistry and Physiology.

CHRIS STINSON is a freshman at Swarthmore College who has started to study bats. He is a new subscriber.

DONALD HENDRICKS is another new subscriber. He is one of Cope's many students working with little brown bats in Indiana.

WALTER GUSCIORA of the New Jersey Department of Health is involved in an arbovirus survey program which includes bats. He tried mist nets over a small pond last summer without luck.

DENNIS MCCOUGH, "Mac's Golden Worms", box 450, Delphi, Indiana 46923, stopped by last fall. He supplies the finest quality mealworms at \$ 4.00 per thousand postpaid. He says he supplies the laboratories of Stones and of Wiebers and would like to have more customers in the bat food business. There now, you know where to get your golden worms.

ARTHUR L. JONES, long time subscriber from Rapid City, is now in the state senate of South Dakota.

The Quarterly rabies summaries for the second and third quarters, 1969, are now in. During the second quarter there were 987 laboratory confirmed cases in the United States, 61 of which were in bats. Figures for the third quarter were 827 and 204, respectively.

JOHN J. CHRISTIAN wrote us a lengthy letter after getting his copy of the bat book. He suggested that if we have a new edition we illustrate the keel on the calcar. Actually we have it illustrated where we refer to it in the key with a photograph of an Eptesicus where it is clearly evident, and we illustrate it again in the account of Myotis sodalis where it is pointed out by an arrow on the photograph. He also says that he has recently found the sporozoan Klossiella in the kidneys of Myotis lucifugus from Wayne County, Pa., and that Lasiurus cinereus is quite common there. He says they are seen regularly in fair numbers around farm lights at night - usually 5 or 6 may be seen at a time around a particular light. They arrive late, usually after 10:00 P.M. He also comments on the annular rings in the teeth of Eptesicus. He says that one can estimate the date of capture of a bat within two weeks - even can be done by someone looking at teeth for the first time and given approximate dates of hibernation. He says that this completely validates the use of annular deposits to determine age without having known age animals. He says that since dating was pos-

sible in every individual he does not consider it necessary to have bats of known age to validate his system. Nevertheless, he says he has asked a number of people to provide him with known age bats in a decalcifying fixative, but none have been forthcoming. However, he says that since one can determine the dates of capture within less than a month, often less, for the non-hibernating period it seems evident that further validation would not be particularly contributory. He also says that tooth wear groups correspond with ring-date very nicely. He suggests that his annular ring method should also apply to other bats if other species were to be studied.

Christian says finally he would like to call attention to the fact that there was a foul up in numbering the figures and plates in his Eptesicus paper (Amer Midl Nat 55 (1) 1956). He considered it obvious enough not to require publication of errata, but to set the record straight he lists 13 lines of corrections for us.

DON HAYNE also wrote me about the book. He said it is an enviable production, a beautiful book as well as a useful one. He was interested in some of our data on the behavior of Myotis grisescens in Tennessee, which was compiled by Merlin Tuttle and taken by us from BRN. Hayne says that WILLIAM MAHAN is working on a PhD at Georgia and will include in a thesis work that he has done on this species in Tennessee. He says that Mahan has some interesting data that he hopes will be published soon. I also hope he will publish soon. I think this bat may have a fragile ecology and for that reason might belong on the list of vanishing species. The more solid data we can have published on its behavior and migrations the better. MERLIN TUTTLE is also still studying this species; I expect him to come out with substantial publications on it any time now. How about it, Merlin?

RUSS MUMFORD says that last August he and BRUCE HAYWARD got some Myotis austroriparius in a mist net at the mouth of a cave where they winter in Indiana. This is good to hear; I had been wondering if the species were not extinct now in that state and in Illinois. How about a report on what we know of its past and current status there?

Russ says that some of the specimens were quite brown (females), entirely different in color from the gray of winter animals. He recalls some brown ones in the collection at Southern Illinois University, but doesn't remember what month they were taken in; asks if I know. I have not seen them. Perhaps JIM HARDIN, who is now at S.I.U. could let him know. I think Russ might also be interested in corresponding with FRANK GRAVES, who is now at Montana. He had one of the most variable series of bats I have seen. They were taken from western Tennessee in summer.

JAMES HEDGES sent me a clipping from the Washington Post about rabid bats preying on Latin American cattle. Rabies is considered the most serious problem in animal health in the region today. HEDGES, who did our last 5 year index, has been working on one for volumes 6-10. We had hoped to have it distributed by now, but it has been held up because he has been having typewriter trouble.

Go  
Student

JOHN PIZZIMENTI, a new subscriber, is a new graduate student at Kansas interested in new world Chiroptera.

ROBERT A. MARTIN, a new subscriber at South Dakota School of Mines, is beginning a study of the bats of the Black Hills, mainly on population dynamics and thermoregulation.

HARLAN WALLEY got a surprise last fall when he found a free-tailed bat in northern Illinois. He has a paper coming out with the details in the April issue of the Transactions of the Illinois Academy of Science.

JESSE WHITE at Delta State College in Cleveland Mississippi is looking for some local Tadarida for his studies of parasites. He also wants to know of anyone looking for possible relationships between ectoparasites and rabies.

RONALD TURNER is now at St. Benedicts College in Atchison, Kansas. He wants to work up his thesis into a popular type book on the mammals of the Black Hills and wants to know where would be the best place to go for a publisher for this sort of thing.

ALLEN BENTON is spending the year on sabbatical at Concord College, Athens, W. Va., working on fleas.

The CDC Veterinary Public Health Notes for November has a story about rabies in bats in the Philadelphia area. During September and October 5 rabid bats were picked up in the area.

DONALD GRIFFIN wrote that DOROTHY DUNNING is now at West Virginia. She is studying social behavior of local bats.

Newsletter number 2 of the Biological Survey of Alabama Caves came out in October. It is a 5 page publication. If you are interested in this, write to JOHN COOPER here at UK.

Newsletter volume 2, number 4 of the Ozark Underground Laboratory, Ozark, Missouri, says that the initial estimate of 100,000 Myotis gris-escens in the cave was low. In mid-summer the population is said to be at least 150,000. This is certainly good to hear. I know of no other place where a population of this species is protected. Unfortunately, I suppose the bats leave the cave to winter elsewhere. Perhaps someone who knows something about this population can tell us where they winter and what their chances of survival in winter are for the reasonable future.

My father sent me a clipping from the Morgantown, W. Va., Dominion-News concerning a rabid bat biting a man there.

The CDC Veterinary Public Health Notes for September ran a story about 2 human deaths from rabies vaccine. Two farmers died in Quebec and Ontario after receiving Semple rabies vaccine. The Ontario Epidemiology Service emphasized the risk associated with the administration of rabies vaccine and urged physicians treating persons exposed to rabies to weigh carefully the risk of rabies infection against the possibility of postvaccinal neuromyelitis.

WILLIAM B. KEITH, 2514 Michaux, Houston, Texas 77009, has recently got interested in bats and has been very active in studying them in the city. He finds Tadarida under lots of the new bridges and in several old buildings. At one place he found where bats had entered a rain spout and got trapped where they could not crawl out. Many others were flying about and some entering the spout. When he looked down into the spout he saw a dozen or so bats. Several were dead. Among the buildings where he has



found bat colonies are the Houston Merchants Exchange, The Moulin Rouge, and Les Quatre Saisons.

Mr. Keith is interested in homing in bats; he is thinking about the possibility of odor playing a role and planning some possible experiments to test it. He is a 40 year old single man who works for the phone company in Houston. You people who are interested in the systematics of Tadarida should contact him. The argument still rages as to whether the southeastern form is a species or a subspecies. Houston is where the two come together. Are there two species there, one migratory and the other a permanent resident. I have heard that Dilford Carter considers them separate species.

#### RECENT LITERATURE

- ABELENITSEV, V. I. et al 1968. The results of bat banding in the Ukrainian SSR 1939-1967. Vestnik Zool. 6: 59-64. in Russian.
- AELLEN, V. & P. STRINATI. 1969. List of the bats of Tunisia. Revue Suisse de Zoologie 76: 421-432. in French.
- ALLRED, D. M. & M. A. GROATES. 1964. Mites from mammals at the Nevada test site. Great Basin Nat. 24: 71-73.
- ANONYMOUS. 1968. List of furred animals actually observed in vicinity of King River during quarter ended 30.9.68. Fauna Bull. (Australia) 2: 14.
- ARMSTRONG, D. M. 1969. Noteworthy records of bats from Costa Rica. J Mamm 50: 808-810.
- BAKER, R. J. & J. T. MASCARELLO. 1969. Chromosomes of some vesperilionid bats of the genera Lasiurus and Plecotus. Southwest Nat 14: 249-251.
- BARBU, P. & G. SIN. 1968. Observations on the hibernating species Nyctalus noctula in Dobrogea. Studii Cercatari Biol. 20: 291-297. in Hungarian.
- BECAK, M. L. et al. 1969. Sex determining mechanism XYX in Artibeus lituratus lituratus. Experientia, 25: 81-83.
- BELL, J. F. et al. 1969. Protracted survival of rabies-infected bat after infective bite. Amer J Trop Med Hyg. 18: 61-66.
- BOCHENSKI, Z. et al. 1968. Changes of the Holocene fauna of Poland. Folia Quaternaria. 29: 59-70. in Polish.
- BROSSET, A. 1968. The changes of the seasonal sexual cycle of the bat Hipposideros caffer seen at the equator. Biol Gabonica 4: 325-341. in French
- BRUCE, D. S. & J. E. WIEBERS. 1969. Influence of season and activity on sodium content of bones and plasma of the bat Myotis lucifugus. Experientia. 25: 29-30.
- BRYGOO, E. R. 1968. Comments on the fish and faune of Malgache in the Institute of Scientific Research of Madagascar. Bull Acad Malgache. 44: 183-185.



- BURANCHINSKII, M. T. 1968. Characteristics of the blood supply of kidneys in members of certain orders of mammals. Biol Nauk 11(4): 46-49. in Russian
- CADENA, A. A. 1967. Studies on flagellates of the bats Tadarida brasiliensis and Myotis velifer and of their ectoparasites in Oklahoma. MS thesis Oklahoma State.
- CHASE, J. & R. A. SUTHERS. 1969. Visual obstacle avoidance by echolocating bats. Anim Beh. 17: 201-207.
- CHISLENKO, L. L. 1969. On the size structure of the world fauna of mammals. Bull Moscow Soc Naturalists, Biol Ser. 74: 5-12.
- CORNET, M. et al. 1968. An epidemic of yellow fever in Senegal in 1965. Bull World Health Org 39: 845-858.
- CRELIN, E. S. 1969. Interpubic ligament: elasticity in pregnant free-tailed bat. Science 164: 81-82.
- DAVIS, R. 1969. Growth and development of young pallid bats, Antrozous pallidus. J Mamm 50: 729-736.
- DEANE, C. D. 1969. Specific flight identification of the Chiroptera. Irish Naturalists J. 16: 142-143.
- DOWNS, T. 1968. Fossil vertebrates of southern California. Calif Nat Hist Guides 23: 1-61.
- \_\_\_\_\_ & J. A. WHITE. 1968. A vertebrate faunal succession in superposed sediments from late Pliocene to middle Pleistocene in California. pp41-47 in Tejkal, ed Tertiary/Quaternary Boundary.
- DUSBABEK, F. 1968. On the knowledge of mites of the subfamily Nycteriglyphinae (Acarina: Rosenteinidae) from Cuba. Folia Parasitol. 14: 239-246.
- \_\_\_\_\_. 1968. Jamesonia, a new genus (Acarina: Myobiidae) with seven new species from Cuban bats. Folia Parasitol. 14: 247-261.
- DWYER, P. D. 1969. Population ranges of Miniopterus schreibersii (Chiroptera) in south-eastern Australia. Australian J Zool. 17: 665-686.
- FAIN, A. 1966. Acariasis of the nasal fossae in mammals: Description of a new species in a bat from Trinidad (Ereynetidae: Trombidiformes). Acta Zool Antverpiensia 41: 103-108.
- FITTKAU, E. J. et al. 1968. Biogeography and ecology in South America. Vol I. Junk Publ, Hague, 445 pp.
- FRAYSER, R. et al. 1967. Systemic and topical actions of leucocytic extracts on minute vessels of the bat wing. Bibl Anat. 9: 46-49.
- FUNAIOLI, U. & B. LANZA. 1968. On some bats from Somalia. Monitore Zool Ital 2: 199-202.
- GOODWIN, G. G. 1969. Mammals from the state of Oaxaca, Mexico, in the American Museum of Natural History. Bull Amer Mus Nat Hist 141: 1-270.
- GOULD, E. 1969. Observations on the ontogeny of echolocation in bats: Myotis and Eptesicus. Bull Ecol Soc Amer 50: 140.

