BAT BANDING NEWS

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Original Issues Compiled by Dr. Wayne H. Davis, Editor, of *Bat Banding News*

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BAT BANDING NEWS

VOL. 3 No. 1 January, 1962

EDITOR'S COLUMN

Bat Banding News appears quarterly: January, April, July and Oct. Subscription rate is $1.00 for two years. - Wayne H. Davis, Biology Dept., Middlebury College, Middlebury, Vermont.

News is coming in so rapidly that things are falling behind, and I am considering changing to bi-monthly. Correspondence is increasingly heavy and subscriptions are increasing. It is getting to be a bigger job to put together an issue of the News. I have decided to rely more heavily on excerpts from letters to get the news to readers.

Most notable new happening is the new interest of health officials in bats. Since the last issue was written, I have had letters from public health officials of Ore., N. J., Ont., and Mass. Dr. Hitchcock has had correspondence with Vt. and N. Y. Several departments and officials have subscribed to the News. Some of these correspondents are interested in learning something about the ecology of their bats, particularly movements and migration patterns of bats. They are allarmed about the rapid spread of rabies and the fact that we know so little about the habits of these new vectors. A general theme in all these letters was the desire to cooperate with banders in learning more about the bats.

This is a most interesting turn of events. Prior to 1953 it was difficult to get funds for research in ecology of bats (physiology of hibernation had become "important" a few years before). Now there is rather urgent demand for such information. Except for the Tadarida brasiliensis of certain caves on the Southwest, and Myotis lucifugus on Cape Cod, we know almost nothing about migrations of North American bats. I suspect that any well-planned study of bat migration would be funded by one of the federal of state granting agencies at this time.

In this issue I have an up-to-date listing of active bat banders. You will note that the list is considerably different from last year. There is too much turn over of bat banders. All too often a person gets bands simply because of a passing curiosity, it seems. This past year we have found a half dozen bats banded by others in N. Y. and Ct. Upon reporting the numbers to Washington we were informed that these bands had been issued to Charles Roth and to Dorothy Reville five or ten years ago, and that these banders had never reported the data on these bands.

A new bat bander is Dr. James N. Layne, Biology Dept., Univ. of Florida, Gainesville. He writes that he plans to do some banding to take advantage of the several trips a year he makes to Tadarida and Myotis austroriparius colonies. He also hopes to get some data on the summer and winter movements of Pipistrellus subflavus which would be of great interest because of the subspecies situation in his region.

Although the standard # 2 bird band shows promise of being satisfactory for bats, the search for a better band continues. Dr. Hitchcock has ordered for testing some #2 bands with the ends rounded. He has also taken interest in monel metal bands. These would have the obvious advantage that it would be much harder for the bat to chew off the inscription and numbers. However, a big drawback is that even the smallest ones cannot be closed easily with the fingers.

In November I had a couple of most interesting excursions to the mines in the vicinity of Kingston, N. Y. The Met Grotto of the NSS showed me a large mine with a nice population of bats, and the next week I returned to band them. Assisted by Dan Smiley, a subscriber and bird bander from nearby Mohonk Lake, we banded 2,000 bats. I was surprised that we found none of the bats banded in summer colonies this past summer. In a visit to a Vt. cave Hitchcock found 13 such bats, from four states, among a population of about 200.

At the Kingston mine we had a most peculiar event. One of the bats in the retaining cage suddenly became puffed with air. One wing and the body skin became stretched tight. The wing was cylindrical and the body nearly spherical. We considered killing the poor creature, but decided to lay him aside in hopes that he might recover. He thrashed around helplessly, and I soon picked him up again. I punctured his wing with a pencil. Immediately the air came out and the bat flew off. I have never encountered such a thing before in banding over 70,000 bats. Have you? I assume that a lung was punctured and leaked into the subcutaneous regions.

I wish to devote a major part of this issue to a very serious problem - the disappearance of our cave bat populations. I have been putting this off for some time hoping that we could get our own noses clean by eliminating the band injury problem before starting on a campaign to save the bats.

LOSS OF OUR BAT POPULATIONS

Several years ago Mohr (NSS News, Nov. 1953, p. 4) brought to our attention the fact that wintering populations of bats were decreasing, particularly in New England. Since that time the loss of bats has been rapid. Several good colonies have been destroyed and the trend continues. We do not know what factors are responsible for the loss of the bats. Most likely guesses are the following: Collecting for physiological experiments, rabies testing, museum specimens, etc.; destruction by vandals; disturbance by bat banders; and disturbance by numerous spelunkers. In any case there is need for action. I have solicited the help of the Nature Conservancy and the National Speleological Society in an attempt to save at least some of our bat colonies. The following letter which I wrote to the Nature Conservancy on Oct. 20, 1961, will serve to introduce the most immediate problem:

"An unfortunate combination of events occuring in recent years has led me to believe that certain species of U. S. bats face extinction if interested people are not able to do something to insure their protection. These events include: the tremendous increase in the popularity of spelunking which has taken place during the last ten years, is still accelerating, and probably will continue to do so; the discovery of rabies in bats in the U. S. in 1953 and its rapid spread in bats throughout the states, along with fairly extensive and ever increasing publicity; and the increased use of bats in a remarkably large variety of legitimate scientific investigations.

"The species for whose survival I am concerned are:

Myotis grisescens. This species inhabits caves exclusively both summer and winter. Except for a few scattered individuals in bordering states, the entire population is found in the large caves of Ky., Tenn., Ala., Mo., and Ark. There they exist by the hundreds of thousands and are fairly widely distributed among hundreds of caves in summer. For a long time the winter quarters of this species were unknown to science. Recent work by R. F. Myers has shown, however, that the

entire Ozark population winters in 3 caves in Mo. (paper given at the meetings of the American Society of Mammalogists at Urbana, Ill., June 1961). One of these is a commercial cave and the new owner has built an air raid shelter in the cave and wants to get rid of the bats. A second one is entered only via a long vertical drop, and until recently was only rarely entered by man. However it presents a challange to the speleologist, and since the recent publication of a book on the caves of Mo. has made its location readily available, increasing numbers of people are going into it. Myers has begun negotiations personally to buy the cave, but its rapidly increasing popularity led the owner to believe it must be valuable, and the price went beyond reason. The increase in vandalism in Mo. caves since the publication of the book is said to have been so great that it has caused the National Speleological Society grave concern, and it has been suggested by many members that perhaps cave localities should not be published. Nevertheless a book on the caves of Tenn. was scheduled for publication in the summer of 1961.

"John Hall in Kentucky and Merlin Tuttle in Tenn. are finding Myotis grisescens behavior similar to that described by Myers. Mammoth Cave National Park contains quite a number of caves, but the one used in winter by some 80,000 of these bats lies just outside the park boundary. Hall reports that last year the owner decided to commercialize it and ran a string of lights down the passage where the bats cluster.

"Myotis sodalis. Apparently this entire species winters in the larger caves and mines in the Eastern U. S. Many large colonies have disappeared entirely in recent years in Vt., N. Y., Pa., and W. Va. It is now nearly extinct in the northeastern part of its range, but is still quite abundant in the east-central U. S. cave region. Fortunately the largest colony known, the 100,000 that winter in Carter Caves State Park, Ky., is now protected. The outcry which followed the destruction of some 10,000 of these by vandals last winter was immediate, well-coordinated, and effective. A locked gate (through which bats could fly freely) was placed across the entrance. This effort was initiated by Ralph Ewers of the Cincinnati Museum of Natural History. Other colonies of Myotis sodalis are protected in Mammoth Cave National Park.

"Plecotus townsendii. This species of big-eared bat is widely distributed in the western U. S., and faces no threat to extinction in the foreseeable future. However, except for a few scattered individuals, the entire population in the East occurs in some of the caves in 5 counties in W. Va. It seems to be exclusively a cave species there at all seasons, and although found in about 40 caves, large colonies of 100 - 500 are known in less than a dozen of these. I found this species to be very intolerant of human disturbance, and expect these colonies to disappear in the next decade if some means of protecting them is not found. Spelunker pressure in the caves of W. Va. has increased tremendously during my time of observation there (1947 - present) due to publication of a book on the caverns of the state and other factors.

"The feasibility of protecting a colony of bats by such means as are used by the Nature Conservancy is not very promising. An organization can buy a forest tract or swamp and prevent lumbering or drainage, but the protection of a cave presents special problems which may prove insurmountable. Many would-be cave explorers do not respect the rights of property owners. There are several instances of steel gates having been destroyed or circumvented by one means or another. The only reasonably safe protection of cave life now offered is in parks where there are resident caretakers.

"I wonder if the Nature Conservancy would be interested in investigating the possibilities of establishing protection for some of these bat species? Most likely help could be obtained from the National Speleological Society which is greatly interested in the conservation of cave life, and the American Society of Mammalogists which maintains a permanent committee on Consefvation of Land Mammals."

I got a reply to this letter saying that the Nature Conservancy would indeed be interested in acquiring caves for the preservation of cave life. Enclosed were several forms for recommending areas to be acquired. It seems that the next step is to decide what caves that are important to these species of bats could most reasonably be purchased and protected. Personally I think that the best chance may be to find caves which are next to national and state parks and get them incorporated into same. Could this be done at Coach and James caves, Ky., John Hall?

Next I sent a form letter on this problem to a number of interested individuals asking for oppinions and advise. At this date only three have yet replied. Myers wrote as follows:

"Regarding caves and Nature Conservancy: we have been dickering with this group since 1957 or 58, in connection with the purchasing of caves. So far, all we have been able to do is raise the price of the caves far beyond our reach, and in one case we actually lost the cave to private interests when it seemed that the cave was ours!

"There are several reasons for this: (1) too much public interest must be generated to pick up the necessary funds for the cave, hence, the price goes up in the owners eyes (outsiders become interested too [illegible] in!) (2) the machinery of N. C. operates rather slowly and sometimes the contact agents do not do the best job representing the N. C. in the field. (3) it is difficult to get the idea across that a "protected" cave is one in which human activity is greatly curtailed. A cave is not a prairie or a forest or a bog, and cannot stand the traffic these may. The cave must be regarded as a scientific area with limited access.

