

BAT BANDING NEWS

Volume 4: Numbers 1-4

1963



DARN THESE ARTIFICIAL SPIDER WEBS

That seems to be what this little brown bat is saying after his encounter with the mist net used by the University of Kentucky team of workers at Mammoth Cave National Park during Operation Chiroptera in August and September, 1963. Story in Volume 4, Issue Number 4. Photo by Roger W. Barbour.

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

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NEWS & CHATTER

The gate which Ralph Ewers put at the entrance to Carter Cave is a magnificent structure. Really an excellent piece of work. It is likely to serve the purpose of protecting the cave and the bats from the casual vandals who wander in. At the same time it allows any interested person access to the cave. A key is available at the lodge which is open 24 hours a day, year around. Anyone who wishes to visit the cave signs up and borrows the key.

Unfortunately, the rear entrance to the cave is still open. Ewers plans to gate it when the money is available. The first gate cost him about \$100. (very cheap for such a structure), but so far he has collected only about \$50. This is so discouraging that the prospects of raising the \$1000 to buy the M. grisescens wintering cave in Missouri look pretty poor.

Once again I have encountered the problem of getting bands anodized. A graduate student here at Kentucky is doing a homing study and wants some bands colored. He took some to the only metal plating company in Lexington. They fooled with them for a while and then said that it could not be done. This is the same story that Dr. Hitchcock got at a couple of metal plating companies in Vermont. Since I have seen bands that Bryan Glass has had anodized in Tulsa, I know it can be done. I phoned someone in metalurgy at the U. of Ky., and asked him about it. He said that the process was to oxidize the surface of the aluminum and then dye it. If anyone has any suggestions on how to do this without dealing with metal plating companies, I would be glad to hear about it.

At the international convention of bird banders at Ithaca, NY, last summer the question of metal for bands was discussed. It was reported that several countries use monel metal for sea birds (aluminum gets numbers worn off with sand in a few years). The wearing properties were reported good, but "two cases of decay due to electrolytic action were reported. Further experience is desirable." The Ring, 32:123, Aug., 1962.

Back issues of Bat Banding News are always available. Since they are mimeographed they can be reprinted whenever necessary. Because the cost is almost nothing, I have been sending them free to anyone who asks for them. This is a big advantage over printing. The question of printing the News has come up, was discussed and discarded. The cost per issue would be about one hundred times what it is now.

The question of whether or not Bat Banding News constitutes publication came up about two years ago, and has caused considerable difficulty. It has been my intention that this should no more be a publication than would be a personal letter, and I have wanted to write the sort of information that workers talk about when they get together, i. e., what they are doing and what they are finding out. Also the sort of speculation and ideas that a person wouldn't consider publishing. Then when Tuttle wrote an article for me on the bats of eastern Tennessee, he requested that I omit the account of one species because he wanted to publish that information in the Journal of Mammalogy, and had heard that the Journal accepted only original work. I wrote to Manville, who was then editor, and asked him about this point. He said that the question is a knotty problem, that the News fits some of the qualifications of publication: it appears on a regular schedule, and is distributed to workers in the field.

Bat Banding News appears quarterly: January, April, July & Oct. Subscription rate is \$1.00 for two years. All back issues available upon request. Wayne H. Davis, Zoology Dept., University of Kentucky, Lexington, Ky., U. S. A.

I had always had the idea that ~~there may be questions about this~~ that a mimeograph did not constitute publication. The question being raised has had the unfortunate effect that I have refrained from giving out ~~certain~~ information that readers would have been interested in. For instance I did not mention the age of the record Eptesicus of Hitchcock's which was captured and skinned last winter, and I have not given any specific information on where or how far the little brown bats in New England travel. I have presented the latter at a meeting of the mammalogists. I would appreciate hearing your comments on this situation.

One new bat bander: Philip Leitner, Biology Dept., Saint Marys College, Saint Marys, California.

THE NUMBER TWO BANDS

Since many banders are now using the no. 2 size, it seems desirable to point out some recent observations concerning them. Among several thousand returns I have never seen one of these bands imbedded in the flesh. Apparently they are large enough and loose enough that they do not bind. In this respect this is good, but in another it is a disadvantage. A band which is closed loosely can slip back to the elbow. Then when the wing is folded, the open lips of the band can occasionally get over the fifth metacarpal, which is very thin at its distal end. The bat is then unable to fly until the band slips back down to the wrist. Then the band soon slips off entirely and is lost. Since discovering this, I have been putting the bands on tight enough that they cannot get over the last finger of the bat.

Also I have seen several of our bats on which the band has gone over the elbow onto the humerus. These have been in excellent shape. No chewing and no irritation. Since irritation seems to be caused by the action of flight, one would expect least trouble when the band is closest to the body. I have since put a few bands directly on the humerus. They seem all right there, and it might be worth testing. The only disadvantage seems to be that the bands would not show up well in a cluster.