- GROKHOVSKAYA, I. M. 1969. Specific ecological and distributional features of Trombiculidae in Viet Nam. *Med Parazitol Parazit Bolez.* 38: 72-78.
- HANAK, V. & J. GAISLER. 1969. Notes on the taxonomy and ecology of Myotis longipes (Dobson, 1873). *Zoologicke Listy* 18: 195-206.
- HARRIS, P. D. et al. 1969. Effects of ethyl alcohol on subcutaneous microcirculation. *Toxicol Appl Pharmacol* 14: 6-12.
- HATTORI, K. 1968. The insectivorous bat in Hokkaido. *Rep Hokkaido Inst Pub Health.* 16: 69-77.
- HILL, J. E. 1969. The generic status of Glischropus rosseti Oey, 1951 (Chiroptera: Vespertilionidae). *Mammalia.* 33: 133-139.
- HOFFMAN, R. S., et al. 1969. The distribution of some mammals in Montana, II. Bats. *J Mamm* 50: 737-741.
- HOOPER, J. H. D. 1969. Recording the ultrasounds of bats. *Recorded Sound* 34: 450-455.
- \_\_\_\_\_ 1969. Potential use of a portable ultrasonic receiver for the field identification of flying bats. *Ultrasonics.* July, pp 177-181.
- KIMURA, R. S. 1969. Distribution, structure and function of the dark cells of the vestibular labyrinth. *Ann Otol Rhinol Laryngol* 78: 542-561.
- KOWALSKI, K. 1968. New data on the distribution of mammals in the Mongolian People's Republic. *Acta Zool Cracoviensia.* 13: 1-11.
- LAVAL, R. K. 1969. Records of bats from Honduras and El Salvador. *J Mamm.* 50: 819-822.
- LEPPIK, E. E. 1969. Homologous and analogous series in the evolution of flower types. *Genetika* 5(5): 12-23. in Russian. Pollination by bats.
- LEE, D. S. 1969. Notes on the feeding behavior of cave-dwelling bullfrogs. *Herpetologica.* 25: 211-212. Myotis austroriparius
- LINARES, O. J. 1969. Subfossil bats found in the caves of Venezuela. Part II. Tadarida aurispinosa in the cave of the carraos, Miranda. *Soc Venezolana Espel* 2: 45-48.
- \_\_\_\_\_ & P. KIBLISKY. 1969. The karyotype and a new record of Molossops greenhalli from Venezuela. *J Mamm* 50: 831-832.
- JONES, G. S. et al. 1969. Bats from central Java. *J Mamm* 50: 835-836.
- LINZEY, D. W. & A. V. LINZEY. 1969. First record of the yellow bat in Alabama. *J Mamm* 50: 845.
- MCNAB, B. K. 1969. The economics of temperature regulation in neotropical bats. *Comp Biochem Physiol* 31: 227-268.
- METSELAAR, D. et al. 1969. Mount Elegon bat virus: a hitherto undescribed virus from Rhinolophus hildebrandtii eloquens K Andersen. *Arch Gesamte Virusforsch.* 26: 183-193.
- MICHAELSEN, J. 1969. Bats at Tonsberg, Vestfold County, Fauna. 22: 63. in Norwegian.
- MIDDLEBROOKS, B. L. et al. 1969. Studies of arthropod borne virus infections in Chiroptera. V. Characteristics of lines of Japanese B encephalitis virus developed by serial passage in big brown bats (Eptesibus f. fuscus) maintained at different environmental temperatures. *Amer J Trop Med Hyg.* 18: 115-122.

- MIZRA, Z. B. 1967. Notes on the ecology and distribution of the fruit bat Rousettus leschenaulti leschenaulti in West Pakistan. Pakistan J Sci. 19: 193-194.
- MUELLER, H. C. 1969. Red bat in bullfrog stomach. Carolina Tips. 32: 43.
- NEILSEN, K. C. & C. OWMAN. 1968. Difference in cardiac adrenergic innervation between hibernators and non-hibernating mammals. Acta Physiol Scand Suppl 316, pp 1-29.
- NORBERG, U. M. 1969. An arrangement giving a stiff leading edge to the hand wing in bats. J Mamm 50: 766-770.
- OXNARD, C. E. 1968. The architecture of the shoulder in some mammals. J Morphology 126: 249-290.
- PATEL, A. J. & C. V. RAMAKRISHNAN. 1969. Studies on avian and mammalian heart tissue. Comp Biochem Physiol 28: 803-815.
- PATTERSON, B. & R. PASCUAL. 1968. Evolution of mammals on southern continents. V. The fossil mammal fauna of South America. Quart Rev Biol 43: 409-451.
- PERACCHI, A. L. 1968. On the habits of Histiotus velatus (Geoffroy, 1824). Rev Brasil Biol 28: 469-473. in Portugese.
- PETROV, B. 1968. Corrections and comments to the distribution maps in the book of van den Brink "the Mammals of Europe" for Yugoslavia. Saugetierk Mitt 16: 39-52.
- PHILLIPS, C. J. et al. 1969. Macronyssid mites in oral mucosa of long-nosed bats: Occurrence and associated pathology. Science 165: 1368-1369.
- POPESCU, A. & E. CHIRIAC. 1969. Migrating mammals. Natura, ser Biol. 21: 18-24. in Hungarian.
- PRUDHOE, S. & B. R. MANGER. 1969. A collection of cestodes from Malayan bats. J Nat Hist, 3: 131-143
- PYE, D. 1969. The diversity of bats. Science J 5 (4): 47-52.
- RACEY, P. A. 1969. Diagnosis of pregnancy and experimental extension of gestation in the pipistrelle bat, Pipistrellus pipistrellus. J Reprod Fert. 19: 465-474.
- ROER, H. 1969. Age structure of female Myotis myotis in four nursery colonies. Saugetierk Mitt, 17: 232-234.
- RYBAR, P. 1969. The bicolored bat (Vespertilio murinus L) and other small vertebrates in the diet of the barn owl in Castolovice (East Bohemia) Zoologicke Listy 18: 239-246.
- SAINT GIRONS, H. et al. 1969. Contribution to the knowledge of the annual cycle of the bat Rhinolophus ferrumequinum. Mammalia, 33: 357-470. in French.
- SENGER, C. M. 1969. Bat Banding in the Mt. St. Helens area. Bull # 6 Washington Spel Surv.
- SHACKLETTE, M. H. & H. F. HASENCLEVER. 1969. Variation of rates of natural infection with Histoplasma capsulatum in bats. Amer J Trop Med Hyg. 18: 53-57.
- SCHLUGER, E. G. 1969. New trombiculid mites and trombiculid mites found for the first time in the USSR. Parazitologiya 3: 115-122. in Russian.

- SIMMONS, J. A. 1968. Echolocation: auditory cues for range perception in bats. Proc Annual Convention APA, pp 301-302.
- SIMPSON, D. H. et al. 1968. Studies of arboviruses and bats in East Africa. I. Experimental infection of bats and virus transmission attempts in Aedes aegypti. Ann Trop Med Parasitol 62: 422-431  
II. Isolation and haemagglutination inhibition studies on bats collected in Kenya and throughout Uganda. 62: 432-440.
- SPENCE, L. & W. G. DOWNS. 1968. Virological investigations in Guyana 1956-1966. West Indian Med J, 17: 83-89.
- STEWART, W. E. et al. 1969. Relative sensitivities of viruses to different species of interferon. J Virol. 4: 142-153.
- STUDIER, E. H. & D. J. HOWELL. 1969. Heart rate of female big brown bats in flight. J Mamm 50: 842-845.
- SUCIU, M. 1968. Siphonaptera collected in Romania. Studii Cercetari Biol. 20: 245-254. in Romanian.
- SUGA, N. 1969. Echolocation and evoked potentials of bats after ablation of inferior colliculus. J Physiol 203: 707-728.  
\_\_\_\_\_. 1969. Echolocation and evoked potentials of bats after ablation of auditory cortex. J Physiol. 203: 729-739.
- SUKHOVSKAYA, L. I. 1968. Morphology of the posterior bigemina of the dolphin brain. Arkh Anat Gistol Embriol 55(10): 12-16. in Russian. Comparisons to bat, echolocation.
- TEDDE, G. 1968. Ovarian dimorphism in Rhinolophus ferrumequinum. Arch Italiano Anat Embriol. 73: 363-378. in Italian.
- TEMBROCK, G. 1968. Land mammals. in Seboek, T. A., ed. Animal Communication. pp 338-404. Indiana Univ Press.
- THRELFALL, W. 1969. Further records of helminths from Newfoundland mammals. Canadian J Zool. 47: 197-202.
- VOGEL, V. B. 1969. Comparative studies on the water metabolism of bats. (Rhinopoma, Rhinolophus, Myotis). Zeit vergl Physiol 64: 324-345.
- WALTON, D. W. 1969. Evolution of the chiropteran scapula. Texas J Sci. 21: 85-90.
- WING, E. S. et al. 1968. Vertebrate remains from Indian sites on Antigua, West Indies. Caribbean J Sci. 8: 123-140.
- ZELEDON, R. & R. ROSABAL. 1969. Trypanosoma leonidasdeanei, sp nov in insectivorous bats of Costa Rica. Annals Trop Med Parasit. 63: 221-228.

## EDITOR TO RETIRE

I have been producing BRN for ten years now, and have thought several times about passing it on to someone else. I enjoy it and it takes much less time than one might think. Once every 3 months I take out everything that has accumulated in the drawer and sort it. Then follows 3 or 4 evenings on the typewriter. Once a week I scan all the literature that has arrived in the library to retrieve bat titles, and every once in a while I check Biol Abstracts.

All this has been a valuable experience. Scanning the journals weekly has made me much better informed as a teacher and zoologist and more aware of what is going on. Writing the news has given me an experience in extemporaneous writing which I have found to be of value. In fact, it was these two things (seeing the literature and learning to write) which have indirectly made it necessary for me to quit doing BRN; I have rather suddenly become so swamped that I cannot continue.

When scanning all the literature that comes into our Biological Sciences Library, and discussing important recent literature in my senior seminars, I got concerned about the really important things that are written in journals like Science, Bioscience, Environment, Food and Cosmetics Toxicology, etc., and don't seem to get beyond a few professional scientists. I remembered that my first impression after reading Silent Spring was disappointment - there was nothing there that was new to me. Then it occurred to me that the remarkable thing about that book was that people read it. I decided to see if I could get people at UK to read some of the stuff that had been impressing me - I started last fall to write a column in the student paper. In January Collegiate Press Service started distributing the column. Also in January I had a little two page paper appear in the New Republic. This paper seems well on its way toward catching Ehrlich's "Ecocatastrophe" as the most extensively Xeroxed paper. Among other things it was the subject of the editorial in the 23 January Wall Street Journal and was responsible for getting me on NBC's First Tuesday. As a result of the column and the article and the student swing toward the environment across the nation, the demands on my time to write and speak are quickly getting out of hand. The stuff I do is trivial junk that anyone could do just by spending a couple of hours per week in the libraries.

It has been difficult to get this issue out, and I fear it might be worse for the next one. Never before have I had one late except when gone for the summer. Therefore I want to try to get someone else to take over BRN,





WESTERN PIPISTRELLE, PIPISTRELLUS HESPERUS



## THE COVER

The little western pipistrelle, nearly the tiniest of mammals, is the most abundant bat in the deserts and lowlands of most of the Southwest. They are on the wing before sunset, fly very slowly, and are quite skillful at avoiding a net. However, they are so abundant that many get into the nets anyway. This one was taken over a waterhole in Arizona. The picture here appears in Bats of America. Photo by Roger W. Barbour.

---

Bat Research News appears quarterly: January, April, July and October. Its future is almost as uncertain as that of the nation and the world and therefore subscriptions are not being accepted at this time. Wayne H. Davis, Department of Zoology, University of Kentucky, Lexington, Ky. 40506  
U. S. A.

---

## HERE AND THERE

JAMES HEDGES made the index which is included with this mailing. He also put together a bibliography of bat literature by compiling all the recent literature sections from BRN. It runs some 30 or so pages, and I may not be able to get it into this mailing. If not, it will be in the next. These were tremendous jobs of real value to bat researchers, for which James Hedges deserves our gratitude.

WILBUR GUNIER banded about 12,000 Myotis grisescens in Missouri last winter and now has a total of about 20,000 tagged. He is finishing his MS thesis.

ROBERT BELICHICK is a new subscriber who is working on the energetics of bats with ED GOULD at Johns Hopkins.

RICHARD LAVAL has a paper in press in J Mammalogy which presents an hypothesis on the cause of the extreme color variation in Myotis austroriparius and revises the nomenclature of the species.

JON SWENSON is a student at Montana State at Bozeman who has been studying bats. He plans to net at mine entrances and over water holes and tanks in the dry Bull Mountains north of his home in Shepherd, near Billings this summer. He hopes to pick up Myotis keenii and Lasiurus borealis. He has been recording some range extensions for M. leibii in Montana.

THOMAS LANDRUM is a graduate student at Ball State doing a thesis on the ecology of the big brown bat in Grant County, Indiana.

The newsletter of the OZARK UNDERGROUND LABORATORY, Ozark, Missouri says that a major part of the colony of M. grisescens found in the cave winters in Marvel Cave, 38 miles to the west. The need for protection of the species is recognized by the owners of Marvel Cave; this population is given as much protection as controlled access and enlightened ownership can provide.

GLEN KOEHLER has offered to help with the work on BRN. He asks how he can get the CDC Veterinary Public Health Notes, as he is quite interested in rabies. This can be obtained by writing to the Communicable Disease Center, U. S. Public Health Service, Atlanta, Georgia 30333.

Bats of America was entered in the Chicago Book Clinic where it was designated a Top Honor Book. This is an award for layout and design.

HARLAN WALLEY reports that Myotis sodalis still exists in Blackball Mine. He had failed to find them since 1963, but located a cluster of 196 in December 1969.

NOEL BURKHEAD, box 289, Roanoke College, Salem, Va., is interested in a summer job working with bats. She has had her rabies shots and has worked with bats for several years.

RICHARD WEBSTER finished his degree on kidney function in bats under FRANK KALLEN and is now in the Anatomy Department at the LSU School of Medicine in New Orleans.

WILLIAM EWING, at New Mexico Highlands University, is studying the relation of temperature and humidity to metabolic rate in three species of local Myotis.

J. FREDERICK BELL says his little brown bats do very well in captivity and are easily trained to eat his standard bat food (ground baby mouse, beef, oatmeal and Abdec vitamins). They become anxious at feeding time and go to the trough immediately after it is filled. Survival is excellent if the new captives are hand fed for 2 or 3 days. He sent some pictures of the bats feeding. I hope to use them for the next cover.

ALVIN NOVICK wrote that on a rather warm day of January 6 a friend saw a hoary bat flying near his house at Branford, Connecticut, and on January 8 he found it dead on the wall of his house. It was a female and seemed to be in good condition. He says he has a book appearing April 16 on the Bats of the World with Nina Leen. I have not seen it yet, but the reviews are excellent. It was reviewed with pictures in Time.

#### CORRESPONDENCE

I want to extend congratulations on two of your latest efforts - The Bats of America is truly an accomplishment. I would be surprised to see any other work comparable to it appear in the foreseeable future. Secondly, I thought your New Republic paper, which I had read in my copy of the ZPG National Reporter, is the best of its kind I had yet seen on the population crisis. I'm sure you won't mind if we reproduce it for use in our Environmental Teach-in April 22. It is going to be a big event here. We also plan to use the tapes of your TV series.

I regret very much to learn that you plan to retire as editor of BRN. However, I am fully sympathetic with your reasons for doing so. Now

that I have got involved in this movement I too feel obliged to spend an ever increasing amount of time and effort in the fight to save our lives. Richard K. LaVal.