"There is a N. C. fund available for loan to make an outright purcahse. I feel it would be wisest for one person to make the contact with the cave owner, and obtain the money from N. C. to make the purchase. Once this has been done - the title rests in N. C. bonds- a program may be set up to raise the money to pay off the loan.

"Presently, I am "gently attempting to buy one of the Myotis grisescens hibernacula, but damn this fallout business! Buying a cave for the bats' sake is much harder for someone to believe than purchasing it for a fallout shelter or for mineral rights.

"Once the cave is owned by N. C., the hardest part comes - that of administering the property. One would almost have to have someone living within sight of the entrance, and the caves we want to preserve out here are too big to grate the entrance and too remote (one cave owner near Columbia lives on top of his cave and still can't keep people out!)

"Oz Hawksley and I plan to host the Mo. chapter of the Nature Conservancy here April 28, 1962, and caves will loom large on the program."

The following was received from Jack Stellmack, Editor of the NSS News:

"I am passing the extra copies of your letter on to Vic Schmidt, Chairman of the NSS Conservation Committee. The situation with our bats is bound to worsen unless we begin some sort of campaign. I wish you

luck and will always be ready and willing to help in any way that I can. Remember, the pages of the NSS NEWS are always open to conservation efforts. Use them if you want to.

"Nature Conservancy and the NSS currently are working together in preserving a cave in California - Black Chasm Cave. While the cave is held by the Nature Canservancy, the actual overseeing is in the hands of the local people. I think this is a common arrangement for areas that have come under the wing of Nature Conservancy.

"Valid research is, by all means, allowed in Black Chasm Cave even though it is a protected cave. However, every person who enters the cave must sign an agreement on conservation regulations. The NSS last year expelled one of its members for breaking this agreement."

Lyle Conrad wrote:

"Plecotus definitely should be protected, as well as the other two species. I would definitely back this project. Too many times I have seen students with their cloth bags collecting for their professors. Also while banding in Hoffman School Cave, we say explorer scouts "golfing" bats from the ceiling. We explained to them why they should be left undisturbed, but I fear to no avail. The advisor did not seem to have any control over them. I am now an explorer advisor working through this caving group, and hope to have a conservation article in Boys Life in about a year.

"The NSS is arousing interest in cave conservation and I am sure that if we got something going we could get help from some of the members."

During my December visit to W. Va., I made some personal investigations of reports that I had of loss of bat colonies. In Trout Cave, which as recently as 1952 had over 600 wintering M. sodalis, I found one bat of this species, two pipistrelles and a half dozen Eptesicus. The largest colony of M. sodalis that I knew in W. Va. was in Minor Rexroad Cave. We visited this cave and found a total of one bat, a big-ear. Speleologists at the Pittsburgh Grotto's field house at Seneca Caverns informed me that the colony of sodalis which used to be above the pit in Schoolhouse Cave is now gone, and that there are no longer bats in Hamilton Cave which used to have over a hundred pipistrelles.

I do not know what caused the loss of these bats. Although I have banded in all these colonies, except the Schoolhouse one, ten years ago, I doubt that this had much effect. We have been handling the entire population of pipistrelles in Thorn Mt. and Greenville Saltpeter Caves every year for over ten years, and there seems to be no loss. Hitchcock has been handling all the bats in several Canadian caves each year for over twenty years, with similar results. Spelunker pressure has increased remarkable in the last ten years, and especially since the establishment of the field house (1955?). Being the nearest real cave region to the east, Pendleton Co., W. Va., is visited by people from Boston to Baltimore. When I was there last week I met a group from Chicago and one from Columbus. However, it is my guess that that this is not the factor directly responsible for the bat loss. Most spelunkers are not interested in the bats and leave them alone.

Probably the loss of bats is due in greatest part to people removing them from the caves for various purposes. Of course we very seldom encounter a person taking the bats, so likely we are aware of only a small percentage of the instances. I heard last year of people from N. J. taking pipistrelles from Thorn Mt. Cave, but I could see no change in the population. I know that Phil Krutzsch has taken bats from the caves of Pendleton Co. He informed me that he does not use very many in his

work.

One of my caving friends at Morgantown told me that he twice has groups from Pittsburgh collecting bats during the past year. He says once they had a cage of five to six hundred, including all species. He said the other time they had all the bats they could find in the Upper Beaverhole Cave. He said that they told him that they were collecting for a research rpoject at the med school, and that they took all the bats they could find in a cave regardless of species or bands.

This is the third winter that one of the cavers at Morgantown has been supplying Myotis lucifugus for the work of Dr. Sulkin at the Southwest Med. School. Since this species undoubtedly winters in large numbers someplace other than in caves accessible to man, I donot fear for its loss. However it is not abundant in any of the W. Va. caves that I know, and most likely the better cave populatinns have suffered severely.

Little brown bats occur by the hundreds of thousands in New England in summer. Because of the old houses and the clearing of the forests, I think it is likely that Myotis lucifugus is far more abundant now than before white man came here. Dr. Hitchcock and I have files of over a hundred summer colonies, and can easily find many more right around Middlebury. Since most of these bats are unwanted by the owners of the buildings, and exterminators kill them by the thousands each summer up here, Dr. Hitchcock and I would be willing to supply bats in summer to any scientist who needs them. We feel that we could do this without having harmful effects on the population of the region. We call upon physiologists to plan their bat work so that they get their specimens during summer instead of from caves. With proper conditions of temperature and humidity a bat can live in hibernation for well over a year (W. Gene Frum, unpublished data). Bats should best be taken from late July to September, when they have put on a lot of fat.

Once the bats are removed from a cave, it seems to be the end for Myotis sodalis. G. M. Allen in his book Bats describes the colony in the Nickwacket Bat Cave in Vt., as being over 1,300 individuals. There has been none of this species in this cave for years now. The same can be said for Indian Oven Cave, N. Y., and the Roxbury mine in Ct. M. lucifugus shows some slight recovery. A dozen to forty have been found in the Plymouth, Vt., cave the past two winters. Dr. Hitchcock encountered two boys from Harvard removing the bats to sell several years ago. There used to be more than a hundred bats in the cave. There are also about a dozen little brown bats in Nickwacket cave this winter, a slight recovery according to Dr. Hitchcock.

The immediate problem at hand is to decide what caves could best be obtained for the protection of bats. I have forms from Nature Conservancy which I will send to anyone who has a cave in mind. Lyle Conrad mentions seeing hundreds of thousands of M. grisescens in a cave in Alabama last summer. This might be a good place to start. Perhaps we could obtain the cave through N. C. and gate it. Then maybe we could get the state to build a state park about it. Such a number of bats should be of significance to the state, as the bats in Carlsbad.

There is a very sad note on the situation at Carter Caves State Park, Ky. After last years vigorous effort by many interested people, led by Ralph Ewers, succeeded in getting a gate to protect the largest colony of M. sodalis known, I thought these bats were safe. However, I have heard from the Columbus spelunkers that the gate is down already. This cave floods in springtime with logs going all the way through the cave. Where the stream comes out at the main entrance the debris took out the gate.

KNOW YOUR MYOTIS

Myotis keenii (continued). I forgot to mention an important thing in my account of this species last time. When M. lucifugus is soaking wet, as a few individuals often are when gathered in a cave, the fur is matted and the ears appear to be quite large. It is easy for the inexperienced worker to misidentify such a bat.

Dr. Rollin Beschel writes the following comment:

"Dr. Davis' rule of thumb '"that if there is any question about the bat, it is lucifugus - if it is keenii you will know it at once' will certainly make all keenii determination quite reliable, but I do not think it will make lucifugus determinations better. M. lucifugus seems to be a name for the remainder, which is however a rather variable group, and may contain even a number (of) not yet recognized entities. Certainly the most common statement in keys separating the two species is not true that only the ear of M. keenii exceeds the nose tip by more than 2mm when folded foreward. Depending on the pressure of the thumb, one can make any lucifugus a keenei (sic). Nevertheless, ear-shape, ear-length, tragus-shape, especially the presence or absence of a notch proximally and caudally on the tragus, tragus-length, hairiness of the uropatagial margin, size and shape of the skin-lobe on the calcar, and hair anatomy show a considerable variation in eastern North American M. lucifugus (s.l.) populations. These characters should be taken much more into consideration when determining bats in caves. So much depends on the correct identification in population studies. It would be too bad if the bat banders found out that many of their results lost value either due to a non-recognized possibility of hybridization between M. lucifugus and keenei (sic) or due to the existence of not yet realized sterility barriers in these morphologically variable and yet very similar bats. So far, I have not been able to locate any publications about successful breeding or crossing of the bats we delimit so arbitrarily in M. lucifugus and M. keenei (sic).

"The differences in behavior between the two species as delimited by Dr. Davis hold on the average, as he says, but I should like to emphasize that one cannot rely on the average in an individual case. In the Dorchester Copper Mine in New Brunswick as well as in several Ontario mines -- there are always some M. keenei (sic) s. str. mixed up in M. lucifugus clusters. The results of Dr. Stallworthy and myself run only for six years, and we want to accumulate more data before we subject them to statistical analysis, but the separation of the females of both species seems to be more pronounced than the separation of the species. Male M. lucifugus s. l., especially when young, seem to be much more gregarious in hibernation than female lucifugus, male keenei (sic), and female keenei (sic).

"Well, this is about all that I should have liked to add. If you can bring it into the next bat-banding-news, I shall be glad."

Roland's comments have caused me to go back and see what I had written. Unfortunately, I did give the impression that a bat is either one or the other. My rule of thumb works only in separating the two species. We do encounter two other species of Myotis occasionally in Vermont (subulatus and sodalis). It could be that a M. sodalis has been banded by one of our students in our mass banding operations.

Myotis austroriparius. Mumford has sent some notes on the recognition of this species in the Indiana region. He says that it is not really difficult to distinguish from the other Indiana Myotis. (To this I will agree, but I have seen specimens that had been sent to our

foremost museums to be identified and were determined as M. sodalis and M. lucifugus! All the North American Myotis are easy to identify - if you are familiar with them).