With regard to Dr. Mumford's question concerning the color of M. austroriparius in the collection here at SIU, there are 4 brown males among our 26. All were collected between January 28 and March 21. All but 5 of the specimens were taken 21 February 1960 in Johnson County, Illinois, and this is where the 4 brown ones came from.

Mumford may be interested in knowing that this species is present at Cave Spring Cave, Hardin Co., Ill., in spring and fall where I have taken them in mist nets. On October 26, 1969, I found 6 M. austroriparius torpid in Sweet Potato Cave, Livingston Co., Kentucky. Scott D. Keefer.

It was with mixed feelings that I received the news that you will retire as editor of BRN. The arrival of BRN has always meant a chance to hear what others are doing and thinking about and see what new titles I have missed. The real value of BRN lies in your capacity for stimulating thought along usually fruitful lines and for attracting diverse comment. I hope you can find a new editor as responsible and challenging, for discontinuation of BRN as we know it would be most unfortunate.

On the other hand your efforts in speaking and writing about population and environmental catastrophe are laudable and a great deal more pressing than bats. If you are able to stimulate enough people to find out what is going on there may be something worth salvaging in a few years after all. Stephen R. Humphrey.

For several years I have subscribed to BRN and have found it most interesting. I now have several questions which some of your readers may be able to answer.

As you know, pest control operators in the U.S. and Canada use 50% DDT dust to control bats in buildings, and have been allowed to continue its use despite recent DDT use restrictions on the grounds that no feasible non-pesticide control methods are available. I am interested in providing the Canada Dept of Agriculture with evidence that suitable alternatives do exist, in the hope that registration of DDT for bat control will be withdrawn. My questions are:

What are the alternatives to pesticides for control of bats in buildings? Have any controlled experiments been done to test efficacy of these methods?

Does anyone know of any effects on bat populations due to pesticides (effects on reproduction, acute or chronic poisoning, etc.)?

Are there any figures available from the U.S. on organochlorine pesticide content of bat tissues?

I am familiar with Luckens' and Davis' paper on DDT in bats. Regarding control methods, Brock Fenton and Don Smith at Carleton University here

in Ottawa think that blocking entrance holes, keeping electric lights on all summer, and disturbance are all possibilities, but no efficacy studies have been done on these techniques. Anne Rick, Consulting Biologist, Canadian Wildlife Service, Pesticide Section, Ottawa. (Ed note: I have heard of a sticky material marketed for keeping bats away. I am not sure, but I think it was Harold Hitchcock who mentioned it. Try your new index to BRN).

I have seen your book Bats of America and think it the best publication I have seen on any specific subject. Today I nominated it for consideration to the National Science Book Club which handles a volume of this type books. I do hope they will handle it. Pete Fussell.

I recently received my copy of Bats of America and think it's great. While I have minor complaints, such as the shape of the book (Ed. note: We did not like it either; that is one fight with the publisher which we lost), I think that on the whole it is a work to be proud of.

Over the past 10 years BRN has kept bat researchers of every ilk in touch with one another. It has done a great deal to draw us together and has provided a much needed forum in which to discuss common problems and exchange opinions and advice. For those of us who have become interested in bats during the life of BRN it has been particularly important. Through BRN we have been exposed to a <sup>e</sup>wealth of information not generally available from the technical journals or from any one major professor. Congratulations on an excellent idea and a job well done for the past 10 years. I was sorry to see the last page of the last issue, but I can understand and sympathize with your reasons.

I'd also like to congratulate you on an article entitled "Overpopulated America" which was among the literature I picked up at the recent Teach-out at Northwestern University. It presents a well-organized and hard hitting view of the world's major problem. I am showing it to everyone I can. Enclosed is a clipping about it from the Roosevelt University student newspaper I thought you might like to see. I am teaching there this year.

I am spending the year working on Iranian bats at the Field Museum and am constantly amazed at how little known the central Asian fauna is. Hans Neuhauser is also here working on the bats of Afghanistan. We have exchanged many stories of bat work in Afghanistan, Iran, Vermont and Indiana.

I have several good slides of Iranian bats. If you are interested in one as a potential BRN cover, I'd be happy to have some copies made for you. Anthony F. DeBlase.

Congratulations on a splendid book on the bats of America. I am proud to be the owner of such a valuable reference book with outstanding pictures of all the bats, thanks to Roger's superb camera work. My book has to me a personal touch from the authors with their autographs, plus a few words of a flattering nature for which I thank you both.

Many times I wish I had done more writing on bats years ago, but not being a writer and then getting sidetracked into selling steel in 1919 I missed out. I spent one year at the California Academy of Sciences with Joe Milliard in the bird and mammal department, but I knew I would not get anywhere, for I had no Ph.D. A chance came along for a livelihood in the steel business and mammalogy became an avocation.

I plan to attend the mammal meetings at College Station provided our home is not sold at the time and I hope that you both will be there.  
Luther Little.

Monday April 13 I visited Texas A & M where I met Dr. W. B. Davis, Dr. Dillard C. Carter, Richard K. LaVal and another graduate student named Valdez. I understand both graduate students are doing their theses on bats.

Texas A & M has a very nice collection of between 15 and 20 thousand bats. Richard showed me the live Carollia and Artibeus.

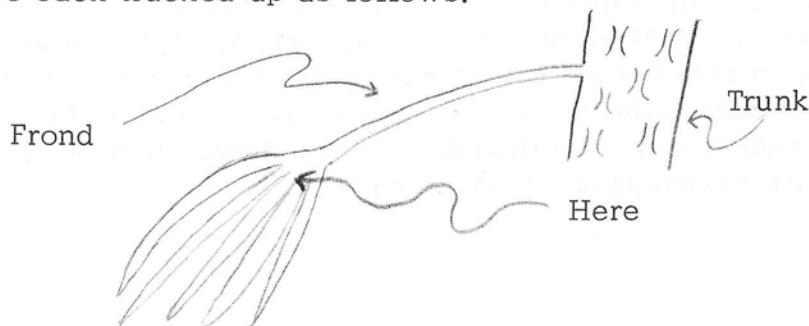
Later that same day I drove to Austin, Texas where I located three very active Tadarida roosts. One was in a building near the Kerrville Bus Station which is used as a parking garage during the day.

Two weeks later I returned and mist netted 15 as fast as I could remove them from the net.

On the way to Austin, at that time about midnight, while going thru Elgin, Texas, I noticed a bat flying near a street lamp. I stopped and watched it. Later about 2:00 AM when driving back thru I saw more under other street lamps there. Further along I saw some near a street lamp in Ledbetter, Texas I could not identify any of them. Maybe I can return soon and mist net them.

In Houston I have found bats flying near the street lamps on a bridge over White Oak Bayou near where I live. I have contacted Mr. Gene Satlis, Asst. to the Mayor in order to obtain a permit, if possible, if one is required, to mist net or otherwise take bats on Houston City property.

Tuesday May 11, I returned to check the palm trees in front of a high school where the principal had told me several weeks ago bats had been seen once some time ago when the custodian was trimming the fronds. I had checked nearly every week end and at other times since then. Tuesday I saw one bat in each of three trees and two in one. They were each trucked up as follows:





The bat could only with difficulty be seen anyway but from below. Each was ten to fifteen feet above the ground.

I fashioned a trap by draping a mist net on some coathangers cut and taped to a piece of 8' x 1" conduit, aluminum, which I slowly put up near the frond then vigorously jabbed, dislodging the bat.

In this manner I captured two which I believe to be Lasiurus intermedius. The interfemoral membrane is furred on the anterior half.

I've seen bats flying at my niece's home in Jacinto City and in a park near my apartment and over my landlord's backyard next door to me. Also I have been told they are seen near Pinemont street which logically enough has a lot of pine trees around it. I have no doubt they are there but have seen none myself.

All this leads me to believe there are bats all over the Houston area though they seem to be concentrated in certain places depending on the time of year and other factors.

The Lasiurus intermedius are beautiful animals. A hair from the area between the shoulders is nearly a straight shaft up to 450X. Tadarida brasiliense's hair from the same area between the shoulders at the same power is a great deal like the horsetail plant Equisetum arvense. It is branched at the "joints."

I have not tried to keep any bats, for more than a few days, alive. But I did try to feed the Tadarida I caught in Austin some bits of calf liver. When they opened their mouths wide in defense I pushed in the liver. I was able to feed several of them about three bits each. They definitely chewed it working their lower jaw from left to right and right to left.

The L. intermedius have a well developed tragus. I would like to suggest that the tragus is an aid to the bats hearing by deflecting air that would otherwise enter the ear canal in flight and at the same time acting as a trap for returning echoes that might be reflected from the pinna and lost, in effect, a waveguide and a device to improve the signal-to-noise ratio.

Of course I may be completely wrong. A few rather simple experiments in a wind-tunnel with a model of a bat's ear, with flowing smoke streams and photographic methods of showing the sound trajectories would tend to confirm or deny this line of thinking. The tragus in the model could be made removable. Models of ears of various species, life-size or larger might be used.

Living animals with appropriate recording devices while more difficult to set up also should certainly be used.

The tragus could be removed from a group of bats in the field and their competence with their fellows could be recorded.

It would be very nice if some individual or organization could see their way clear to backing me with adequate funds. I think I would go in to the study of bats full-time. But since I have no Ph.D. they probably wouldn't give it a second thought. I do believe, however, that there are certain contributions I could make.



I am sending along a few photographs you may find of interest. You may return them as you did the others I sent you several weeks ago.

I am sorry you are giving up editing the BRN. Hope you find someone<sup>of</sup> competence and enthusiasm to carry it on. William B. Keith.

#### RECENT LITERATURE

- AGEE, H. R. 1969. Response of flying bollworm moths and other tympanate moths to pulsed ultrasound. *Ann Ent Soc Am* 62: 801-807.
- AKINCHINA, G. & J. M. DOBY. 1968. First direct microscopic observation of Toxoplasma gondi Nicolle & Manceau 1909 (Protozoa) in a Chiroptera, Myotis bechsteini Leisler. *C R Hebd Seances Acad Sci Ser D Sci Nat* 266: 2431-33. in French.
- ALVAREZ, T. 1969. Fossil remains of mammals of Tlapacoya, state of Mexico (Pleistocene-Recent). *Univ Kansas Mus Nat Hist Misc Publ* 51: 93-112. in Spanish.
- ANONYMOUS. 1968. Rare and endangered fish and wildlife of the United States. U. S. Bureau of Sport Fisheries & Wildlife.
- ANONYMOUS. 1969. The walking, running, leap-frogging bat. *New Sci.* 42: 280.
- ANONYMOUS. 1970. Directory of European bat researchers. *Myotis* 7: 3-11.
- BARBOUR, R. W. & W. H. DAVIS. 1970. The status of Myotis occultus. *J Mamm* 51: 150-151.
- BARBU, P. & C. SORESCU. 1968. Observations on a summer colony of Plecotus austriacus. *Studii Cercetari Biol, Ser Zool* 20: 165-170. in Hungarian.
- BARCELLS, R. E. 1969 (1967). Bats and Nycteribiidae of the Spanish Levante. *Bol Real Soc Espan Hist Nat Sec C Biol* 65: 199-224.
- BARKALOW, B. H. & K. M. BALDWIN. 1969. A differential emissivity calorimeter. *Rev Sci Instrum* 40: 535-38. (Heat exchange in Myotis lucifugus).
- BARTA, Z. 1969. New discovery of Bechstein's bat, Myotis bechsteini Kuhl, 1818 in the Ore Mountains. *Vertebratologicke zpravy* 3: 119-120.
- BEAUCOURNU, J. C. 1969. New or recent data on the small mammal fauna of the west. *Bull Soc Sci Nat* 66: 3-22. in French.
- BEAUREGARD, M. 1969. Bat rabies in Canada, 1963-1967. *Can J Comp Med* 33: 220-226.
- BECK, A. J. 1969. Bats as a public health hazard in Malaysia. *Bull Publ Health Soc.* 3: 23-24.
- BLACK, H. L. 1970. Occurrence of the Mexican big-eared bat in Utah. *J Mamm* 51: 190.
- BLAKE, I. H. & A. K. BLAKE. 1969. An ecological study of timberline and alpine areas, Mount Lincoln, Park County, Colorado. *Univ. Nebr Studies, new ser* 40: 1-59.

- BLANCO, A. et al. 1969. Testicular lactate dehydrogenase isozyme: cyclic appearance in bats. *Science* 164: 835-36.
- BOOTH, E. S. 1968. *Mammals of southern California*. Univ Calif Press, Berkeley, 99pp.
- BRAAKSMA, S. 1969. Nogmaals de Laatvlieger. *De Levende Natur* 72:165-167. Sorry, I can't translate this title.
- BRAAKSMA, S. & A. van WIJNGAARDEN. 1969. Hibernation quarters of bats in a castle. *De Levende Natur* 72: 185-188. in Dutch.
- BRADBURY, J. W. 1970. Target discrimination by the echolocating bat *Vampyrum spectrum*. *J Exptl Zool* 173: 23-46.
- BRADBURY, J. W. & F. NOTTEBOHM. 1969. The use of vision by the little brown bat under controlled conditions. *Anim Beh* 17: 480-85.
- BRIDGMAN, C. F. et al. 1969. Insertions of intrafusal fibers in muscle spindles of the cat and other mammals. *Anat Rec* 164: 391-401.
- BRYLES, M. C. et al. 1969. Isolation of *Histoplasma capsulatum* from bats in Oklahoma. *Am J Trop Med Hyg* 18: 399-400.
- CAPANNA, E. 1968. The chromosomes of *Barbastella barbastellus*. *Caryologia* 21: 137-145.
- CHOATE, J. R. & P. L. CLIFTON. 1970. Noteworthy records of bats from Tamaulipas, Mexico. *Southwest Nat* 15: 358-360.
- CONISBEE, L. R. 1969. Notes on the local fauna and flora for 1968: mammals. *Hastings and East Sussex Nat* 10: 179-182.
- CORBET, G. B. 1969. The geological significance of the present distribution of mammals in Britain *Bull Mamm Soc* 31: 14-15.
- CRELIN, E. S. & E. V. NEWTON. 1969. The pelvis of the free-tailed bat: sexual dimorphism and pregnancy changes. *Anat Rec* 164: 349-358.
- DALQUEST, W. W. et al. 1969. The mammal fauna of Schulze Cave, Edwards County, Texas. *Bull Florida State Mus* 13: 206-276.
- DAVIS, W. B. 1970. A review of the small fruit bats (genus *Artibeus*) of Middle America. Part II. *Southwest Nat* 14: 389-402.
- DAVIS, W. B. 1970. The large fruit bats (genus *Artibeus*) of Middle America, with a review of the *Artibeus jamaicensis* complex. *J Mamm* 51: 105-122.
- DAVIS, W. H. & R. W. BARBOUR. 1970. Homing in blinded bats (*Myotis sodalis*). *J Mamm* 51: 182-184.
- DAVIS, R. 1970. Carrying of young by flying female North American bats. *Am Midl Nat* 83: 186-96.
- DIAMOND, M. 1968. *Perspectives in reproduction and sexual behavior*. Indiana Univ Press, Bloomington, 532 pp.
- DIAZ, C. 1969 (1968). Identification of a collection of parasites of Venezuelan vertebrates. *Bol Soc Venez Cienc Natur* 27: 525-536. Nematodes in bats. in Spanish.
- DULIC, B. & B. SOLDATOVIC. 1969. The chromosomes of *Rhinolophus mehelyi* Matschie 1900. *Caryologia* 22: 1-6.
- DUSBABEK, F. 1969. Macronyssidae (Acarina: Mesostigmata) of Cuban bats. *Folia Parasit* 16: 321-328.

- DWYER, P. D. 1970. Social organization in the bat Myotis adversus. Science 168: 1006-1008.
- EASTERIA, D. A. 1970. First records of the spotted bat in Texas and notes on its natural history. Am Midl Nat. 83: 306.
- EISENTRAUT, M. 1969. Does West Africa have a mountain limited fauna? Bonner Zool Beitrage 20: 325-334. in German.
- ENDERS, A. C. & S. SCHLAFKE. 1969. Cytological aspects of trophoblast-uterine interaction in early implantation. Am J Anat 125: 1-29.
- ENDO, K. 1969. Flight pattern in Barbastella. J Mamm Soc Japan 4: 92. in Japanese.
- FAIN, A. & T.H.G. AITKEN. 1969. Nasal Acarina of birds and mammals of Brazil. II. Erenetidae from the region of Belem. Bull Ann Soc Roy Entomol Belgique 105: 33-44. in French.
- FELDMANN, R. 1969. Occurrence and seasonal movements of Myotis dasycneme in the Westfallen area. Natur und Heimat 29: 85-92. in German.
- FRANK, H. 1969. Bat observations in the winter of 1968-1969. Laichinger Hohlenfreund 4: 4-7. in German.
- FRYER, R. & I. TEMBY. 1969. A mammal survey of stockman's reward. Victorian Nat 86: 48-53.
- GAISLER, J. & V. HANAK. 1969. Results of 20 years of bat banding in Czechoslovakia. Acta Sci Nat Acad Sci Bohemoslov. 3(new ser): 1-38.
- GRAF, J. 1968. Animal life of Europe. Warne & Co, London. 595 pp.
- GREENHALL, A. M. 1969. Vampire bats and paralytic rabies. Zoonoz 42:14-18.
- GRIFFIN, D. R. 1969. Bats- animal sonar experts. Animal Kingdom 72:12-16.
- HANAK, V. 1969. Information on Rhinolophus bocharicus. Vestnik Cesk spol Zool 33: 315-327. in German.
- HARMATA, W. 1969. Summer colony of Bechstein's bat Myotis bechsteini (Kuhl) in Szymbark near Gorlice, Rzeszow District. Remarks about biology and occurrence. Przegląd Zool 13: 233-238. in Polish.
- HASENCLEVER, H. F. et al. 1969. The use of cultural and histological methods for the detection of Histoplasma capsulatum in bats. Am J Epidemiol 90: 77-83.
- HENZE, O. 1970. A 19 year old Bechstein's bat (Myotis bechsteini). Myotis 7: 21-23. in German.
- HERSKOVITZ, P. 1969. The evolution of mammals on southern continents. VI. The recent mammals of the Neotropical Region: a zoogeographic and ecological review. Quart Rev Biol 44: 1-70.
- HILL, J. E. 1969. The status of Myopterus senegalensis Oken 1816 (Chiroptera, Molossidae). Mammalia 33: 727-729.
- HINCHCLIFFE, R. & A. PYE. 1969. Variations in the middle ear of mammals. J Zool 157: 277-288.

- HINCKLEY, R. E. & P. R. BURTON. 1970. Fine structure of the pancreatic islet cells of normal and alloxan treated bats (Eptesicus fuscus). Anat Rec 166: 67-85.
- HOOPER, J. 1969. Listening to bats. J Devonshire Trust 20: 858-862.
- HOUSE, H. B. 1969. Wings in the night. New York Zool Soc Newsletter May.
- HRABAN, Z. & M. RECHCIGL. 1969. Microbodies and related particles: morphology, biochemistry and physiology. Academic Press, N. Y. 296 pp.
- HUGGEL, H. & H. C. LANE, 1968. Some fundamental properties of the pulsating vein of bats. J Physiol (Paris) 60 (supplement 2) :466 in French.
- HUMPHREY, S. 1969. Disturbances and bats. Oklahoma Underground 2: 42-44.
- HURKA, L. 1969. The larva of the bat fly Nycteridopsylla eusarca Dampf (Aphaniptera, Ischnopsyllidae), Acta Entom Bohemoslov 66: 317-320. in German.
- HURKA, K. 1969. Basilia rhybini sp n and notes on the Nycteribiidae of the Caucasus and Central Asia (Diptera, Pupipara). Acta Entom Bohemoslov 66:387-398.
- HUSSON, A. M. 1970. The spelling of the scientific names of a few European bats. Myotis 7: 19-20. in German.
- IMAIZUMI, Y. 1968. Analysis of Ural owl pellet contents. Zool Mag 77: 402-404. in Japanese.
- IMAIZUMI, Y. 1968. Taxonomic status of the Japanese lesser noctule Nyctalus noctula motoyoshii J Mamm Soc Japan 4: 35-39.
- ISHIYAMA, E. et al. 1968. Observations of the eminentia cruciata in bat's labyrinth, Nihon Univ J Med 10: 177-181.
- JOHNSON, M. 1968. Mammalia. Trans Lincolnshire Naturalists' Union 17: 35.
- JONES, J. K. & H. H. GENOWAYS. 1969. Holotypes of recent mammals in the Museum of Natural History; the University of Kansas. Univ Kans Mus Nat Hist Misc Publ 51: 129-146.
- JONES, J. K. 1970. The red bat in Baja California. Southwest Nat 15: 361.
- JONES, W. B. & W. W. VARNEDOE. 1968. Caves of Madison County, Alabama. Circ Geol Surv Alabama 52: 1-177.
- JUDD, F. W. & D. J. SCHMIDLY. 1969. Distributional notes for some mammals from western Texas and eastern New Mexico. Texas J Sci 20: 381-83.
- KARABATSOS, N. 1969. Characterization of viruses isolated from bats. Am J Trop Med Hyg 18: 803-810.
- KEAST, A. 1969. Evolution of mammals on southern continents. VII. Comparisons of the contemporary mammalian faunas of the southern continents. Quart Rev Biol 44: 121-167.

- KLIMA, M. 1968. Flight mechanism. *Vesmir* 47: 172-78. in Czechoslovakian.
- KLUGER, M. J. & J. E. HEATH. 1970. Vasomotion in the bat wing: a thermoregulatory response to internal heating. *Comp Biochem Physiol* 32: 219-226.
- KOCHSEDER, G. 1969. Investigation of Hymenolepis grisea from bats in Styria. *Z Parasitenk* 32: 43-47.
- KRATKY, J. 1970. Nyctalus noctula in the summer quarters of Myotis myotis in Bohemia and in Slovakia. *Myotis* 7: 20-21. in German.
- KUHN, H. J. 1968. On the innervation of the larynx of a few flying foxes (Pteropodidae, Megachiroptera, Mammalia). *Zool Anz* 181: 168-181. in German.
- KULZER, E. 1969. African fruit-eating cave bats: part II. *African Wildlife* 23: 129-138.
- LECHER, P. & J. SIGNORET. 1969. Data on the sex chromosomes of mammals. *Ann Biol*, ser 4. 8: 167-198. in French.
- LECHLEITNER, R. R. 1969. Wild mammals of Colorado: Their appearance habits, distribution and abundance. Pruett, Boulder. 254 pp.
- LIAT, L. B. 1970. Food habits and breeding cycle of the Malaysian fruit-eating bat, Cynopterus brachyotis. *J Mamm* 51:174-177.
- LINARES, O. J. 1969. New bats for the fauna of Venezuela in the LaSalle Museum of Natural History. *Mem Soc Cienc Nat LaSalle* 29: 37-42. in Spanish.
- MAHDI, N. & P. V. GEORG. 1969. A systematic list of the vertebrates of Iraq. *Iraq Nat Hist Mus Publ No.* 26. 104pp.
- MAHNERT, V. 1969. Discovery of Myotis oxygnathus (Monticelli) 1885 in Austria and Switzerland. *Revue Suisse Zool* 76: 1039-1044.
- MARBURGER, R. G. 1969. Wildlife diseases dangerous to man. *Texas Parks Wildl* 27 (5): 12-15.
- MATYUSHKIN, D. P. 1969. Some characteristics of the acoustic system of bats (inhibition of cochlear neurons by strong stimuli). *Biol Nauk* 12 (3): 28-32. in Russian.
- MAYER, A. & J. WIRTH. 1969. Finding Slovakian bats in Austria. *Hohlenkundl Mitt* 25: 71. in German.
- \_\_\_\_\_. 1969. Bat observations in Austrian caves in the year 1968. *Z fur Karst und Hohlenkunde* 20: 123-128. in German.
- MCDIARMID, A. 1969. Diseases in free-living wild animals. *Symposia Zool Soc London* 24: 1-332.
- MIDDLETON, G. C. 1969. A case for the conservation of Colong Cave Reserve, New South Wales, Australia. *Studies Speleol* 2: 1-11.
- MIYAO, T & M. MOROZUMI. 1969. Notes on the embryo size and the litter size in Japanese native bats. *J Mamm Soc Japan* 4: 87-92. in Japanese.
- MORRIS, P. 1969. Unique life on the Nile. *Daily Telegraph Mag* 246: 42-43.
- MUMFORD, R. E. 1970. Myonycteris torquata and Megaloglossus woermanni from Uganda. *J Mamm* 51: 169.

- NADER, I. A. 1969. Animal remains in pellets of the barn owl Tyto alba from the vicinity of An-najaf, Iraq. Bull Iraq Nat Hist Mus 4: 1-7.
- NOVICK, A. & N. LEEN. 1970. Bats of the World. Holt, Reinhart & Winston
- O'FARRELL, M. J. & W. G. BRADLEY. 1970. Activity patterns of bats over a desert spring. J Mamm 51: 18-26.
- OLANIYAN, C. I. O. 1968. An introduction to West African animal ecology. Heinemann, London. 167pp.
- PARMALLEE, P. W. et al 1969. Pleistocene and Recent vertebrate faunas from Crankshaft Cave, Missouri. Repts Invest Illinois State Mus 14: 1-37.
- PATHAK, S. & T. SHARMA. 1969. Chromosomes of 5 species of Indian vespertilionid bats. Caryologia 22: 35-46.
- PATTON, T. H. 1969. An Oligocene land vertebrate fauna from Florida. J Paleontol 43: 543-546.
- PEDLER, C. & R. TILLEY. 1969. The retina of the fruit bat (Pteropus giganteus). Vision Res 9: 909-922.
- PURCHASE, D. 1969. Sixth, seventh and eighth annual reports on bat banding in Australia. Div Wildl Res Tech Paper 17: 1-16.
- PUROHIT, K. G. 1968. Ecology of mammals in the Great Indian Desert. pp 269-287 in Misra, R & B. Gopal Proc of the symposium on recent advances in tropical ecology. Internatl Soc Trop Ecol, Faridabad 375 pp.
- PYE, J. D. 1968. Hearing in bats. pp 66-88 in De Reuck, A. V. S. & J Knight Hearing mechanisms in vertebrates. Little, Brown & Co., Boston. 320 pp.
- QUAY, W. B. 1970. Histology of the Para-anal sebaceous glandular organs of the bat Eonycteris spelaea (Chiroptera: Pteropidae). Anat Rec 166: 189-198.
- RANKIN, W. T. C. 1969. The bats of Cheshire. Lancashire Cheshire Fauna Soc 55: 12-15.
- REIG, O. A. & O. J. LINARES. 1969. The occurrence of Akodon in the upper Pliocene of Argentina. J Mamm 50: 643-647.
- ROBEN, P. 1969. Observations on the genus Plecotus in the Heidelberg area. Saugetierk Mitt 17: 105-106. in German.
- ROER, H. 1969. On the occurrence and habitat of Cimex lectularius and Cimex pipistrelli in bat colonies. Bonner Zool Beitr 20: 355-359. in German
- \_\_\_\_\_. 1969. Food habits of Plecotus auritus. Bonner Zool Beitr 20: 378-383. in German
- \_\_\_\_\_. 1970. Concerning the transmission of rabies by insectivorous bats. Myotis 7: 17-18. in German.
- \_\_\_\_\_. 1970. Mutual achievements in delineating bat distribution in the middle European region. Myotis 7: 24. in German.
- ROTH, E. L. 1970. Silver-haired bat at Wichita Falls, Texas. Southwest Nat 14: 449-450.