Mumford says "Our specimens are all grayish above and whitish below. The fur of the dorsum is thick, wooly, and dull in color. The bat has a large hind foot, a short, "snub-nosed" profile, and in life a pink nose. I think only the gray-pelaged grisescens would be confused with it.

"We have found it clustered with Myotis lucifugus in caves or in clusters made up only of austroriparius. Pure clusters range in size from 8 to 45. It also is frequently found in crevices in the ceiling of caves, in which there is just room for one bat (in this respect its behavior is like M. keenii). Hovever, up to 6 individuals have been found in longer crevices, and a few lucifugus sometimes occupy the same small crack. Clusters are found on flat ceilings or on the side walls of caves- usually rather high up on the side walls. Pure clusters, even in winter, are often composed of active individuals, so that when one or more are removed the rest may fly away. M. austroriparius seems to dislike disturbance and the fact that it readily flies when dislodged from its roost, even in winter, makes it more difficult to catch than other Myotis I have worked with. Cope and I have found just one austroriparius anywhere other than in caves; we captured one in a house attic where hundreds of M. lucifugus had a summer colony. Bat shooting has failed to take a single one in Indiana.

BAT BANDING IN COSTA RICA, 1961

by R. B. Linsky and R. S. Casebeer

During the summer of 1961 we did some banding with three of the more common forms of bats found in Costa Rica: Carollia, Glossophaga and Artibeus. This program gave us a chance to try a new type band in the field.

The bands were made from stainless steel stock measuring 0.005 mm thick. This was cut into 31 x 17 mm bands. They were then coated with a yellow or red Geon-Plastisol (PVC) plastic and baked at 325°F for ten minutes. After cooling, the bands were stamped with a three digit numbering system (i.e., 001-300). The purpose of the colors was to indicate localities.

Bands were trimmed and prefitted in the field to fit each specific animal. Each band was placed ¼ inch above the distal end of the forearm. The band was shaped to fit by wrapping it around an eighth inch steel rod, and squeezing it together with the last ¼ inch of each end of the band lying parallel to one another, forming a lip similar to that of the German band (J. Mamm. 38:402-405, 1957). After placing the band it was then pinched slightly together. Observations indicated that the animals were not hindered.

The banding sites were located near Madre de Dios, Limon Province, Costa Rica, 29 miles west of the Carribean seaport of Puerto Limon. Two colonies of Carollia that were observed roosting in railroad culverts, and a single colony of Glossophaga that was found in the attic of the main building of the La Lola Agricultural Station were chosen for this study. Inter-relationships between the colonies of Carollia were found.

The significance of this banding program will be seen this coming summer when more banding and recapture data will be gathered.

This work was supported by the Bache Fund of the National Academy of Sciences.

ANNOTATED LIST OF ACTIVE BAT BANDERS

AYRE, ROBERT. 2510 S. Julian St., Denver 19, Colo. Began: 1961. Active speleologist with the Denver Grotto

BECK, ALBERT J. Zoology Dept., Univ. of Calif., Davis. Began: 1957. Grad student working with seasonal movement and orientation.

BEER, DR. JAMES R. Dept. of Entomology & Economic Zoology, Univ. of Minn., St. Paul 1. Banded hundreds of Eptesicus about 10 years ago before city of St. Paul closed his caves. Present banding an annual trip to an Eptesicus cave in Wisconsin.

BELL, DR. F. J. Rocky Mt. Laboratories, Hamilton, Mont. Began: 1955. Interest in bat rabies.

BESCHEL, DR. ROLAND. Biol. Dept., Queens Univ., Kingston, Ontario. Interest in sex ratios, homing, survival, taxonomy, hibernation behavior, hair analysis. Has banded 500 bats.

BUTTERWORTH, DR. B. B. Biology Dept., Univ. of Wichita, Wichita, Kans. Began: 1960. Bands a few bats when taking a class to the bat caves.

BALDWIN, D. H. Division of Birds, Royal Ontario Museum, Toronto 5. Began: 1961. A bird bander who has become interested in banding the many tree bats that they net during migration at Pt. Pelee.

CASEBEER, RICHARD S. Allen Hancock Foundation, Univ. of So. Calif., Los Angeles 7. Began: 1961. Grad student. Working on development of a better bat tag.

COCKRUM, DR. E. L. Zool. Dept., Univ. of Ariz., Tucson. Interested in home range, homing, migration, sex ratios, survival. Has banded 60,000 bats.

CONRAD, LYLE. 4815 Chevy Chase Dr., Chevy Chase, Md. Began: 1960. Speleobiologist interested in cave life of Va. Has banded about 800 bats.

CONSTANTINE, DR. DENNY G. Box 552, State College, N. M. Began: 1948. Interested in rabies, migration. Banded over 30,000.

COPE, JAMES B. Biol. Dept., Earlham College, Richmond, Ind. Began:1951. Interested in homing, migration, life history. Banded about 30,000.

DAVIS, DR. WAYNE H. Biol. Dept., Middlebury College, Middlebury, Vt. Began: 1950. Interested in survival, sex ratios, migration. Banded over 70,000.

ELEMS, STAN. Box 361, Worthington, Minn. Began: 1959. Bands a few bats in summer in Minn.

GLASS, DR. BRYAN P. Zool. Dept., Okla. State Univ. Began: 1952. Interested in migration, particularly in Tadarida and Lasiurus borealis. Has banded over 50,000. Hopes to get a new project started in June.

GOEHRING, DR. H. H. Biology Dept., State College, St. Cloud, Minn. Began: 1951. Interested in homing, migration, survival. Works with the bats that hibernate in the storm sewer of the city of St. Cloud. Has banded 1400 bats including 9 Lasiurus cinereus.

HALL, DR. JOHN.S. Biol. Dept., Albright College, Reading, Pa. Began: 1954. Interest in homing, migration, sex ratios, survival, habitat selection, population sizes, non-seasonal movement. Has banded 13,000 bats. Banded several hundred bats in 1961 in Pa., W. Va. and Ky.

HERREID, CLYDE F. Dept. of Biological Sciences, Univ. of Alaska, College, Alaska. Began: 1956. Interested in homing, sex ratios, survival, migration, temperature regulation and metabolism. Has banded 35,000 Tadarida.

HOFFMEISTER, DR. DONALD F. Museum of Natural History, Univ. of Illinois, Urbana. Began: 1954. Interested in migration. Bands a few bats with a class each year. Has banded about 300.

HITCHCOCK, DR. HAROLD B. Biol. Dept., Middlebury College, Middlebury, Vermont. Began: 1938. Interested in sex ratio, survival, migration. Has banded about 70,000.

LAYNE, DR. JAMES N. Biol. Dept., Univ. of Florida, Gainesville. Just beginning. Plans to band in the caves of Fla.

LINSKY, RONALD. Biol. Dept., Univ. of So. Calif., Los Angeles 7. Began: 1961. Grad student. Working on new bat tag. Banding in Costa Rica.

MARTIN, ROBERT. Science Dept., State College, Plattsburgh, N. Y. Began: 1960. Banding in mines and summer colonies of eastern N. Y.

McCOY, CLARENCE. Biol. Dept., Univ. of Colo., Boulder. Began: 1957. Bands small numbers of M. subulatus, M. evotis and Plecotus in mine tunnels around Boulder.

MOISAN, GASTON. Universite Laval, Quebec, P. Q. Began: 1961. Bands in a cave over 100 mi N of Quebec. Interested in migration, sex ratios, survival. Has banded 765.

MUELLER, HELMUT. Zool. Dept., Univ. of Wisc., Madison. Interested in homing and migration. Has banded several hundred.

MUMFORD, DR. R. E. Dept. of Forestry & Conservation, Purdue Univ., Lafayette, Ind. Began: 1951. Interested in homing, migration, survival; life history of the red bat. Has banded 6,000 bats. During the past year has netted about 30 bats of six species over water holes, including two returns of Nycticeius.

MYERS, DR. R. F. Biol. Dept., Central Mo. State College, Warrensburg. Began: 1950. Interested in homing, migration, sex ratio, survival, behavior. Has banded over 45,000.

NADER, IYAD. Museum of Natural History, Univ. of Illinois, Urbana. Began: 1961. Interested in Eptesicus.

SMITH, DR. ELIZABETH. Smithville, Ohio. Began: 1946. Interested in homing. Banded 100 Eptesicus & 500 M. lucifugus during the past summer. Has banded 8,600 bats, all in buildings in Pa. & Ohio.

STALLWORTHY, DR. W. B. Biol. Dept., Mt. Allison Univ., Sackville, New Brunswick. Interested in sex ratios, survival, hibernation. Has banded about 400 bats in a mine near Sackville.

THOMA, BEN. Wisconsin State College, Superior, Wisc. Began: 1960. Bands a few bats in Itasca Park, Minn. in summer.

TUTTLE, MERLIN. Little Creek School, Concord, Tenn. Began: 1960. Student at U. of Tenn. Interested in homing and migration. Has banded several thousand, mostly M. grisescens.

WALLEY, HARLAN. Route 1, Sandwich, Ill. Began: 1960. Has banded several thousand in a mine in Ill.

WATERS, DR. JOSEPH. 65 Bonney Hill Lane, Hanson, Mass. Began: 1961. Has banded a few bats in summer colonies. Plans to work with hibernating bats this winter.

WILSON, NIXON. Health Dept., State of Hawaii, Honokaa. Began: 1954. Interested in ectoparasites, homing, migration. Banded 5000 bats. Plans work with Lasiurus semotus

RABIES

The total of states reporting rabies in bats is now 35, with the addition of Mass. and South Dakota as reported in the Oct. 27 issue of the weekly Morbidity & Mortality report of the PHS. The bat in Mass. was apparently a Myotis and the one in S. D. a Lasiurus cinereus. Both bats had bitten people, apparently after accidental provocation.