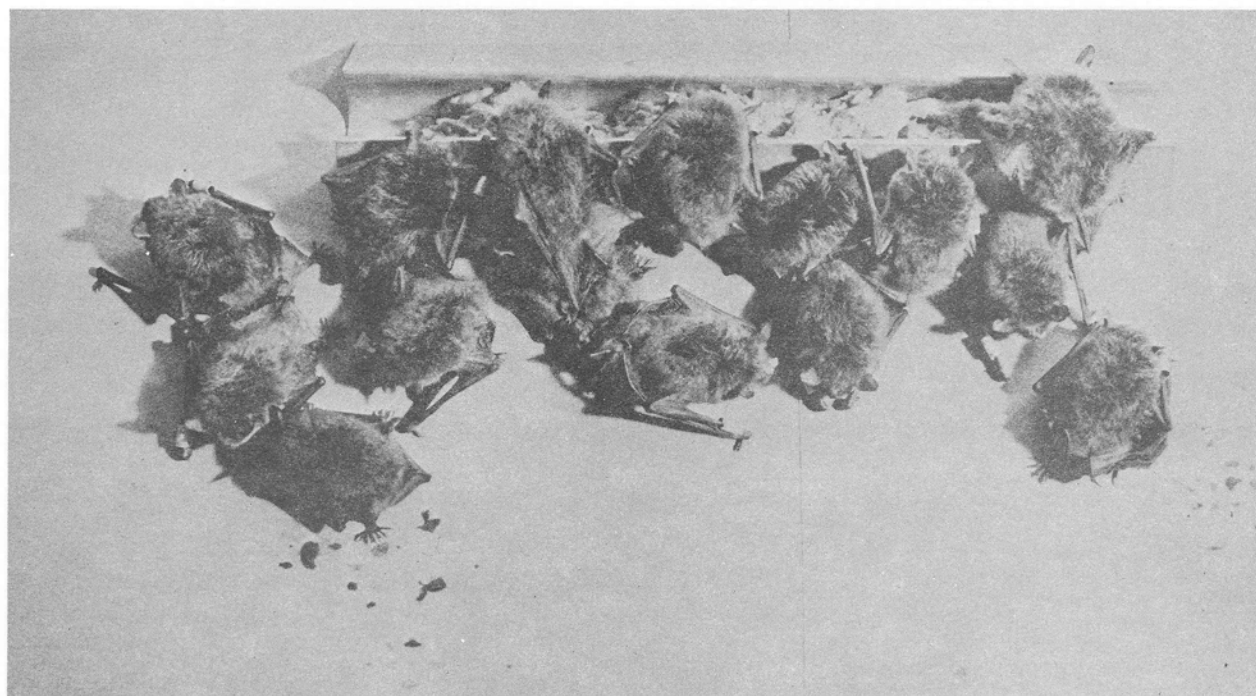
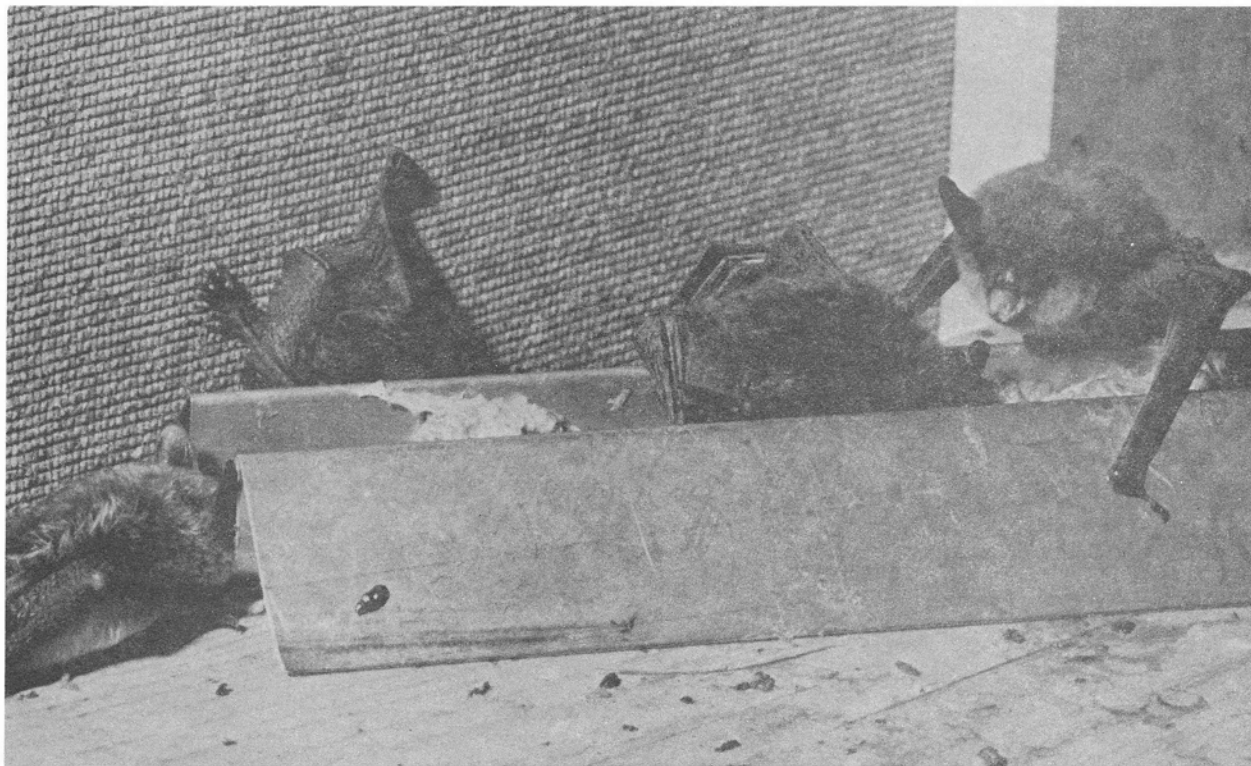
- SAMANO, A. 1967 (1965). The persistence of the stapedial artery in the chiropteran middle ear. Univ Nac Aut Mexico Inst Biol An 36: 303-317. in Spanish.
- SAMUEL, E. M. 1969. Mammals. Proc Dorset Nat Hist Archaeol Soc 90: 51-52.
- SASAKI, M. 1970. Karyotypes of three species of bats. Mamm Chromosomes Newsletter 11: 22.
- SAWADA, I. 1969 (1968). Helminth fauna of bats in Japan. Annot Zool Japan 41: 168-171.
- SCHLIEPHAKE, H. 1970. Experiences with artificial nest holes for the colonizing of bats. Myotis 7: 12-16. in German.
- SCHOOP, G. 1968. The rabies situation in America and Africa. Med Klin 63: 1334. in German.
- SIMMONS, J. A. 1969. Acoustic radiation patterns for the echolocating bats Chilonycteris rubiginosa and Eptesicus fuscus J Acoustical Soc Amer 46: 1054-1056.
- SKALSKI, A. & Z. WOJCIK. 1968. Caves of the Sokole Gory Mts Reserve, near Czestochowa. Ochrona Przyrody 33: 237-279. in Polish.
- SMITH, R. E. 1969. Brown fat: Regulatory function and control. Bull New Jersey Acad Sci, special symposium issue pp 93-100.
- SPILLETT, J. J. 1968. A report on wildlife surveys in south and west India. J Bombay Nat Hist Soc 65: 296-325.
- START, A. N. 1969. A note on three species of cats not previously reported from Kenya. Mammalia 33: 219-224.
- STEPHENS, R. J. 1969. The development and fine structure of the allantoic placental barrier in the bat Tadarida brasiliensis cynocephala J Ultrastructure Res 28: 371-398.
- STUDIER, E. H. & A. A. FRESQUEZ. 1969. Carbon dioxide retention: A mechanism of ammonia tolerance in mammals. Ecology 50: 492-494.
- SUTHERS, R. et al. 1969. Visual form discrimination by echolocating bats. Biol Bull 137: 535-546.
- TAMSITT, J. R. & D. VALDIVIESO. 1969. Hemoglobin electrophoresis in the systematics of bats. Life Sci Occ Papers Roy Ontario Mus. No. 14 12pp.
- TAMSITT, J. R. & I. FOX. 1970. Mites of the family Listrophoridae in Puerto Rico. Can J Zool 48: 398-399.
- TOPAL, G. 1969. Chiroptera. Fauna Hungariae. 22(2): 1-81. in Hungarian.
- TUPINIER, Y. 1969. The bats: their habits and distribution. Bull Mens Soc Linneenne Lyon 38: 50-56. in French.
- TURNER, R. W. & W. H. DAVIS. 1970 (1969). Bats from the Black Hills of South Dakota. Trans Kansas Acad Sci 72: 360-364.
- VANALEK, G. J. 1970. Bat flights over a pond. Southwest Nat 15: 360.
- VANCE, J. M. 1970. Bat Man. Missouri Conservation 31(3): 13-15.
- VAN DEUSEN, H. M. 1969. The hoary wattled bat of North Queensland. North Queensland Nat 36: 5-6.

- VAUGHAN, T. A. 1970. The transparent dactylopatagium in phyllostomatid bats. *J Mamm* 51: 142-145.
- VOGEL, S. 1968. Chiropterophilia in the neotropical flora: New contributions. *Abt B Morphol Genob, Jena.* 157: 562-602. in German.
- WEBER, B. 1969. The occurrence of bats in Kreis Haldensleben. *Jahreschrift des Kreismuseum Haldesleben* 10: 94-102. in German.
- WIJNGAARDEN, A & S. BRAAKSMA. 1969. Bats in ice cellars. *De Levende Natur* 72: 145-149. in Dutch.
- WOLBIANSKI, J. 1967. Overwintering of bats in the vicinity of Odessa. *Westnik Zoologii* 1: 77-78. in Russian.
- YONENAGA, et al. 1969. Karyotypes of 7 species of Brazilian bats. *Caryologia* 22: 63-80.
- WEBER, N. S. & J. S. FINDLEY. 1970. Warm-season changes in fat content of Eptesicus fuscus. *J Mamm* 51: 160-162.
- WILSON, D. E. 1970. An unusual roost of Artibeus cinereus watsoni. *J Mamm* 51: 204-205.
- WILSON, D. E. & E. L. TYSON. Longevity records for Artibeus jamaicensis and Myotis nigricans. *J Mamm* 51: 203.

BAT RESEARCH NEWS

VOLUME II, No. 3

JULY 1970



## THE COVER

The photos of little brown bats, Myotis lucifugus, at dinner were sent to me by Dr. J. F. Bell, of the U. S. Public Health Service Rocky

Mountain Laboratories at Hamilton, Montana. Dr. Bell has been working with rabies in captive bats for many years, and has developed successful techniques for keeping them. New captives are fed by hand for two or three days until they learn to go to the trough. His standard bat food is ground baby mouse, beef, oatmeal and Abdec vitamins.

---

Bat Research News appears quarterly: January, April, July and October. For information concerning subscriptions write Dr. Robert Martin, Dept of Biology, University of Maine, Farmington, Maine 04938

## THE NEWS

Included with this issue is a bibliography that was meant to go with the index which was sent with last issue. James Hedges prepared a bibliography. It was a tremendous amount of work. He typed out each citation and corresponded with me to correct numerous errors, such as my failing to get a date or page number on one. After he sent me the final product, I put a note on it for 500 copies and put it on a desk to go to duplicating services and never saw it again. Thinking that it would surely turn up I noted in the last news that it would be shipped with this issue. When I was unable to find it, I decided to put one together myself. My wife and I spent a weekend cutting and pasting from old issues to come up with the enclosed.

ROBERT MARTIN will be taking over the News with the next issue. He stopped by on the way to the mammal meetings to talk it over, and later wrote that he definitely would do it. After a summer netting bats in the southwest he has now returned to the University of Maine at Farmington 04938, where he is teaching in the Biology Department. Send future news to him.

MARK DULIN, a junior in veterinary medicine at Kansas State is working on the nervous system of pallid bats on a research scholarship this summer. He would be interested in hearing of any work on the brachial plexus or spinal cord of bats.

JOHN BOWLES is now at Central College at Pella, Iowa, finishing up his PhD from Kansas with a thesis on the mammals of Iowa. He heard

that I would be speaking next fall at a college a few miles down the road, and wrote to ask if I could stop by. Since I will be going through Pella anyway, we surely will be able to work in a visit.

URSULA ROWLATT, in the Pathology Dept of the University of Illinois Medical Center in Chicago, is a new subscriber. Her name is familiar to me from the recent literature.

WILLIAM KEITH is still finding lots of bats in Houston. In a house in the north side he recently discovered a colony of Nycticeius humeralis. On 21 June he removed two females with three young each of Lasiurus intermedius from the fronds of a palm tree on the lawn of a house at 16th and Columbia. He says there are three places with palms like he found in front of Reagan High School that he has checked and has found bats in each.

NOEL BURKHEAD is working this summer as a museum aid with CLYDE JONES at the Smithsonian.

ANNE RICK's request for information on bat control in the last issue brought a couple of responses. HAROLD HITCHCOCK, who is now at Bates College, wrote that the sticky material which he tried several years ago did not work. In spite of very liberal use of the stuff the bats continued to frequent the two roosts where he tried it. His advice for getting rid of bats is to seal up the openings.

DR. C. D. MAMPE, of the National Pest Control Association, wrote Miss Rick a long letter concerning bat control. The only methods he has found effective are shutting them out, use of moth crystals (only where the bats are in a tight area with small volume) and DDT.

HARLAN WALLEY has finished his manuscript on the migration of Myotis lucifugus in north-central Illinois and sent it to the publisher.

The annual rabies summary for 1969 has just been published by the Communicable Disease Center of the U.S. Public Health Service. There were 3522 laboratory confirmed cases in 46 states. This was a decrease of 19 % from the average for the previous 5 years.

Last year I wrote an article in the News on the status of the hoary bat in Kentucky. It seems to be a regular breeding summer resident in Lexington. New data include: on 1 July, 1970, I received a call about a bat in a residential area in south Lexington. I investigated and found an adult female with a large young attached. They had been discovered in a lawn. I released them at my house. On 6 July I saw a hoary bat flying high in the air above my house early in the evening.



The meeting of the American Society of Mammalogists was held in June at Texas A & M. There were many interesting looking titles on the program about bats, but unfortunately I did not attend.

SVEN-OLLE OLSSON writes from Sweden to ask about Wimsatt's book. It is expected to appear in October and is being published by Academic Press. It will be in three volumes, with the third coming out a little later. The title is Biology of Bats.