The article in TIME last fall concerning Constantine's work has caused quite a stir. The speleologists wonder if it is safe to go into caves. The NSS News had an article on the problem. People in talking and writing to me have severely criticized Dr. Constantine for the article. An example from a veternarian in Ontario who prefers to remain anonymous:

"The increasing reports about rabid bats call for a detailed study by virologists in connection with bat banders. Only a collaboration will give us objective results about the possible latent phase of the virus in bats and its distribution in bat populations. The overemphasis on chemotherapy in recent decades has made human populations unfortunately more vulnerable not only to resistent bacterial strains but also to viruses. A general extermination program to kill as many bats as possible will be a very crude measure upsetting numerous equilibria in our already shaky ecosystems, and should only be propagandized if no better way is possible. D. Constantine has done science quite a disservice by lending his name for the purple prose horror tabloid in Time Magazine of Sept. 29. Why doesn't he draw a further logical conclusion and advocate a general extermination of dogs, as the contact of human populations with dogs is so much more intensive. But instead of incurring the wrath of the cynophiles he permits his name to be used in connection with a rehash of old fairy tales about the sinister activities of bats and emerges a hero---.

"Another intensive study of the therapeutic and prophylactic agents used against rabies at present is overdue. Pasteur did not succeed in finding an adequate and reliable treatment, and the situation has not changed very much. The duck embryo serum currently used in the U. S. has doubtful value, and the actively immunizing attenuated virus strain employed in Canada is not only cumbersome to use, but suffers all the drawbacks of a potential reversion to a virulent strain."

The magazine article which has caused such a fuss appeared soon after Denny Constantine gave a paper on his findings at a medical meeting at the Univ. of Mo. Since I am aware of the fact that a reporter sitting in at a meeting can put just about anything he pleases in our free press, and that sensationalism sells magazines, I thought that likely Dr. Constantine has been unjustly criticized. So I wrote and asked him about the incident. His reply:

"Regarding the article in TIME, I was visited by a reporter, who was provided the facts concerning our transmission experiments. In addition, numerous questions were asked. As you have pointed out, many of us eventually realize our inability to control human factors involved in the reporting of our work (by others) and in the reaction to such reports. Our responsibility and intent was to report only facts, thus providing an obviously needed warning to the public and especially spelunkers. The resulting item placed emphasis on peripheral areas and matters of proven appeal to the general reader. It was not previewed by any of us prior to publication. I trust that similar human factors do not deter spelunkers from getting the point and taking necessary precautions.

"On the positive side, I am enthusiastic and hopeful over prospects of interrupting (postulated) bat to bat air transmission of rabies in

the big free-tailed bat caves by ventilation of the caves, induced by sinking one or more shafts in each cave. Observations indicate that such alterations should be more advantageous to the bats. And since Tadarida usually hang relatively close to the cave entrances, there should be little influence on the cave fauna already surviving conditions imposed by the bats and their guano. The neutralization of these caves as centers of infection for bats may have a profound effect on the incidence of the disease in bats - and possibly other species. Our immediate future efforts will be directed toward investigating this as a possible solution. Such a solution obviates any consideration of destruction of bats or caves. Moreover, cave destruction would offer the obvious disadvantage of not being able to thus control transmission, since the bats could be expected to spill into numerous smaller if less choice roosts and proceed to create conditions conducive to airborne transmission."

Of great concern to us chiropterophiles is the thought that the large increase in number of rabid bats found last summer, plus Dr. Constantine's discoveries would lead to bat destruction campaigns by health officials. Dr. Hitchcock wrote Dr. Constantine and asked him about this. The reply:

"I can appreciate your concern that hysterics are to be avoided in corrective action regarding the bat rabies problem. Fortunately I think you may be assured that no such action is being considered at this time. Rather, alternatives to bat destruction are the only recommendations being made. In fact, we are endeavoring to develop a suitable bat repellant, our first consideration being that the product must not make bats ill, even in prolonged forced contact trials we are doing here. Destruction of bat caves is not being considered ---."

Upon questioning my correspondents in health departments I heard the following:

From N. J. "Our bureau does not advocate the general destruction of bats. The recommended control measure is the bat-proofing of private premises. Bats which exhibit abnormal behavior only are submitted to the State Virology Laboratory."

From Ontario: "We can assure you that our desire is not to destroy all of the bats that we can find, but to take only that sample of each species in the various districts of Ontario that you biologists feel could be safely sacrificed without upsetting the balance of things."

From Oregon: We have resisted all efforts to exterminate bat colonies, as it has been the oppinion of myself and those working in this field that these are more useful creatures than the potential that they may have in transmission of rabies. I do not like to see the balance of nature upset in any regard."

A paper by Dr. Robert P. Hanson of the Dept. of Veternary Science & Bacteriology, Univ. of Wisc., which appeared Wildlife Diseases, Oct., 1961, is pertinent. He indicates that the reduction or elimination of an animal should be considered only if the species is the sole or major source of infection.

An indication of the seriousness of the bat rabies problem is found in letters I have from Dr. Monroe A Holmes of the Oregon State Board of Health. He said that Oregon had been apparently free of rabies for 20 years until discovered in bats in August, 1960. Since then there have been 18 other rabid bats found, three of which bit humans. Rabid species were: Myotis lucifugus, Lasiurus cinereus, Lasionycteris noctivagans and Eptesicus fuscus. Dr. Holmes thinks it likely that the disease was originally brought in by Tadarida which migrate to the south.

TROUBLE IN KENTUCKY

I have some new information at hand which helps illustrate the plight of the bats in some of the finest bat caves. In a recent issue I mentioned that four of us from the Univ. of Illinois made a very careful estimate of the number of Myotis sodalis in Carter Cave in the winter of 1956. The number was about 98,000.

Dr. Herschel T. Gier of Kansas State writes that when he was at Ohio University he and a group of students made several trips a year to the cave from 1940 through 1946. Christmas week, 1941, they estimated between 400,000 and 500,000 M. sodalis in the big room, with 4,000 assorted species of bats in the rest of the cave. The sodalis were clumped in big mats as much as 5 feet in diameter, with many of these mats around the walls. The temperature of the room was about 6°C.

Dr. Gier says that he would be interested in any information on the condition of the cave this winter, and says that if anyone would like to write a report, he would gladly supply any notes he has from 20 years ago.

John Hall writes that Ron Brandon, a graduate student at Illinois, has just visited Carter Cave on Dec. 27, with Dr. Seibert from Ohio University. They found the sodalis population much smaller than in previous winters. They estimated 20,000 present, and noted that the gates were down.

A letter of Jan 12 from John Hall concerning Coach and James Caves:

"Let me review the history of the Coach-James cave for you, and I think you will see that it is hopeless even to try to acquire this property. The caves and 600 acres are owned by L. L. Cutliff of Park City. He bought this land in 1958, just at the time I had begun to negotiate with Phil Smith to have the property bought and given to the (Mammoth Cave National) Park(they would accept it). Phil Smith would have gone to the Cave Research Foundation or the Nature Conservancy to buy the caves. Cutliff beat us to it. He is now rapidly commercializing the area into a dude ranch type of a thing. He plans to show both Coach and James caves. He has strung lights down the bat passage of Coach Cave and put in steps, opened up passages, etc. He is doing the same in James. This is the reason for the bats leaving and I see no way of stopping him or acquiring the property. I am hoping the bats may come into one of the several sodalis caves in the Park, but have no evidence of this yet. I have a feeling that sodalis and grisescens may be able to change caves quickly. Lets hope so."

Mailed: January 18, 1962

BAT BANDING NEWS

VOL. 3 No. 2 APRIL, 1962

Bat Banding News appears quarterly: January, April, July and Oct. Subscription rate is $1.00 for two years. - Wayne H. Davis, Biology Dept., Middlebury College, Middlebury, Vermont.

AN APPEAL

Ralph O. Ewers has undertaken the task of building and installing a gate to protect the bats in Carter Cave from destruction by vandals. It will be anchored into the bedrock with reinforced concrete, and provided with an automatic release which permits it to swing free at times of flood. Labor, engineering advise, and much material have been supplied free by friends of the Cincinnati Museum of Natural History. Thus the cost has been kept to a minimum. Ewers says that the entire operation, including rent of a truck to transport the gate, to Kentucky, is running to just about $100. He has been paying these costs, and hopes that interested people will help him with this. Therefore we ask that those who are interested in saving the bats of Carter Cave send a dollar or two to the Bat Fund, Cincinnati Museum of Natural History, 1720 Gilbert Ave., Cincinnati 2, Ohio. I will start the fund with a contribution before this is mailed.

EDITOR'S COLUMN

Plans call for a meeting of the bat banders to be held in connection with the American Society of Mammalogists meetings at Middlebury, Vermont, June 12-15. Our session will follow the afternoon papers on Wednesday, June 13. We hope that the afternoon schedule will be devoted primarily to bat papers, as was done last year. Hitchcock and I plan to give a paper on the results of our studies on the migrations of little brown bats in New England, and Hitchcock will give a short paper on the problems of developing a satisfactory bat band. I do not know what other bat papers will be presented, but the schedule should be out soon.

One of the highlights of the mammalogists meetings will be an evening presentation by Dr. Donald R. Griffin of movies of bats catching insects in flight using the interfemoral membrane and wing tips. He will also give a demonstration of the portable ultrasonic bat detector.

Progress is being made toward purchasing some caves for the protection of the vanishing species of bats. Myers has talked the owner of the M. grisescens hibernaculum in Mo. into selling. Tuttle is investigating a couple of caves in Tenn., and Conrad is looking into the possibilities in W. Va. The chairman of the National Speleological Society's Committee on Conservation has written that we can count on their full support. Bruce Dowling, Asst to the Director on the Nature Conservancy, writes that they would be glad to give us guidance on the fund-raising aspects of a project. He plans to meet with us at the mammalogists meetings here to discuss the problems. He suggests that the best way to get a cave tied up quickly is to obtain an option to buy, and then use the time to raise funds to purchase. He has sent me some option forms which I would be glad to pass on.

Dick Anderson, a N. J. speleologists writes that I neglected to mention rabies deaths as a possible cause of the decrease in the bat populations of the caves. This is certainly a good possibility, and should have been considered in my discussion of the problem in the

last issue.

In February I had the pleasure of visiting the famous Chester, Mass., emery mine with Dana Snyder. I am pleased to be able to report that there are still plenty of bats there, and that there always will be, unless someone devises an elaborate means of destruction. Most of the bats are on the lower level, which is reached only via a 90 foot vertical shaft. This is easy enough to make with proper equipment, and anyone going down has access to numerous bats. However, many of the bats are really high on the walls. The passage is a crevice type that reaches all the way to the upper level. It is one of the most dangerous looking underground chambers I have ever been in.

We have been discovering more abandoned mines with bats up here. In December Dr. Hitchcock and I discovered an old mine within just about 20 miles of Middlebury that has about 3000 wintering bats. Bob Martin showed me another near here, and has leads on others. I also have leads on numerous others. I think there are probably hundreds of abandoned and nearly unknown mines in this region. Many mines have passages inaccessible because of water; many others are too dangerous to enter; and still others are closed to man because of breakdown. I have little doubt that there are enough such places up here that our bat population is not in immediate danger.

There are two new bat banders: Dr. N. B. Gale, Box 459, Balboa, Canal Zone; Edwin Tyson, Box 1531, Balboa, Canal Zone. Bruce Hayward, New Mexico Western College, Silver City, N. M., writes that he is doing a little banding in mines around Silver City.

Anybody need some skulls or skeletons of Myotis lucifugus? In handling many thousands of these bats we have an occasional casualty. I have been saving them and feeding them to the bugs. Write if you could use some of these.

In March I attended the conference on the use of telemetry in biology at the American Museum of Natural History. Seems that the time when we can put a radio on a bat to study home range is not far off. Migration studies are a little farther in the future. The limiting factor is a battery.

Dr. Hitchcock has received two new types of experimental bands for testing. Both are no. 2. One has rounded edges instead of sharp corners, and the other has flat lips. Unfortunately the workmanship on them is crude and sloppy. The Gey Band Co. does very poor work. I wish we could get our bands from a British company which has sent us samples of their work. Their workmanship is superb. Numbers are more clear cut and legible, and there are no ragged edges on the bands. Write if you would like to try some of the experimental tags. Last summer for a while we clipped all four corners off each band with a nail clipper. I suspect that this may make a slight improvement, and I would like to see others try it.

Replies to a recent questionnaire show that nearly all banders have received rabies vaccine. A few did not get a successful response to the vaccine, however.

The Met Grotto News for Nov-Dec. carries an article about histoplasmosis, "spelunker's risk", which they filched from Medical News National Tuberculosis Association. It reports a total of 11 people who had been in a cave near Torreon, Mexico, at various times, all of whom came down with the disease. Four of these died. This "bat dung fever" seems to be dangerous. I wonder if those of us who have survived after so many treks into the bat caves are not immune to histoplasmosis. Karl Koopman has told me about how he has spent hours sifting through the dusty dung of caves in the Antilles looking for bones

of fossil bats.

HOW RELIABLE ARE OUR RECOVERIES?

When an interesting recovery comes in how can we know whether or not it is reliable? Was there a mistake somewhere? Unfortunately very often there is. So often in fact that I have serious doubts about most good recoveries. There are at least three places where a mistake can be made, and I know that they have occurred at all three places. These are: the bander, in his records; the finder, in getting the number; and the Washington office, in pulling the card. In my early experience I found that when handling bats in a cave where I had banded before, and thus was recording many repeats, that we would make a mistake in recording on at least two to three bands out of 100. Thus many bats "seemed" to be moving from one cave to another. When I devised a method to eliminate this error, the bats quit moving. I have had only one authentic case of a pipistrelle moving from one cave to another among all of the thousands that I have handled in the country where caves are numerous. He moved the few miles (4) from Hoffman School Cave to Thorn Mt. Cave, W. Va.

Jim Cope has generously given me permission to cite from his records to illustrate the problem. It could happen to anybody. In March I got a copy of a F. & W. Service letter to Cope. It was a reply to his report of banded bats seen in Wyandotte Cave, Ind., on five different visits. It reported, among other things, that he had found: a M. sodalis banded in Tennessee by Merlin Tuttle; a M. lucifugus banded and released at Terre Haute, Ind., by Mumford; a pipistrelle banded at a cave at Ft. Leonard Wood, Mo., by Myers; a pipistrelle banded in extreme southwestern Georgia by me; and two band numbers which had not been issued for bats.

Probably many of these are in error. But which ones? Perhaps some are authentic. But how can we know? None can be accepted. As soon as I got this letter, I wrote to Cope and asked him for all the particulars concerning these bats and the conditions under which he recorded them. Since I suspected that these were among several hundreds of repeats that were being recorded, I asked about this too. He replied with the following information: My Ga, pipistrelle resulted from a misinterpretation of his letter to Washington. He actually reported it as having been found by a student in the cave where it was banded. His notes on the one reported as Myers' pipistrelle from Mo. indicate that it was a female M. lucifugus. It was among 326 (50 repeats) netted at night. On one of the other nights in question his party read off 648 repeats by the light of a Coleman lantern! Likely one could misread a digit under these conditions.

This is the problem. What can we do about it? If one finds a single banded bat in a strange place it is easy. Simply check and record the number very carefully. The big problem is in recording large numbers of bands. I have a solution for this which I have been using for years, and it has been flawless. Whenever I go to my W. Va. caves where I have been banding for years, I record all the numbers I have used in each cave on a card. This may sound like a lot of numbers, but it is not as much as it sounds. All 11 years can easily be put on half a 3 x 5 card. One years bands may be 54-19239 to 568 & 701 to 817. Then I keep this card in front of me while I am banding and two other workers are reading and recording the repeats. If a number is read that is not on the card, I immediately reach for the bat and check the num-

ber. Thus any foreigner is immediately recognized and his number can be checked carefully. For recoveries to be reliable one must recognize the band as an interesting one before the bat has been released. In this connection it is also quite helpful to be able to recognize ones own numbers without having to look them up. This is not hard if you want to do it. Although I have about 80 series numbers on my file cards, I immediately recognize any number that does not belong to me.

One reason mistakes are often made in reading numbers is because the digits are so poor and the stamping job so sloppy. That flat-topped 9 is easily mistaken for a five. I have never seen such a figure 9 anywhere other than on bands. A recent issue of the bird banders' EBBA News carries a suggestion for making numbers more legible. They suggest rubbing a lipstick over the digits. I tried it, and it certainly makes the numbers stand out, but would be impractical because of time consumption. I have thought about mixing a stain from histology lab in melted margarine, and dipping a string of bands in it. The color would probably be lost to dirt as the bat dragged the tag through the attics, but then a dirty band is much easier to read than a new one.

We have the problem of finding a few summer-banded bats among the thousands of bats that we have banded in a mine. We would like to use a different color of band in summer from what we use undergroung. This would make it easy th recognize foreign bats. Dr. Hitchcock took some bands to a metal plating company to get them anadized, but they did not take the color. Has anyone tried coloring bands in any way with success?

MYOTIS GRISESCENS IN VIRGINIA

John R. Holsinger, who is directing the Biological Survey of Virginia Caves for the D. C. Grotto of the NSS, writes to report what he has found concerning Myotis sodalis in the state. He knows of colonies in caves in Bath and Giles counties. He also reports finding a large colony of bats in August, 1961, in Grigsby Cave, Scott Co. He describes the swarm of bats going past him in a passage as lasting ten minutes or longer, and he said that judging from the sound a considerable number must have remained in the bat room. A specimen was collected and identified as M. sodalis. It would be interesting to learn what species the rest of the bats were. Most likely they would be M. grisescens. John Hall has found a few groups of M. sodalis throughout the summer in some Ky., caves. The largest such groups have been about 100. Nearly all of the great masses of these bats leave the caves in spring.

Merlin Tuttle has recently received recoveries of two of his M. grisescens from Virginia. The finders report that several thousand of these bats come through Virginia each spring. As yet there has not been a specimen of the species preserved from the state to my knowledge.

TIPS ON TECHNIQUE

I have added a plastic bag to the wire ring on the end of my telescoping bat pole. Not only does it save a lot of time in collecting singletons, such as pipistrelles, but it also allows one to capture active bats which are ready to fly.

We have made some improvements on the Myers cage (BBN Vol. 2 # 1). Instead of three wire hoops, we find one at the bottom is sufficient. We also find that making the top plywood circle flat on one side which

rests against the chest makes the cage much less awkward to handle. Since the carrying capacity for hibernating bats is determined by the surface area of the bottmm, I have been experimenting with making the bottom somewhat larger than the top.

KNOW YOUR BATS - MYOTIS SODALIS

If you are not familiar with this species, it is a difficult one to identify. The books and keys are of little help. The differences generally referred to are subtle. I cannot give a simple formula which will easily separate this species from all other eastern Myotis. However, if it is but a question of separating this species from M. lucifugus, as it most often is with the bander, I can cite differences which seem to be reliable and practical. The best character is the foot. When the two species are compared, the foot of sodalis is quite noticeably smaller. Also compare the profiles of the faces. M. sodalis has the shorter, snub-nosed appearance.

M. sodalis has the second smallest foot of any of our eastern species. Only M. subulatus is smaller.

A problem that a bander often has is to pick a few M. lucifugus out of a large group of sodalis that he is handling, or vice versa. This can be a tough and time consuming problem, and there is no substitute for experience here. One hint might be helpful though. When gathering the tightly packed clusters of sodalis, one usually picks up a few scattered singles and small groups. I have found that most of the lucifugus get into the bag along with these. Except for a single M. grisescens, I have never found another species in a large cluster of sodalis, although perhaps other banders have.

HERE AND THERE

JOE WATERS started banding bats with a few Eptesicus near his home. He got a recovery among his first 25 bats when one he banded at Halifax, Mass., was picked up in Dorchester, about 20 miles NW.

PHIL KRUTZSCH was featured in an NEA syndicated article of March 27, which appeared in 300 papers across the country. The article was about research being done with bats. It mentioned bat banding.

N. R. WHITNEY, M. D., of the Pennington Co., S. D. (Rapid City) Health Dept., writes to ask that someone write up the life histories of North American bats in some manner such as Bent has done for the birds.