We have been getting nice reviews for Bats of America; Barbour commented today that he hadn't seen anything critical. The latest I have seen is a column by Marc Drogin, with a note that it was published in all client newspapers. He says that this "is not the bat book currently being given so much advertising and reviewer attention. And it is regrettable because this excellent volume is at least its equal". And speaking of the other volume, I have just recently seen Leen and Novick The World of Bats. It is an entirely different sort of book than ours, being aimed at a popular rather than the scientific audience. The pictures are excellent and spectacular photographs. The writing is of adventure style and quite interesting. I would like to have gone over it carefully and write a review, but I am pressed for time and shall leave that to Bob Martin. This book was the lead review in Time accompanied by pictures of bats. I heard AL NOVICK on the Arthur Godfrey show one morning discussing the book, and have been told that he was also on the Johnny Carson show with a live bat.

JOHN HOLSINGER wrote about a second colony of Myotis grisescens in Scott County, Virginia. A road cut was made opening an unknown cave at two entrances. The bats were about 1000 feet from the entrance hanging in thick clusters on the ceiling about 40 feet above the stream. The new cave is known as Speers Ferry cave and is on U. S. route 23 just a few hundred feet northwest of Speers Ferry.

SIDNEY MCGUIRE is now in the Department of Zoology and Physiology at L. S. U., after spending a few years working with bats in Costa Rica.

J. F. BELL sent me a very interesting letter that his laboratory had received in August 1955, from J. H. Brown, Provincial Entomologist of Alberta, Edmonton. It reads: "When I was at Waterton recently, Mr. Atkinson, the Superintendent, informed me that he had

observed two bats attached on the hind quarters of two separate deer in the Cameron Lake area. Apparently these bats become attached just about dusk and there is some question as to whether they are feeding on the deer or on the insects which are attracted to the animals. He has arranged with the wardens to trap the deer with the object of capturing the bats."

#### RECOVERY OF A BANDED LASIURUS CINEREUS

During June of 1966 I banded about 300 hoary bats in the Southwest, mostly at Portal, Arizona. Last year I reported on the recovery of one of these at Tucson. Now I have another recovery. Male hoary bat number 652-83815, banded at Martyr Pond, 6 miles SW of Portal, Arizona on 18 June, 1966, was killed 30 miles SW of Van Horn, Texas in December, 1967, and reported by Jim Brewer of Van Horn. W. H. Davis.

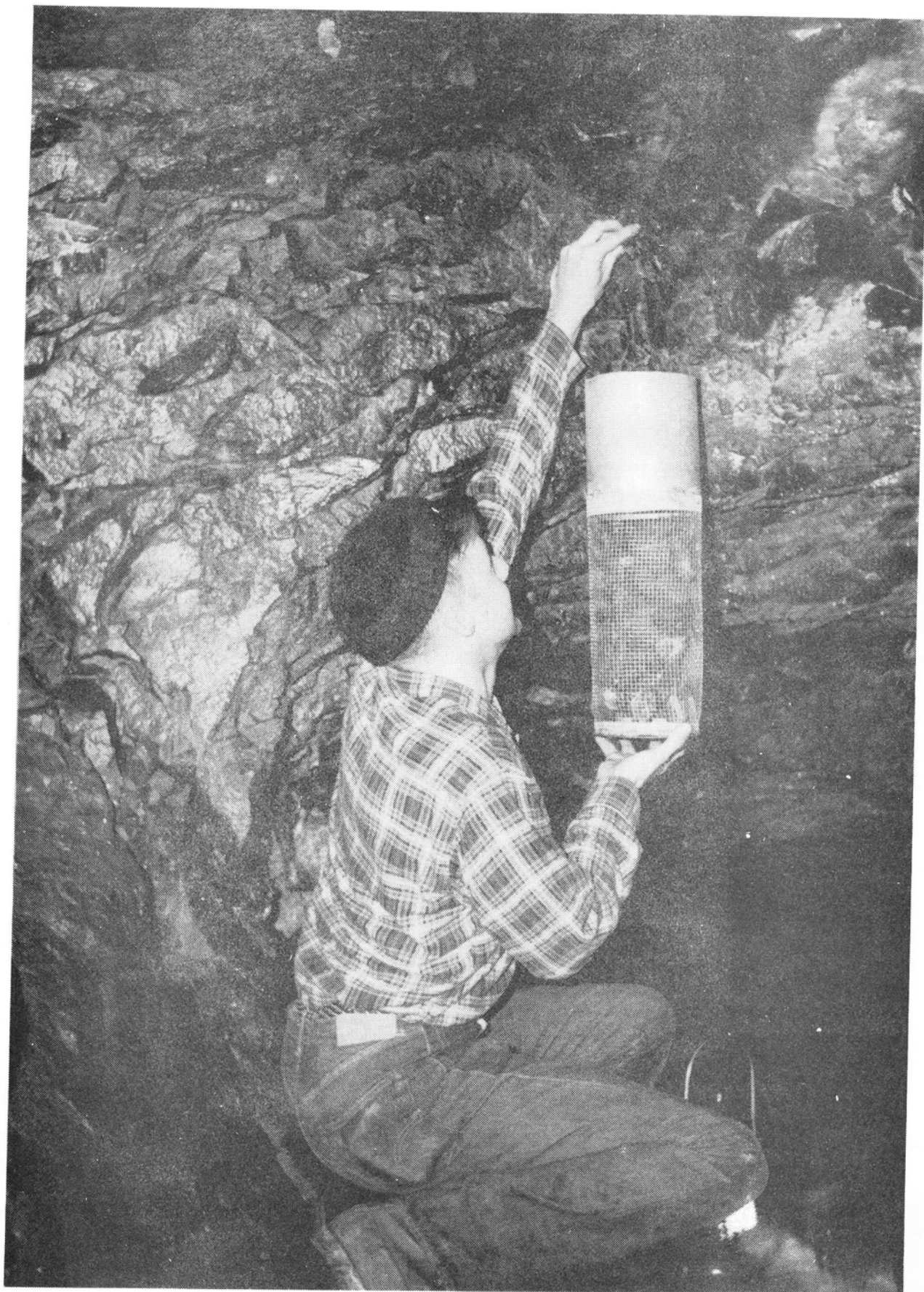
#### RECENT LITERATURE

Because of the desire to get this into the mails before I leave for a while in August, and the pressing of other things, I am not including the usual literature search. The following are just a few of the things that have come to my attention. I shall send the rest of the listings to Bob Martin for the next issue

- ANONYMOUS. 1970. Vampire bats: rabies transmission and livestock production in Latin America. 1969 Annual Rept. Denver Wildl Res Center U. S Fish & Wildlife Ser. 24 pp.
- ATALLAH, S. I. 1970. Bats of the genus Myotis from Lebanon. Occ Papers, Univ of Conn Biol Sci Ser 1: 205-212.
- BAKER, R. J. & HSU, T. C. 1970. Further studies on the sex chromosome systems of the American leaf nosed bat (Chiroptera, Phyllostomatidae). Cytogenetics 9: 131-138.
- BALCELLS, E. 1967. Bats and nycteribiids of Spanish Levante. Bol R Soc Espanola Hist Nat Biol 65: 199-224. in Spanish.
- BOGAN, M. A. & D. F. WILLIAMS. 1970. Additional records of some Chihuahuan bats. Southwest Nat 15: 131-134.
- BRUCE, D. S. & J. E. WIEBERS. 1970. Calcium and phosphate levels in bats, Myotis lucifugus, as function of season and activity. Experientia. 26: 625-627.
- BURNS, R. J. 1970. Twin vampire bats born in captivity. J Mamm. 51: 391-392.
- DAVIS, W. B. 1970. Tomopeas ravus Miller (Chiroptera). J. Mamm 51: 244-247.

- DINALE, G. 1969. Studies on Italian bats: X. Measurements on a collection of Rhinolophus ferrum equinum captured in Liguria, Italy. *Annali del Museo Civico di Storia Nat di Genova* . LXXVII: 574-590. in Italian.
- ERKERT, S. 1970. The effect of light on the activity of fruit bats (Megachiroptera). *Z vergl Physiol*. 67: 243-272. in German.
- GOPALAKRISHNA, A. 1969. Gestation period in some Indian bats, *J Bombay Nat Hist Soc.* 66: 317- 322.
- HOFFMEISTER. D. F. 1970. The seasonal distribution of bats in Arizona: a case for improving mammalian range maps. *Southwest Nat* 15: 11-22.
- HUMPHREY, S. R. & J. B. COPE. 1970. Population samples of the evening bat, Nycticeius humeralis. *J Mamm* 51: 399-401.
- KOLEBINOVA, M. & P. H. VERCAMMEN-GRANDJEAN. 1970. Neotrombicula vandeli and Riedlinia petarberoni, two new Trombiculidae larvae, acarine parasites of a bat. *Annales de Speleologie*. 25: 173-178.
- LACKEY, J. A. 1970. Distributional records of bats from Veracruz. *J Mamm* 51: 384-385.
- LAVAL, R. K. 1970. Banding returns and activity period of some Costa Rican bats. *Southwest Nat* 15: 1-10.
- LIVINGSTON, B. 1970. Bat Man. Minneapolis Tribune Picture Magazine. 31 May. Story about H. H. Goehring.
- MACHADO, C. E. & R. ANTEQUERA. 1969. Some notes on the distribution of the spinturnicidae of Colombia. *Caldasia* 10: 371-376. in Spanish.
- MITCHELL, R. W. 1970. Total number and density estimates of some species of cavernicoles inhabiting Fern Cave, Texas. *Annales de Speleologie*. 25: 73-90.
- NEUWEILER, G. 1970. Neurophysiological investigations in the echolocation of the greater horseshoe bat, Rhinolophus ferrum equinum *Z vergl Physiol* 67: 273-306. in German.
- PATTEN, D. R. & L. T. FINDLEY. 1970. Observations and records of Myotis (Pizonyx) vivesi Menegaux (Chiroptera: Vespertilionidae). *Los Angeles Co Mus Nat Hist Cont Sci No* 183.
- SPENRATH, C. A. & R. K. LAVAL. 1970. Records of bats from Querteraro and San Luis Potosi, Mexico. *J Mamm* 51: 395-398.
- STOCK, A. D. 1970. Notes on mammals of southwestern Utah. *J Mamm* 51: 429-433.
- STUDIER, E. H. et al. 1970. Diurnal body weight loss and tolerance of weight loss in five species of Myotis *J Mamm* 51: 302-309.
- STUDIER, E. H. & D. E. WILSON. 1970. Thermoregulation in some neotropical bats. *Comp Biochem Physiol* 34: 251-262.
- THOMAS, S. P. & R. A. SUTHERS. 1970. Oxygen consumption and physiological responses during flight in an echolocating bat. *Fed Proc* 29: 265.

- THOMPSON, J. N. & J. K. GREER. 1970. Geographic ranges of three Oklahoma mammals. *Southwest Nat* 15: 131. Nycticeius.
- VAN PEENEN, P. F. D. et al. 1970. A collection of mammals from Con Son Island, Viet Nam. *J Mamm* 51: 419-424.
- VAUGHAN, T. A. & G. C. BATEMAN. 1970. Functional morphology of the forelimb of mormoopid bats. *J Mamm* 51: 217-235.
- WALLEY, H. D. 1970. A Brazilian free-tailed bat (Tadarida brasiliensis) taken in north-central Illinois. *Trans Illinois Acad Sci.* 63: 113.
- WALLEY, H. D. et al. 1969. Big brown bat entangled in burdock. *Amer Midl Nat* 82: 630.
- WALTON, D. W. & J. D. KIMBROUGH. 1970. Eumops perotis from Black Gap Wildlife Refuge. *Southwest Nat* 15: 134.
- WILSON, D. E. & J. S. FINDLEY. 1970. Reproductive cycle of a neotropical insectivorous bat, Myotis nigricans. *Nature.* 225: 1155.





## THE COVER

This photograph shows the Hitchcock cage being used in a routine collection of little brown Myotis for banding in a northern New York abandoned mine. For situations where space is not a problem, this cage is fine, and is durable enough to outlast the users.

I am currently working up a Euderma cover, thanks to Dave Easterla, and have another on tap, but will greatly appreciate the loan of photos and slides which might be appropriate for future covers.

---

Bat Research News appears quarterly: January, April, July, and October. Subscription rate is \$1.00 for two years. Address all correspondence to Robert L. Martin, Department of Biology, University of Maine, Farmington, Maine 04938.

---

## EDITORIAL

With a change in editorship, the question again arises as to the status of Bat Research News as a publication. Tom Kunz and Steve Humphrey brought the subject up at the ASM meeting at College Station, and there have been inquiries from some of the companies handling periodicals for libraries. My views are essentially the same as those I expressed back in Volume 4, Number 2, and which Wayne Davis agreed with at the time: BRN is similar to the CDC Newsletter in almost all respects and it is not considered a publication for citation purposes, so BRN could be considered in the same manner. Wayne pointed out at that time that an editor of a journal could turn down a paper which had appeared in BRN as having been already published as an individual decision, but did not expect that this would happen. On noting a number of journal papers in which papers from BRN are cited (Kirk's 1969 paper on worldwide protection of bats by law cites Wayne Davis in BRN for Kentucky's bat law, for example), observing the list of BRN papers cited in Greenhall and Paradiso's F&WS booklet on Bats and Bat Banding, and coming across BRN paper citations listed in the Recent Literature of Mammalogy including one citing Wayne Davis as author of BRN itself (how true!), I have come to the conclusion that it should be up to the individual "author" as to whether or not he wishes to claim a BRN paper as a publication or not. I know that the Department of Zoology at the University of Illinois did not accept faculty member's papers in mimeographed form as publications, so again it may be up to the department, the institution, or individual as to whether or not a BRN paper is a bona fide publication for their purposes. If the problem becomes too acute, it may be worth while considering setting up the BRN as a journal with an editorial board and slightly higher dues, etc. The Journal of Mammalogy has had a rather high percentage of bat research papers in the past several years, and the BRN might serve as an outlet for shorter papers. This is something which a large number of researchers will have to decide, perhaps at the next International Bat Research Conference.

The Mammal society of the British Isles in their newsletter have a short description of the Amsterdam International Bat Research Conference which is as good as any I could whip up, so here it is:

"100 Scientists attending the 2nd International Bat Research Conference at Amsterdam on the 18th of March 1970 agreed that Bats are of world wide importance in our ecosystem and to the human economy.

"Delegates representing 20 nations stated that bats are declining, especially in highly urbanized areas. The main causes are: pollution by insecticides, loss of habitat, killing of bats by man.