BOB AYRE has sent me a copy of the Las Cruces, N. M. Citizen of March 3, 1960, which has a front page article about D. G. CONSTANTINE. It says that he is working on a project of "baiting" bat traps with the recorded voices of the species he wishes to capture. The article also quotes Constantine as saying "The facts we now have must be interpreted as acknowledging that probably 15 per cent of the bats in N. M., Ariz., Texas, Calif. and Okla. have rabies, and we should not be surprised if these infected bats suddenly become 'furious' and attack man and animals". The article points out that methods have already been developed to capture and safely destroy species of bats which occupy SW caves by the millions. It says that potentially dangerous tree bats require radically new methods of control. Thus the recording of their voices to lure them to capture and destruction.

JOHN HOLSINGER reports that a cave in Bath Co., Va., which had an estimated 3000 M. sodalis two years ago had only 800 this winter.

BRUCE HAYWARD writes that he is in interesting bat country now. He has 27 species, including 9 Myotis, out there in Arizona- New Mexico.

DAN SMILEY, a bird bander who has helped me in a N. Y. mine, sends a clipping from the Nassau Co. News Day which says "LI Researchers out to Bag Bats". They are wanted for rabies testing.

HARLAN WALLEY writes that the snow has been so deep that he has had to walk all the way in to Blackball Mine this winter. He hopes to do considerable banding during the spring.

GASTON MOISAN tried both 1 & 1B on his bats at the cave in Quebec last year, and he writes that this winter 15% of the ones wearing no. 1 bands had injuries but none of the 1B. He says it will be 1B from now on. He reports they recaptured 35% of the males banded but only 2% of the females.

NIXON WILSON is now at the Bishop Museum in Honolulu. He reports that he has collected 6 Lasiurus semotus and banded one. I wonder how far it will travel.

PHIL KRUTZSCH writes that he saw a single Corynorhinus in Trout cave with a band on each wing. The flesh was red and growing over the bands and the bat was in poor shape. I saw one in Minor Rexroad Cave that was carrying one of Hall's no. 1 bands and was injured. I quit banding these bats ten years ago when I found that the bands were so hard on them.

S. EDWARD SULKIN, in reply to my question, says that it does appear that bats become less likely to infect when in hibernation than during their active season.

S. C. DOWNING writes that the Ontario Bird Banders Association is setting up a project to band tree bats which they catch in autumn at Pt. Pelee. They want an oppinion on what size bands to use. My opp-inion is no. 2, by all means. We want some recoveries on these bats. So far as I know, no one has ever had a recovery on a tree bat.

EDWIN L. TYSON writes that he is starting banding in a population study of tropical bats in the Canal Zone and Panama. Seems to me he is an old time Connecticut bird bander?

The TECH TROGLODYTE, V. P. I. Grotto newsletter, has an article about James Cave, Ky. It mentions the bat gallery as having 700,000 bats during much of the year. I wonder what John Hall thinks of this estimate.

VIC SCHMIDT, Chairman of the NSS Committee on Conservation says that after writing Kentucky Park Commissioner Fox in November about the Carter Cave bat problem, he received a reply which states "---- today I am directing that our maintenance organization take immediate action to replace the gates. ---I believe that you know of our sincere interest in protecting the bat colony at Carter Caves." Vic wonders what happened? So do many of us.

MERLIN TUTTLE now has 500 recoveries from 80 miles distant, and 125 from 130-200 miles. M. grisescens gets around!

BRYAN GLASS has just received a new grant to carry on his work with Tadarida. He is going to work on aging techniques.

RECENT LITERATURE

KRUTZSCH, P. H. A summer colony of male little brown bats. J. Mamm., 42: 529, Nov. 1961. In July and August, 1959, samples of 100 bats were taken from clusters of several hundred in Hellhole Cave, W. Va. All were males.

PEARSON, E. W. Bats hibernating in silica mines in southern Illinois. J. Mamm. 43: 27, Feb., 1962. Not much here. Observations in 35 mines. Total of 183 bats of six species was found. Recorded temperatures at hibernation sites.

VILLA, BERNARDO & E. L. COCKRUM. Migration of the guano bat Tadarida brasiliensis mexicana (Saussure). J. Mamm. 43: 43, Feb., 1962. A review of the literature and presentation of additional banding results.

SHACKLETTE, M. H., et. al. Histoplasma capsulatum recovered from bat tissues. Sci. 135:1135, March 30, 1962. Reports the presence of this organism in Chilonycterus rubiginosa fusca (sic) taken from a building in Panama.

MUIR, T. J. & E. POLDER. Notes on hibernating bats in Dubuque County caves. Iowa Acad. Sci. 67: 602, 1960. Not much here. The first report of Myotis sodalis for the state of Iowa. Three were taken from Becker's Quarry Cave in Dubuque. Two were preserved in alcohol.

MARTIN, R. L. Bat transmitted rabies. The Iowa State U. Veternarian. 24: 79, 1961-62. A review of the rabies in bats problem.

COPE, J. B., et. al. Breeding colonies of four species of bats of Indiana. Proc. Ind. Acad. Sci. 70: 262, 1961. Three year search for summer colonies yielded the following totals: Pipistrellus subflavus, 1; Nycticeius humeralis, 4; Myotis lucifugus, 41; Eptesicus fuscus, 142. Methods used to locate colonies are described.

COPE, et. al. A method of tagging bats with radioactive gold-198 in homing experiments. ibid., p. 267; Notes on homing of two species of bats, Myotis lucifugus and Eptesicus fuscus. ibid., p. 270. Liquid gold was placed inside bands and covered with nail polish. Tagged bats which returned home were detected with a Geiger counter. Detection was successful through roof and brick wall. Myotis returned from 20 miles within a few hours. Eighty-five per cent of 36 Eptesicus returned from 250 miles to the south, but only one of 18 returned from 250 miles to the north.

Mailed April 30, 1962

BAT BANDING NEWS

VOL. 3 No. 3 JULY, 1962

EDITOR'S COLUMN

Bat Banding News appears quarterly: January, April, July & Oct. Subscription rate is $1.00 for two years. - Wayne H. Davis, Zoology Dept., University of Kentucky, Lexington, Ky.

The fund of the Cincinnati Museum of Natural History for building a gate to protect the bats in Carter Cave, Ky., is not very healthy. About $41 was received the last I heard from them. Of that $12. was from readers of this newsletter and the rest from individual members of the American Society of Mammalogists. As the cost of building and installing the gate is about $100 it is hoped that others will contribute.

I have found it most difficult to get this issue out. Besides working full time seven days a week on the bat migration project during July, I was busy with the problems of moving as well. Some things planned for this issue will have to wait for next.

The mammal meetings at Middlebury in June were a success. Many bat banders were present, and several papers on bats were given. Cope and Baker may have got the impression that all the bats in New England are banded. After leaving the meetings they spent a night at Hillsboro, N. H., and shot one bat. It carried one of our bands from a cave in southern Vt.

Our experiments with band injury continue to show progress. We have been testing two styles of # 2 bands. One of these is lipped and the other has the corners rounded off. Both types were made to specifications by the Gey Co. Results show that the one with the rounded ends is very promising. We have seen no injury with these but some have been chewed. I think chewing depends on the individual personality of the bat rather than band irritation. Some bats chew and some don't.

Our New England bat study has been very successful. I would like to point out some things that we have learned by experience that may be of help to others. We have found that we made a mistake by not using different colored bands for our summer and winter work. This would have made it much easier to spot foreign recoveries in a cave where we had done much previous banding. We have done some painting of bands with nail polish this summer. Glass informed us that bands can be anodized despite the fact that a metal plating company in Rutland was unable to do it for us. Glass had samples of the work done by a Tulsa company. It looked good. Something else worthy of note is some of our experience in locating bat colonies. We have sent many publicity releases to newspapers, and find that the newspapers are very good about running stories about our work. It seems that someone working with bats and looking for them is always news. But we have found that some stories are very successful in getting people to write us about their bats, whereas others are not. Some pointers on success: the most important thing seems to be to indicate that you are willing to give free information on how to get bats out of a house. This seems to be the only interest of most people who have bats. Also you should imply that bats are scarce right here whereas the next state (city, etc) has lots of them. The newspapers like a local attachment (the town hall at Stoddard, N. H., has hundreds of bats including many of our tagged ones from Vermont, but we haven't been able to find any closer to Manchester and don't know whether they go there or not). By using such tactics we have succeeded in getting lots of people to write to

us about their bats. Although we have sent releases only to the newspapers, we have heard that the radios and TV have carried our stories and appeals too. We reply to all letters and try to visit everyone who writes. However, about half of these turn out to be wild goose chases. "Hundreds" and even "thousands" of bats have sometimes turned out to be 0. We often find that we do better locating bats ourselves than we in visiting those who write us. We do this by watching for bat spatter on houses and by inspecting the outside of every small town church. We always ask the people in whose house we are gathering bats if anyone else around has them. They are always glad to tell us that their neighbors have them too.

Most of our bat colonies are in old houses,barns, churches, schools, town halls, grange halls and fire stations. However we occasionally get a surprise. A well-spattered building in Connecticut that we stopped to visit turned out to be a beauty shop. Inside, downstairs, where we talked to the proprietor and a customer, it seemed like just like any other beauty shop, but upstairs we found about 800 Myotis. Also in Connecticut we visited a suburban development just east of Hartford from where someone had written us about her bat problem. Though the place was only 5½ years old they had a thriving little colony of Myotis in the walls. We talked to the neighbor and found that she and others had bats, too, and since all the houses were identical in structure, it could be that they all had bats. I mentioned that it would be an interesting place to study color preference in bats, since the bats seemed to have their choice of dwellings.

In our work during this summer and last I have come to see that bats in a building can be a real and serious pest. If a house has a colony of 300 or so in the attic, I can smell them from anyplace inside the building. We have seen woodwork rotted from bat urine, Cimex bugs swarming on the rafters, deep piles of dung crawling with dermestids, and large black wet stains on the walls and ceilings. In a one-room building in Connecticut from which we gathered and banded over 800 Myotis the rafter running the length of the roof in the middle was actually dripping with bat urine. After these experiences it seems logical that a boy living in one of these houses might destroy the bats he sees hibernating in a cave. A large colony of bats in a building can be a real pest. If I had them in my own house I would shut them out. It seems to me that Myotis lucifugus is probably much more abundant now than it was before white man came to North America. The great shame of the bats as pests problem is that the innocent species hibernating in the caves suffer.

Although some bats can be a real pest, this does not seem to be the main objection that most people have to them. They are actually afraid of them. Perhaps 9 of ten women are. This includes the technician of a state laboratory of health where we sent some bats for rabies testing. She was terrified to learn that the bats were on their way - alive! In most cases, however, the generalization holds that the more intelligent and educated people are not afraid of bats, but the backward, stupid and ignorant really are. Many of our letters contain such as "not only are they dirty things, but they terrify me", or "... there was a bat in the bathroom. I called the fire department and they sent a truck with three men who dispatched with the bat. ... A month later there was another bat in the house. I called the fire dept. again...". (this letter from a man in Norwich, Ct.). One woman wrote that she couldn't sit in the yard at night for the bats swooping down at her.

We also find that most people who have bats in the house aren't really very interested in getting rid of them. If they were they would have

done so, for it is easy enough to do and many people do it. Those who have bats usually have what I call a fly-swatter complex. They would rather chase them continually with the swatter than to shut the window and keep them out for good. The more I see of people the better I like my bats.

Just last week I saw my first summer colony of Myotis keenii. It was in a barn at Fitzwilliam, N. H., along with about 300. M. lucifugus and one Eptesicus. The keenii were hanging in a group at one end of the barn next to the window in full light. They were asleep, whereas the other bats were noisy. The cluster contained 2 adult females and three young. Other keenii were netted in the barn, bringing the total to 13.

Now is the time for some interesting summer netting at night at the caves. August is the best month, although we found that activity started at least as early as July 14 at our cave in southern Vt. We got 400 that day, but activity has picked up considerable since then. Dr. Hitchcock said that the night of August 1 they were the thickest he has yet seen. Though we use a mist net some, we find that our yard diameter hand net is more effective and easier to use.

Dick Myers writes that the owner of the Myotis grisescens hibernaculum in Mo. is willing to sell the property for $1000. He is working on the possibility of getting the place preserved by Nature Conservancy. Work is also being done toward getting a Plecotus cave in W. Va. There is one cave where a large colony can be found both summer and winter. However the bats have retreated to the very end of this lengthy cave, and the cave is heavily spelunkerized. The property on which the cave lies should be commercially as near to worthless as a piece of land can be, even in Pendleton Co., W. Va.

HERE AND THERE

Merlin Tuttle is spending the summer collecting in Central America.

Dr. N. B. Gale, Box 459, Balboa, C. Z., and Ed Tyson of Florida State University are working on the ecology of bats in the Canal Zone. They are netting and banding on Barro Colorado Island.

Russ Mumford has just got back from the Southwest. He netted 15 species of bats including 6 Lasiurus ega in N.M. He got 102 hoary bats of which most he banded and released. He writes that his students have been catching hoary bats in Indiana; 6 in one night.

Cockrum is considering publishing life histories of N. A. bats.

BANDERS' PROBLEMS

Two of the worst problems bat banders have are caused by bands that the bats can mutilate and by collectors who take banded bats.

On April 27, 1962, someone found a dead banded bat at Edwards Ferry, just south of Pooleville, Md., and sent the band to Washington. It was so badly chewed as to be not certainly legible. Dr. Manville thinks that it is probably 50-36463 which I put on Myotis lucifugus at Hoffman School Cave, W. Va., on Feb. 10, 1952.

Dr. Hitchcock has been following an Eptesicus from his earliest days of banding in Ontario. It kept returning year after year, and was much older than any recorded in the literature. This winter it was collected and skinned by a mammalogist.

Dr. Hitchcock has also had one of his old bats collected from Hibernia mine in N. J., by a physiologist at Princeton.

MYOTIS GRISESCENS OF VIRGINIA

In the last issue there was a note on the occurrence of Myotis grisescens in Virginia. It mentioned that a bat taken from a large swarm in Grigsby Cave, Va., in August, 1961, was identified as Myotis sodalis. John Holsinger now writes that C. O. Handley, Jr., of the U. S. National Museum has identified this specimen as Myotis grisescens. One wonders how a mistake could be made between these two species since one has such a small foot and the other such a large one.

BAT RABIES IN TENNESSEE

Luther Fredrickson, D. V. M., state director of rabies control, is sampling bats in Tennessee caves for rabies. He reports that one of 18 Pipistrellus subflavus from Lost Cove Cave, Franklin Co., was positive on FRA examination of the brain and mouse innoculation of with brown fat; that 15 of 232 Myotis grisescens from Caney Hollow Cave, Franklin Co., were positive.

RECENT LITERATURE

CONSTANTINE, D. G. Rabies transmission by non-bite route. Public Health Repts., 77(4):287-289, April, 1962. This is the paper many of us have been so anxious to see since the article in Time magazine of last Sept. The popular press left one with much wonder about the methods used to guard against the possibility of the virus being transmitted by the ubiquitous mites found in the Tadarida caves.

Constantine reports that 13 carnivores were caged in Frio Cave, Tex., in July, 1960, for 7 days. After removal from the cave 4 of the animals died of rabies. Then 28 carnivores of various species were placed in the cave for a week and the bats vacated the room, moving to other parts of the cave. None of the carnivores developed rabies.

In the summer of 1961 22 carnivores were placed in the cave for a month. Some of these were in enclosures designed to prevent entry of the smallest arthropods: they were on smooth steel legs, a moat was built about the air openings, food was built into the cage, water was piped in from outside the cave, air openings were covered with 1/20 in. dacron mesh. All animals died of rabies. Although this strongly suggests air transmission, the possibility of arthropod carrier remains. A colony of dermestids was found in one of the moated enclosures.

PUBLISH CAVE LOCALITIES?

This question is perhaps the most frequent debate when cavers get together. The striking increase in caving and increase in destruction and littering that has followed publication of books on the caves of W. Va. and Mo. have made this question a serious one. It is interesting to note that the Division of Mines of the State of California has decided not to publish a manuscript which they have on the caves of California. Cave protection was given as the reason.

An interesting article on this subject appeared in the Tech Troglodyte 1 (2):14, April, 1962, by Gregg Marland. He approached the cave map drawer of the VPI library and noticed two strangers looking at the maps. Upon inquiring he was told they were looking for bats and they asked if he knew where large numbers of bats could be found.

The boy was interested in a bat parasite which he got by cyaniding the bats and then picking them. His interest was "just curiosity" and he wanted just to collect as many of the parasites as he could. He was going over the cave map file looking for "Bat caves" and "Bat rooms." The availability of such a file makes it easy for anyone at VPI easily to find the caves, and apparently the local caves have suffered as a consequence.

WHO BANDED THE MOST OF WHAT IN 1961

This column is an idea which I stole from the Eastern Bird Banding Assn. News. It is a poor one, and probably will die soon on these pages - perhaps from lack of nourishment.

Plecotus rifinesquii	200	Hall (West Virginia)
Myotis lucifugus	40,000	Davis & Hitchcock (New England)
Myotis keenii	224	" " " "
Nycticeius humeralis	13	Mumford (Indiana)
Lasiurus borealis	12	" "
Pipistrellus subflavus	874	Davis (West Virginia)

Contributions for this column are wanted (if it lives till Oct.).

SPELEOBIOLOGY AT THE UNIVERSITY OF KENTUCKY

Last fall Dr. Thomas Barr moved to the Zoology Dept. of the University of Kentucky to begin a research program in speleobiology and establish an Institute of Speleology there. Tom is a well-known speleologist whose major interest is cave Carabids. With the help of an NSF grant he has set up a study of ecology of cave life at Mammoth Caves. It has been my good fortune to have the opportunity to join the faculty at the University of Kentucky and to start a bat research program in the caves of that state. Tom and I plan to make Kentucky the center of speleobiological activity. He has some big things now in the planning stages.

mailed August 4, 1962

BAT BANDING NEWS

VOL. 3, No. 4 OCTOBER, 1962

NEWS & CHATTER

Bat Banding News appears quarterly: January, April, July & Oct. Subscription rate is $1.00 for two years. Wayne H. Davis, Zoology Dept., University of Kentucky, Lexington, Ky.

It seems that the autumn month are beginning to show as the most interesting time for the bat bander. I had long thought of the fall as a time when few bats are in the caves, and that one might as well wait until the population built up before banding. We are now learning that we have more than just a steady buildup of wintering populations at many caves. In the fall before cool weather comes there are lots of transients that come into the caves and then move on. There is a lot of work to be done before we work out the patterns of these movements. An example of a recent interesting find: On Oct. 6 I went to Carter Cave to see the new gate and do some exploring. I didn't expect to find many bats, because it was too early in the season for M. sodalis to be hibernating in any numbers. I saw a couple of thousand in the main bat room, which was about what I expected. However Tom Barr, who was exploring the cave for beetles, reported about 100,000 near the other end of the cave. We found the bats in the main room to be 98% females. The next week we returned and found about 20,000 in the rear room. The major quantity of bats this time was in a different level of the cave. Barr did not venture an estimate of these. The sex ratio this time was 86% females, except for a group of about 2,000 actives in a shallow room within sight of the entrance. These were 9% females. I expect there had been considerable turnover during the week, and perhaps most of these bats were not ones which normally winter in the cave. These findings, along with what we have seen in Vermont and what Cope, Mumford, Hall and others have noted, make it evident that there is a lot of bat behavior between time of colony dispersal in summer and hibernation that we know very little about.

The Institute of Speleology here at the University of Kentucky is bustling with activity. In addition to the three biospeleologists on the staff, there is considerable interest from the students of the Zoology Dept. It seems as if there will be some sort of cave activity going on here nearly every week, and eager spelunkers can always have a chance to go along and get their feet wet. Kentucky caves are numerous, huge, and unknown; so here is the opportunity for caving enthusiasts.

I have heard second hand via the telephone that the bird banders' Operation Recovery on Cape May, N. J., caught fair numbers of silver haired bats this fall in their nets. It was said that six were taken in one net at one time. If this is so, it is suggestive evidence on the question of whether or not bats travel in flocks while migrating.