"Certain countries have recognized the importance of conserving bats and have legislation protecting them (Austria, Bulgaria, Czechoslovakia, Denmark, East and West Germany, Finland, Hungaria, Italy, Mexico, Poland, Switzerland, U.S.A., U.S.S.R., Yugoslavia). Since bats migrate internationally the conference recommends that other countries should provide legislation to protect these mammals.

"Additionally it was agreed that further investigations in ecology of bats is essential for conservation, and any necessary control of local populations should be done by qualified persons."

THOMAS KUNZ and J. KNOX JONES JR. have provided a good review of Davis and Barbour's Bats of America in the August Journal of Mammalogy.

DENNIS C. TURNER, a new subscriber, will be studying communication and social behavior in bats with Edwin Gould at Johns Hopkins Univ.

BOB KLYCE JR. is trying to net the species of Myotis present in the southwestern area of Tennessee for field and museum records for the Memphis Museum.

WILBUR J. GUNIER writes: "When I first came to Higginsville, Missouri, in 1964, I could net three or four Lasiurus borealis on Davis Creek and its tributaries just about every night. At the Junction Cafe, several L. borealis could be seen flying around the lights. Now, rarely a L. borealis is seen or netted. I have become concerned about the possibilities of DDT. Since Lafayette County is primarily an agricultural area and a variety of sprays are used, could this be the reason?"

PHIL VAN CLEAVE asked us during our brief visit at Carlsbad Caverns National Park if there were any major studies on pesticide effects on bat populations other than those concerned with DDT. The extremely large die-offs of Tadarida at Carlsbad might well be related to spraying and dusting activities in the agricultural areas in which the bats feed. Anyone doing any such work please contact Phil or write me and I'll send the info on to him.

GLEN A. KOEHLER writes that he recently won the second Grand Award in the Southeastern Wisconsin Science Fair and was sent with another winner to represent Wisconsin in the International Science Fair at Baltimore, Maryland. His project, "The comparative function of the chiropteran tragus", the result of four years' study, has led him to attempt to standardize a method to produce one of the most accurate reproductions of the entire auditory system of Myotis lucifugus in order to quantitatively determine the role of the tragus in echolocation.

The September CDC Veterinary Public Health Notes reports 19 cases of rabies in bats in Canada for the 1 April 1969 to 31 March 1970 period, an increase from the 11 cases reported the previous year.

DAVE EASTERLA plans to continue his study of bats in the Big Bend area this winter and next summer. He notes that so far his released banded Euderma have ignored trees in the area and have always headed for the nearest cliff. At least four non-mammalogist friends sent me copies of the August-September issue of the National Wildlife article by the Easterla's; a good indication of what good public relations can be engendered by such articles.

RALPH A. RASCHIG writes that he is planning to build a "bat tower" at his tree farm in northern Wisconsin, following the original bat tower ideas of Campbell. He is fully aware of the lack of success in the past of such ventures, but wishes to experiment. Anyone interested in the project and/or having information which might be of use can contact him c/o NATO P.O. Box 1418, Sarasota, Florida 33578.

TOM COWLAND, TOM LINDER JR., and I netted western pipistrelles in the desert north of Chihuahua City, Mexico in the same dry washes where I caught a good number of pallid bats in parturition or with young at the same time of year several years ago, but there was no sign of pallid bats. The last time I tried to check out some road culverts in San Luis Potosi, I almost expired from the insecticides used in adjacent fields, but there is little agriculture in the area where we netted in Chihuahua, so perhaps pesticides are not at fault.

LOUIS J. LIPOVSKY, now Senior Entomologist at the Entomology Laboratory of the Maine Forest Service, gathered me into a visit to a woman's apartment in Bethel, Maine, last year in response to her contention that she and her mother had sleeping sickness due to the bat colony in the attic. The details rival some of the Vermont stories told by Harold Hitchcock and Wayne Davis in their bat searches, but the interesting results are that we did find a bed bug population confined to hard-packed bat feces, though it was with great difficulty that we convinced her that the bedbugs were not transmitting any form of sleeping sickness. Delicate small bat bones were subject to being eaten by dermestid (Attagenus) and ptinid (Mesium) beetle populations. The indications were that the bedbugs leave the bats after feeding and congregate in and on structurally sound piles of feces, not in the loose droppings. The bats were Myotis lucifugus. We now find that the woman was evicted from her apartment for pushing the story of how the Biblical plagues and the great epidemics of the past were all due to bat bedbug-transmitted sleeping sickness, so our educational efforts seem to have failed. The bats are still there and the apartment owner is satisfied with the situation. This is interesting in view of the comments by Dalibor Povolny in the British journal, Animals, in which he states: "It is almost certain that man acquired the bedbug from bats which roosted in the caves which he inhabited during the final stages of his evolution in the Pleistocene period...We shall probably never know just when bedbugs decided that men tasted sufficiently like bats for their blood to make an acceptable meal." The bedbugs "shared" would be Old World forms, of course

ADAM KRZANOWSKI writes: "I am still working on the bibliography of bats, 1758-1957. Besides, I am collecting the current literature titles; in connection with this I am going to publish a bat bibliography for the period 1957- through 1967. According to provisional calculations, this ten year biblio-

graphy will fill approximately 600 typewritten pages." Adam has just sent me a pre-publication copy of a paper to appear this coming year on niche and species diversity in temperate zone bats, and it looks good. As a former English teacher, I am to make sure that the English is in perfect order, and I am happy to have that as an excuse to get it now to read before 1971.

ARTHUR GREENHALL writes that requests for bat specimens taken in the FAO project in Mexico cannot be honored due to the "used-up" condition of the vampire bats and the release of all other species.

STEVE HUMPHREY notes that the winter recapture program starts next month and banding reports should be forthcoming. I imagine that he and HARLAN WALLEY will be getting together on the M. lucifugus summer colonies in Illinois. Harlan is planning to work with M. keeni this winter. It was good this summer to revisit Blackball Mine in northern Illinois with Harlan, and we spent most of the wee hours in the morning going over his manuscript on M. lucifugus to be submitted to the Illinois Academy of Science.

Authors submitting papers for inclusion in BRN are advised to make it clear that the paper is for "publication" rather than for casual comment, as the former should be edited more carefully, and will be. Perhaps a heading entitled "NOTES" would help to identify papers from casual commentary. Please feel free to write me of your opinions and suggestions. The BRN will be most useful if you provide the materials, so summaries of the activities of each and every worker are solicited along with "notes" to be published.... My apologies for the lateness of this issue; mastering the mechanics of a one-man operation such as this takes time, and my success depends on your response in sending in pertinent information. Wayne's is a tough act to follow.

#### RECENT LITERATURE

- AELLEN, V. & P. STRINATI. 1970. Cave bats of Tunisia. *Mammalia* 34: 228-236. in French.
- AGEE, H. R. 1969. Response of *Heliothis* spp. (Lepidoptera: Noctuidae) to ultrasound when resting, feeding, courting, mating, or ovipositing. *Ann Entom Soc Amer* 62: 1122-1128.
- AIDLEY, D. J. 1969. Echo intensity in range estimation by bats. *Nature (England)* 224: 1330-1331.
- AIRAPETIANZ, E. S., A. I. KONSTANTINOV, & D. P. MATJUSHKIN. 1969. Brain echolocation mechanisms and bionics. *Acta Physiol Acad Sci Hung* 35: 1-17.
- ALLISON, T. & H. VAN TRYVER. 1970. The evolution of sleep. *Nat Hist* 79: 56-65.
- ALMAÇA, C. 1968. La faune mammalogique du Portugal dans la Checklist of Palaerctic and Indian Mammals, 1951, par Ellerman et Morrison-Scott. *Arg Mus Bocage (Lisboa)* 2: v-ix.
- ALMEN, T. & N. S. JOLD-NORDENSTAM. 1969. Effects of dyes on microvasculature of the bat wing in vivo. *Invset Radiol.* 4: 63-67.
- ANDERSON, S. 1969. Macrotus waterhousii. *Mammalian Species* 1: 1-4.
- ANONYMOUS. 1969. Mammals. *Nat Wales (Haverford-west)* 11: 218-219.
- ANONYMOUS. 1969. Vampire bat eradication. *Sci News* 95: 551.
- ANSELL, W. D. H. 1969. A bat hawk (*Macheiramphus alcinus anderssonii*) at Ngoma, Kafue National Park. *Puku (Zambia)* 5: 213-214.
- ANSELL, W. D. H. 1969. Addenda and corrigenda to "Mammals of Northern



- Rhodesia" no. 3. Puku (Zambia) 5: 1-48.
- BADEN, H. P., S. SVIOKLA, & P. F. A. MADERSON. 1969. A comparative study of histidase activity in amphibian, avian, reptilian and mammalian epidermis. *Comp Biochem Physiol* 30: 889-894.
- BĂNĂRESCU, P. 1969. New and rare animals in the fauna of Romania. *Natura Biol (Bucharest)* 21: 43-53. in Romanian.
- BANNISTER, J.L. 1968. A list of the species of mammals collected by W. H. Butler for the Archbold collections of the American Museum of Natural History and for the Western Australian Museum 1963-66. *West Austral Mus Ann Rept*, 1966-67: 61-76.
- BARBU, P. 1968. O colonie Estivala de Pipistrellus nathusii Keys. et Blas. 1839 in farul de la Sf. Gheorghe--Dobrogea. *Ocotirea Naturii (Bucarest)* 12: 211-215.
- BARCELLS, R.E. 1968. A faunistic revision of the Nycteribiidae and Streblidae of the bats of Spain and their specificity. *Rev Iber Parasitol* 28: 19-31. in Spanish, English summary.
- BARON, G. 1969. Comparative study of motor nuclei of the encephalon of neotropical bats: I. Nucleus alaris and nucleus nervi hypoglossi. *Rev Can Biol* 28: 241-257. in French
- BEAMES, I. R. 1969. Mammals in the London area, 1967. *London Nat* 48: 40-47.
- BENIRSCHKE, K. (ed.) 1969. Comparative mammalian cytogenetics. Springer-Verlag, New York, 473 pp.
- BRENNAN, J. M. 1969. New bat chiggers of the genus Perissophalla from Venezuela and northeastern Brazil (Acarina: Trombiculidae). *J Med Entomol* 6: 427-431.
- BROSSET, A. 1969. Recherches sur la biologie des chiropteres troglaphiles dans le nord-est du Gabon. *Biol Gabonica (Paris)* 5: 93-116. in French.
- CABRAL, J. C. 1967. Mamiferos da Reserva do Luando. *Bol Inst Invest Cient Angola (Luanda)* 4: 33-44.
- CHATURVEDI, Y. 1969. Two new records of bats from Assam and Andaman Islands *Labdev J Sci Tech (Kanpur)* 7-B: 74-75.
- CHISLENKO, L. L. 1969. On the necessity of statistical characteristics of taxa for modeling faunistic systems (in the case of the average body size in mammals). *J General Biol (Moscow)* 30: 399-409. in Russian.
- CLEEVES, T. R. 1969. Herring gull catching and eating bat. *British Birds* 62: 333.
- CLEGG, T. M. 1969. Mammals of Gibraltar Point Nature Reserve, Lincolnshire, 1966-68. *Naturalist (Yorkshire)* 911: 117-119.
- CONDAMIN, M. & R. Roy. 1969. II. Vue d'ensemble sur la faune et le peuplement animal (état des connaissances au 20 novembre 1968). *Mém Inst Fondamental Afrique Noire (Ifan-Dakar)* 84: 19-67
- CRANE, H. E. 1969. A bat with a dry fly. *Field (London)* 234: 402.
- CORTESE, T.A. JR. & P. A. NICOLL. 1970. In vivo observations of skin appendages in the bat wing. *J Invest Dermatol* 54: 1-10.
- CRESCO, R. F., R. J. BURNS, & S. B. LINHART. 1970. Load-lifting capacity of the vampire bat. *J Mamm* 51: 627-629.
- D'AGROSA, L. S. 1970. Patterns of venous vasomotion in the bat wing. *Amer J Physiol* 218: 530-535.
- DE LA CRUZ, J. 1969. A new species of mite (Acarina: Listrophoridae) parasite of Cuban bats. *Poeyana Inst Biol (Le Habana), Ser. A* 62: 1-8. in Spanish.
- DUSBABEK, F. 1969. Generic revisions of the myobiid mites (Acarina: Myobiidae) parasitic on bats. *Folia Parasitol (Praha)* 16: 1-17.