New bat banders are: Monroe A. Holmes, D. V. M., Oregon State Board of Health, 1400 SW Fifth Ave, Portlandl, Oregon; and Dwight L. Spencer, Biology Dept., Kansas State College, Emporia, Kansas. Dr. Holmes is interested in bat rabies in Oregon, and Dr. Spencer is interested in migration and distribution of bats in Kansas.

The CDC Health Notes for June, 1962, reports that Pennsylvania's reported rabies cases for 1961 reached an all-time low of 14, but that 8 of these were in Myotis lucifugus. All bat cases were from a small area in the north-central part of the state.

In our work with summer bat colonies in New England, Dr. Hitchcock and I frequently had difficulty convincing people that we were really

interested in the bats. We found that a printed card with information about our work, and containing our names and address, was most helpful. It always helped overcome the normal suspicion of strangers. However we did find some people who were sure we were antique hunters and just did not want to be talked into selling any of that stuff in the atic.

GLOP

I have received several requests for the formula for glop. It is not my formula. I got it from Donald Griffin. Have heard that it was originated by Dalquest. Grind live meal worms with mortar & pestel. Mix with equal parts by weight of ripe banana, Philadelphia cream cheese, and yolk of boiled egg. Add a drop of multiple vitamin compound. Store in the refrigerator. Eptesicus will learn to take this out of a dish on the floor of a cage, and get so fat and lazy that they won't fly. Perhaps the best source of information on feeding and care of bats in captivity is: Mrs. John Dunning, Biological Laboratories, Harvard University, Cambridge, Mass.

POLICY IN ISSUING BAT BANDS
by R. H. Manville

The bat-banding program in North America has, since 1932, been under the general coordination of the U. S. Fish & Wildlife Service (formerly the Bureau of Biological Survey), which provides the numbered metal bands and maintains the central records in Washington. Unlike the work of our bird-banding colleagues, ours concerns relatively fewer species and individuals, and is done largely by professional workers. (Actually some 150 cooperators have banded over 500,000 specimens.) In general, bands are issued only to cooperating scientists whose special projects require the use of banded animals. Such workers are better equipped to identify properly the bats taken, and are more likely to transcribe the band numbers correctly and report their data promptly. The policy is designed not to discourage amatuers, but to assure accuracy throughout the program. Individuals whose interest in bats may be transitory, or whose experience with them is limited, are referred to work under the guidance of a recognized cooperator, where possible. When circumstances warrant, they may be issued bat bands in their own name after a period of apprenticeship.

NEW RECOVERY FORM

If you have had a recovery reported since about the middle of August, you are familiar with the new form. Instead of a letter to the finder with the copy to the bander, a printed form is filled out with all pertinent information. A copy is sent to the bander and one is kept in the files. The original goes to the finder. This form is saving them a lot of time in Washington, and is more convenient to the bander as well. On the back of the original, which goes to the finder, is an entire page of information concerning the bat banding program. It is as follows:

"Bat-banding in North America is under the general coordination of the U. S. Fish & Wildlife Service. Since the program began in 1932, over 500,000 numbered metal bands have been affixed to bats of various species. Bats are banded primarily to study their migrations and other travels, their homing tendencies, sex ratios, breeding habits, growth

rates, and longevity. Bat-banding cooperators are scientists working on specific projects which require the use of banded animals. Much of the banding has been done in connection with studies of bats as carriers of disease, and large-scale banding operations have been financed by Federal and State health agencies, especially in the Southwest.

"Many interesting facts have been disclosed through the banding program. For instance, we now know that some species of bats winter in caves and protected sites in the north, while others, like birds, migrate hundreds of miles each year. Summer-banded free-tailed bats (Tadarida brasiliensis) from our southwestern states have been recovered during colder months in Mexico, one of them 810 miles south of its summer quarters in the United States. It has been discovered that bats of a certain species have a strong homing instinct and will return to the home roost from distances as great as 150 miles. Perhaps the most surprising discovery is the age to which some bats may live. Ten-year-old little brown bats (Myotis lucifugus) are not uncommon, and the oldest yet recorded is an animal recaptured 21 years after it had originally been banded.

"Much remains to be learned, and the success of the banding program depends upon the reporting of recovered bands by interested parties. Bats bearing bands should not be killed but released at the point of capture after the number on the band has been carefully read and o other pertinent information recorded. If the bat is dead when found, remove the band and mail it, with information on the location, date found, cause of death, name of collector, circumstances of recovery, and other details. Bats are useful in killing mosquitoes and other insects, and ordinarily should not be molested. They should, however, be handled with care, for they can bite and, as with all mammals, there is the possibility that they may carry disease. The use of gloves is recommended in handling them. The agencies and individuals participating in this work thank you for your helpful cooperation".

HERE & THERE

Al Beck mentions that G. M. Allen's book Bats is now available in paperback from Dover Publications for $2.00. Good news. This book, long out of print, contains a wealth of information on bats, and is most interesting reading.

H. Elliott McClure, a bat bander in Kuala Lumpur, Malaya, writes that he recently visited the Earl of Cranbrook at his bat banding station in England. He says the Earl mist nets bats at a villiage dump where they come to feed on crickets which infest the dump.

Dan Smiley sends a clipping from the Aug 22 Boston Record American. The two-column headline says "Boy bitten by rabid bat saved by alert mother". He was bitten in Boston July 24 when he picked a bat off a telephone pole and put it in a tin can. The PHS in Atlanta determined the bat to be rabid. Dr. George Waterman, asst director of the State Health Dept. Dviision of Communicable Diseases said that the boy in all probability would be dead now if his mother had not acted as she did. Shots were started at once, and the bat was not found to be rabid until Aug. 15. Probably material for a TV drama here.

Dr. Bernardo Villa-R writes that last June students from the universities of Mexico and Arizona banded 23,000 free-tailed bats in Eagle Creek, Arizona.

Dr. Murray Johnson, Biological Research Laboratory, University of Puget Sound, Tacoma 6, Washington, would like to have a few bats of each species for his studies of serum protein and hemoglobin relation-

ships among different taxonomic categories of mammals.

RECENT LITERATURE

HALL, JOHN S., 1962. A life histiry & taxonomic study of the Indiana bat, Myotis sodalis. Scientific publications # 12, Reading Public Museum & Art Gallery, Reading, Pa. 68pp. Apparently the material of Hall's PhD thesis, this excellent piene of work represents a real contribution to our scanty knowledge of this common bat. Work was done primarily in the Mammoth Cave region. Some information was at last gathered on the mysterious problem of where this species goes when leaving the caves in spring. He had three recoveries from central Indiana and one from Ohio. He thinks that the males mostly stay in the cave region. He found hundreds active in remote regions of the caves in summer, and found that there was frequent turnover in individuals. Perhaps the males spend the summer wandering from one cave to another. Hall also puts forth the idea that the bats find their way about by traveling the watercourses, and he includes a map of such a postulated travel pattern. This idea looks so intriguing that one of the graduate students at U. of Ky. is setting up an experiment to test it. Several pages are devoted to a consideration of the populations over the entire range of the species. Four large wintering concentrations of 100,000 each are known (two in Ky. & two in Mo.). All other colonies contain only a few thousand or less.

CORRESPONDENCE

DAVIS, CALIF. The remarks on histoplasmosis and rabies in the April issue have prompted me to join in the discussion with a few facts which I hope are more encouraging to bat collectors and banders.

I believe that most of the bat banders and workers in the central and western parts of the U. S. and Mexico have been exposed to histoplasmosis. They have contracted a mild infection which did not display noticeable symptoms and now have immunity. If many of these people, such as Dr. Koopman, had sensitivity tests they would show a positive reaction. I do not mean to imply that histoplasmosis is a disease to be discounted, but it helps to know that it is rarely fatal. It is present not only in caves, but also in barns, chicken houses, and basements of houses. If anyone is worried about this disease I would advise having a skin test to determine if immunity is present.

I would like to take issue with some of the statements concerning the bat rabies problem. I think that the figure of "15%" infection with rabies in the Las Cruces Citizen is a misleading interpretation by the newspaper. This figure may apply to the number of bats examined that show antibody titers against rabies, but does not indicate the number of rabid bats. Fifteen per cent is a noticeable epidemic by anybody's standards and if present in a bat population would do the work of the people favoring control. I would like to be corrected by Denny if wrong, but I further believe that the surveys conducted so far cannot be interpreted to include estimates of incidence of diseases on a statewide basis. I believe that the number of rabid bats, at least in California, to be less than one per cent, with a slightly higher percentage of bats showing antibodies against rabies.

The bat rabies scare has already caused initiation of a few local mass extermination programs in California. The people involved do not usually think about building bats out, but think that gassing them will do the trick. This sort of program is hard on the taxpayers' money

since bats come in successive years, and extermination procedures must be repeated. Perhaps I am a bit bitter because I have had a few favorite collecting sites destroyed and have lost some good banding data, but I would appreciate seeing more accurrate accounts of the bat rabies problem rather than scare articles. - Albert J. Beck.

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BAT DESTRUCTION NOW A SPORT ?

A spelunker reported to Jack Stellmack, Editor of NSS News, that the American Legion Magazine, October, 1962, p.8, carried the following story under Rod and Gun Club, for the man with an interest in the Great Outdoors:

BATS IN YOUR BELFRY? If you want to try something new in shooting, find yourself an old barn or building in which bats have taken up residence. As they pop out of unsuspected openings at dusk, they will provide you with the most exciting shooting imaginable... Also the toughest. Even expert winshooters find it hard to get a bead on the little monsters as they zig and zag at different altitudes. One shooter, who goes on bat safaris regularly and who has tried hitting them with every kind of shooting iron, from a 12-gauge double to a .22 smoothbore, says that the most practical loads are .22 shot cartridges or .410 gauge in the 2½ inch size. His favorite gun is the Remington 572 pump because it permits him to get his shots off quickly and the magazine holds 15 cartridges.

The type of vandalism described here is similar to that of the little boys who shoot all the toads and frogs in the pond. There is nothing illegal about it. The tragedy is that this magazine should advocate such childish destruction. Likely the story was written in innocent ignorance with no harm intended. If you wish to comment to the editors the address is: American Legion Magazine, 720 Fifth Ave., New York 19, N. Y.

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