- DUSBABEK, F. 1970. Mite parasites (Acarina) of bats from Afghanistan. *Folia Parasitol (Praha)* 17: 61-76.
- EASTERLA, D & P. EASTERLA. 1969. America's rarest mammal. *Natl Wildl* 7: 14-18.
- EASTERLA, D. A. & L. C. WATKINS. 1970. Breeding of *Lasionycteris noctivagans* and *Nycticeius humeralis* in southwestern Iowa. *Amer Midl Nat* 84: 254-255.
- EATON, S. W. & J. DEREMER. 1968-1969. The mammals of Cattaraugus County, New York. *St. Bonaventure Univ, Sei. Studies* 25: 23-30.
- ELLISON, N. F. 1969. Report on the mammals, reptiles and amphibians to the end of 1968. *Lancashire Cheshire Fauna Soc* 55: 7-11.
- EWING, W. G., E. H. STUDIER, & M. S. O'FARRELL. 1970. Autumn fat deposition and gross body composition in three species of *Myotis*. *Comp Biochem Physiol* 36: 119-130.
- FERIANC, O. 1968. Die Saeugetiere des Liptauer Talkessels (zwischen Liptovský Mikuláš und Liptovský Mara). *Univ Comeniana (Bratislava), Zool Publ* 14: 195-237. in Czechoslovakian with Russian & German summaries.
- FILIPPOVA, N. A. & S. P. CHUNIKHIN. 1969. Argas (Chiropterargas) boueti Roubaud et Colas-Belcour, 1933 (Parasitiformes, Argasidae)-a new species of the fauna of the USSR. *Zool Zhur (Moscow)* 48: 1407-1409. in Russian English summary.
- FISCHER, W. 1969. Beobachtungen an frielebenden Saeugetieren im Tierpark Berlin. *Milu (Berlin)* 2: 411-429. in German.
- FORNES, A. & E. MASSOIA. 1969. The presence of *Carollia perspicillata perspicillata* (L.) in the Republic of Argentina (Chiroptera, Phyllostomidae, Carollinae). *Physis (Buenos Aires)* 28: 322. in Spanish, English summary.
- FRYLESTAM, B. 1970. Studies on the long eared bat. *Fauna och Flora* 65: 72. in Swedish.
- GAUCKLER, A. & M. KRAUS. 1970. Characteristics and distribution of *Myotis brandti*. *Z Saeugetierk* 35: 113-124. in German
- GERLACH, R. 1969. Die Geheimnisse im Reich der Saeugetiere. Claassen Verlag, Hamburg. 324 pp. in German.
- GLASS, B. 1969. Bats of Alabaster Caverns State Park. *Guide Book, Oklahoma Geol Surv* 15: 36-37.
- GOODWIN, R. E. 1970. The ecology of Jamaican bats. *J Mamm* 51: 571-579.
- GRASSÉ, P-P. (ed.) 1969. Mammelles. Appareil génital gamétogenese, fécondation. Gestation. *Traité de Zool (Paris)* 16: 1-1027.
- GREEN, R. H. 1969. Birds of Flinders Island. *Queen Victoria Mus (Launceston) Rec.* 34: 1-32. (has 4 pages on mammals)
- GREER, J. K. 1969? Mamíferos de la Provincia de Malleco. *Pub Mus Dillman S. Bullock, Angol, Publ* 12, 114 pp. (Translation of *Publ. Mus. Michigan State Univ, Biol Ser* 3, 1966).
- GRIFFIN, D. R. 1969. Echo-Orientierung und Fledermausflug. *Naturwiss Med (Mannheim)* 6: 3-13. in German.
- GRINNELL, A.D. 1970. Comparative auditory neurophysiology of neotropical bats employing different echolocation signals. *Z vergleich Physiol* 68: 117-153.
- GUILDAY, J. E. 1969. A possible caribou-Paleo-Indian association from the Dutchess Quarry Cave, Orange County, New York. *N Y State Archeol Assoc Bull* 45: 24-29.
- HALL, J. G. 1969. The cochlea and the cochlear nuclei in the bat. *Acta Otolaryngol* 67: 490-500.
- HALTENORTH, T. 1969. Saeugetiere, 1, pp. 1-218, 2, pp. 1-271. In *Das Tierreich*, 7(6), Sammlung Goeschen, 282, 283, Walter de Gruyter & Co., Berlin.

- HARMATA, W. 1969. Summer colony of Bechstein's bat Myotis bechsteini (Kuhl) in Szymbark near Gorlice, Rzeszów District. Remarks about biology and occurrence. *Przegląd Zool (Wrocław)* 13: 233-238. in Polich, English summary.
- HARRIS, J. A. 1970. Bat-guano cave environment. *Science* 169: 1342-1343.
- HARRIS, P. D., E. K. GREENWALD, & P. A. NICOLL. 1970. Neural mechanism in small vessel response to hemorrhage in the unanesthetized bat. *Amer J Physiol* 218: 560-565.
- HARRISON, D. L. & C. J. SETON-BROWNE. 1969. The influence of soil colour on subspeciation of mammals in eastern Arabia. *Zool J Linnean Soc (London)* 48: 467-470.
- HERLANT, M. 1968. Etude préliminaire sur la structure fine du système tubéro-hypophysaire chez la chauve-souris. *Arch Anat Histol Embryol (Strasbourg)* 51: 321-332. in French.
- HIRSCHFIELD, S. E. 1968. Vertebrate fauna of Nichol's Hammock, a natural trap. *Quart J Florida Acad Sci* 31: 177-189.
- HOFFMEISTER, D. F. & S. W. CAROTHERS. 1969. Mammals of Flagstaff, Arizona. *Plateau* 41: 184-188.
- HORST, R. 1969. Comparative aspects of respiratory water loss in bats. *Amer Zool* 9: 586-587.
- HUGUENEY, M. 1969. Les Rongeurs (Mammalia) de l'Oligocène supérieur de Coderet-Bransat (Allier). *Documents Lab Géol Fac Sci Lyon* 34: 1-227.
- IMAIZUMI, Y. & M. YOSHIYUKI. 1969. Results of the speleological survey in South Korea 1966. XV. Cave-roosting chiropterans from South Korea. *Bull Natl Sci Mus (Tokyo)* 12: 255-272.
- JAMES, C. T. 1969. Mammal club: Report on findings at "Sandlands"...about 4 1/2 miles south of Ashbourne--12-13/4/68. *South Austral Nat* 43: 107-108.
- JEANNE, R. L. 1970. Note on a bat (Phylloderma stenops) preying upon the brood of a social wasp. *J Mamm* 51: 624-625.
- JOHNSTON, D. H. & M. BEAUREGARD. 1969. Rabies epidemiology in Ontario. *Bull Wildl Dis Assoc* 5: 357-370.
- KALTENHOUSER, D. & L. V. KRUSHINSKI. 1969. Ethology. *Priroda (Moscow)* 8: 21-31. in Russian.
- KEITH, A. R. 1969. The mammals of Martha's Vineyard. *Dukes County Intelligence* 11: 1-98.
- KLUGER, M. J. 1969. Fluctuations in the wing temperature of the bat in response to internal heat loading. *Amer Zool* 9: 591.
- KOCK, D. 1969. The chiropteran fauna of Sudan (Mammalia, Chiroptera). *ABH Senckenberg Naturforsch Ges* 521: 5-238.
- KOCK, D. 1969. A new genus and species of cyanopteran fruit bat from Mindanao, Philippines. *Senckenberg Biol* 50: 319-327.
- KOCK, D. 1969. A new genus and species of fruit bat from Luzon, Philippines. *Senckenberg Biol* 50: 329-338.
- KRAVTSOV, B. G. & B. M. ZVONOV. 1969. The dependence of the summated reaction of bat auditory nerve on a spatial position of the sound source. *Vestn Mosk Univ Ser 6, Biol* 24: 99-101. in Russian.
- KRAVTSOV, B. G. & B. M. ZVONOV. 1969. Dependence of the cochlear potentials of bats on temperature. *Vestn Mosk Univ, Biol* 4: 102-104. in Russian.
- LAVAL, R. K. 1970. Intraspecific relationships of bats of the species Myotis austroriparius. *J Mamm* 51: 542-552.
- LAVINA, E. M. & A. C. ALCALA. 1969. Endoparasites of certain Philippine land vertebrates. *Silliman J (Dumaguete City, Philippines)* 16: 137-148.

- LEWIS, R. E. 1970. A new genus of bat flea (Siphonaptera: Ischnopsyllidae) from the Himalayas. *J. Parasitol* 56: 146-150.
- MA, P. F. & J. R. FISHER. 1969. Comparative studies of mammalian adenosine deaminases--some distinctive properties in higher mammals. *Comp Biochem Physiol* 30: 771-781.
- MARTIN, D. R. 1969. Lecithodendriid trematodes from the bat Peropteryx kappleri in Colombia, including discussions of allometric growth and significance of ecological isolation. *Proc Helminthol Soc Wash* 36: 250-260.
- MCKENNA, M. G. 1969. The origin and early differentiation of therian mammals. *Ann New York Acad Sci* 167: 217-240.
- MICHAEL, E. D., R.L. WHISENNAND, & G. ANDERSON. 1970. A recent record of Myotis austroriparius from Texas. *J Mamm* 51: 620.
- MITCHELL, G. C. 1970. An electrophoretic comparison of hemoglobins in bats. *Comp Biochem Physiol* 35: 667-678.
- MIURA, T., K. TOYOKAWA, R. ALLEN, & S. E. SULKIN. 1970. Studies of arthropod-borne virus infections in Chiroptera: VII. Serologic evidence of natural Japanese B encephalitis virus infection in bats. *Amer J Trop Med Hyg* 19: 88-93.
- MUMFORD, R. E. 1969. Distribution of the mammals of Indiana. *Indiana Acad Sci. Monogr* 1: 1-114.
- MURPHY, F. A., R. E. SHOPE, D. METSELAAR, & D. I. H. SIMPSON. 1970. Characterization of Mount Elgon bat virus, a new member of the rhabdovirus group. *Virology* 40: 288-297.
- PEATIE, D. C. 1969. The bat: Child of night. *Frontiers* 34: 4-9.
- PETERSON, R. L. 1969. Notes on the Malaysian fruit bats of the genus Dyacopterus. *Roy Ont Mus Life Sci, Occas Pap* 13: 1-4.
- PEYRE, A. & A. MALASSINE. 1969. L'équipement stéroïdodéshydrogénasique et la fonction endocrine du placenta de Minioptère (Chiroptère). *Compt Rend Soc Biol (Paris)* 163: 914-917.
- PFEFFER, P. 1969. Deux sanctuaires naturels de Java. *Bêtes Nature* 69: 24-28.
- PHILLIPS, C. J., J. K. JONES JR. & F. J. RADOVSKY. 1969. Macronyssid mites in oral mucosa of long-nosed bats: Occurrence and associated pathology. *Science* 165: 1368-1369.
- PITTS, G. C. & T. R. BULLARD. 1968. Some interspecific aspects of body composition in mammals. *Natl Acad Sci, Publ* 1598: 45-70.
- POULET, A. R. 1970. The Rhinopomatidae of Mauritania. *Mammalia* 34: 237-243. in French.
- PRASAD, V. 1969. New species of bat mites from southeast Asia and the Pacific region, with a note on Periglischrodes gressitti Bak. & Delf. *Proc Entomol Soc Wash* 71: 533-540.
- PYE, J. D. & L. H. ROBERTS. 1970. Ear movements in a hipposiderid bat. *Nature* 225: 285-286.
- RADOVSKY, F. J. 1969. An unusual new genus and species of Macronyssidae (Acarina) parasitic on a disc-winged bat. *J Med Entomol* 6: 385-393.
- RAUCH, J. C. & J. S. HAYWARD. 1969. Topography and vascularization of brown fat in a hibernator (little brown bat, Myotis lucifugus). *Can J Zool* 47: 1315-1323.
- REED, T. H. 1969. National Zoological Park. *Ann Rept* 1968: 403-418.
- REITE, O.B. & W. H. DAVIS. 1970. Mast cells and hibernation: observations in the Indiana bat Myotis sodalis. *Experimentia* 26: 745-746.
- ROEDER, K. D. 1969. Brain interneurons in noctuid moths: Differential suppression by high sound intensities. *J. Insect Physiol* 15: 1713-1718.
- ROER, H. 1968. Myotis: *Mitteilungsblatt fuer Fledermauskundler (Bonn)* 6: 1-46.

- ROMER, A. S. 1968. Notes and comments on vertebrate paleontology. Univ Chicago Press. 304 pp.
- ROUK, C. S. & B. P. GLASS. 1970. Comparative gastric histology of five North and Central American bats. J Mamm 51: 455-472.
- SANIDES, F. 1969. Comparative architectonics of the neocortex of mammals and their evolutionary interpretation. Ann New York Acad Sci 167: 404-423.
- SCHWARZ, J. & K. K. SETHI. 1969. Recognition of changing sources in histoplasmic infection. Mycopathol Mycol App 37: 77-80.
- SILVA TABOADA, G. & R. H. PINE. 1969. Morphological and behavioral evidence for the relationship between the bat genus Brachyphylla and the Phyllonycterinae. Biotropica 1: 10-19.
- SIMKIN, G. N. & N. D. PATLYAKEVICH. 1969. Movement of bats toward plane targets and the nature of the changes in location signals during target discrimination. Biol Nauk 12: 48-57. in Russian
- SIMKIN, G. N. & N. D. PATLYAKEVICH. 1969. Location systems in bats of the USSR fauna. I. The genus Myotis. Millers. Zool J (Moscow) 48: 1526-1543. in Russian, English summary.
- SMITH, J. D. & H. H. GENOWAYS. 1969. Systematic status of the mastiff bat, Eumops perotis renatae Pirlot, 1965. Mammalia 33: 529-534
- STEWART, G.R. 1969. A western yellow bat in Los Angeles County, California. Bull Southern Calif Acad Sci 68: 194-195.
- STUDIER, E. H. 1970. Evaporative water loss in bats. Comp Biochem Physiol 35: 935-944.
- SUGA, N. 1970. Echo-ranging neurons in the inferior colliculus of bats. Science 170: 449-452.
- SULKIN, S. E., R. ALLEN, T. MIURA, & K. TOYOKAWA. 1970. Studies of Arthropod-borne virus infections in Chiroptera: VI. Isolation of Japanese B encephalitis virus from naturally infected bats. Amer J Trop Med Hyg 19: 77-87.
- VOGEL, S. 1969. Chiropterophilie in der neotropischen Flora: III. Flora Abt. B. Morphol Geobot (Jena) 158: 289-323. in German, English summary.
- WALLEY, H. D., W. E. SOUTHERN, & J. H. ZAR. 1969. Big brown bat entangled in burdock. Amer Midl Nat 82: 630.
- WALLIN, L. 1969. The Japanese bat fauna: A comparative study of chorology, species diversity and ecological differentiation. Zool Bidr. Uppsala (Stockholm) 223-440.
- WICKLER, W. & D. UHRIG. 1969. Verhalten und oekologische Nische der Gelbfluegel-fledermaus, Lavia frons (Geoffroy) (Chiroptera, Megadermatidae). Z Tierpsychol (Berlin) 26: 726-736. in German, English summary.
- WILLIAMS, D. F., J. D. DRUECKER, & H. L. BLACK. 1970. The karyotype of Euderma maculatum and comments on the evolution of the plecotine bats.
- WOLVERTON, C. & A. L. EDGAR. 1969. Temperature regulation of migrating and hibernating bats in Cratiot County, Michigan. Bios 40: 147-153.
- WRIGLEY, R. E. 1969. Ecological notes on the mammals of southern Quebec. Can Field-Nat (Ottawa) 83: 201-211.
- XIMÉNEZ, A. 1969. Dos nuevos generos de quiropteros para el Uruguay (Phyllostomidae--Molossidae).
- YOSHIYUKI, M. 1968. Notes on the milk dentition of Vespertilio superans. J Mamm Soc Japan (Tokyo) 4: 48-50. in Japanese, English summary.