With pipistrelles the no. 2 band presents the problem that it slips off over the wrist rather easily. I have been clamping the band tightly on them and do not expect any to be lost. Pipistrelles are such weak flyers that band injury is very unusual, and I do not expect any difficulty from the tight bands.

MYOTIS SODALIS PROBLEMS

I have some pleasant news to report on the problem of what is happening to the Myotis sodalis of the Mammoth Caves National Park region. As has been mentioned before, the huge colony of about 100,000 which winters in Coach-James cave system faces eviction because the cave is being commercialized, and lights have been strung down the passage where the bats are. We have been wondering what would happen to the bats. It now seems as if perhaps they are moving into the protected caves of the park.

On November 23, 1962, I visited several caves in the park including Long and Dixon. The populations were much larger than what I had remembered from February, 1957, and than what Hall reported in his recent paper. There were probably about 10,000 in Dixon and perhaps twice that in Long. I wrote Hall and he replied that he had noticed that the populations seemed to be going up in recent years. Someday we will examine some bands to see if the bats really are the ones from Coach-James.

BAT BANDING AT THE UNIVERSITY OF ARIZONA

SPECIES	1952	3	4	55	56	57	58	59	60	61	62
Chilonycteris								7	6		
Pteronotus davii								31			
Choeronycteris							14				1
Leptonycteris			611	46	105		206	3	1		
Macrotus calif.	10	82	87	116	23	13	474	613	244	644	461
Myotis volans					54		42		7	7	74
M. subulatus									1	2	6
M. occultus										42	
M. keenii									4		
M. yumanensis								88	38		
M. evotis					4		38	1	1		
M. californicus					2	1	30	3	36	18	31
M. thysanodes				4	7	5	72	115	382	189	285
M. velifer	2	693	272	1046	326	607	7094	3640	3543	414	407
Eptesicus fuscus				93	146	8	368	295	188	347	288
Lasionycteris				2		8	6				
Lasiurus borealis					18						
Lasiurus cinereus				23	15	1	96				1
Plecotus phyllotus	28	60	55	5			5		15	14	107
Plecotus townsendii	28	60	55	22	18	190	231	320	1040	402	
Antrozous pallidus				5	9	11	241	289	437	248	230
T. brasiliensis	2	111	19	812	394	2900	1334	9513	16486	16256	24778
T. femorosacca							59			14	7
Pipistrellus hesperus				9	74		223		533	232	386
T. molossa				54	29		5			3	
Eumops perotis							14			5	
TOTALS	14	914	1049	2265	1228	872	10511	14829	22192	19475	27464

Totals by species:

Chilonycteris	13	Myotis californicus	121
Pteronotus davii	31	Myotis thysanodes	1009
Choeronycteris	15	Myotis velifer	18044
Leptonycteris nivalis	972	Tadarida femorosacca	80
Macrotus californicus	2767	Pipistrellus hesperus	1457
Myotis volans	184	Eptesicus fuscus	1733
Myotis subulatus	9	Lasionycteris	16
Antrozous pallidus	1470	Lasiurus borealis	18
Tadarida molossa	91	Lasiurus cinereus	136
Eumops perotis	19	Plecotus phyllotus	147
Myotis occultus	42	Plecotus townsendii	2366
Myotis keenii	4	Tadarida brasiliensis	69905
Myotis yumanensis	126		
Myotis evotis	44	GRAND TOTAL	100,813

This banding work has been done by E. Lendell Cockrum and his students and associates at the University of Arizona. Most of the banding has been done in Arizona and Sonora. Certainly is an impressive looking list of species. Until the last few years several of these have been considered to be very rare bats.

CORRESPONDENCE

SILVER CITY, N.M. I am revising my thesis on Myotis velifer for publication. Also Cockrum and I are working on the natural histories of the emballonurids, and Gordon Bradshaw is doing the natural histories of the Phyllostominae. Bruce Hayward.

STILLWATER, OKLA. I am presently working under Dr. Glass here on a project with Tadarida. During this past summer another student and I banded 10,000 young in the western part of the state. Alfred E. Perry.

SAN FRANCISCO 5, CALIF. (Western Region, National Park Service). I was recently given a copy of Bat Banding News, Vol. 3, No. 4 by Mr. Rick Gale. I was pleasantly surprised to read that the Tadarida I banded at Carlsbad Caverns National Park still holds the distance record for banded bats. Incidentally, that particular animal achieved that record during its first year of existence, within about four months after its birth. I would have to check my records to determine its age when taken. Because I am still very much interested in bat banding, I am enclosing \$1.00 for a subscription to the News. Richard G. Prasil.

READING, Pa. The published records of movements of M. sodalis in my paper I consider highly reliable. Any records which I had the least doubt about I have not published, and there have been a number of these.

You can find 100-200 pipistrelles in most of the larger caves and fewer numbers in the smaller caves around the park. Eptesicus are rare in the caves of that region. I know of only one summer colony. There are about 100-150 in the attic of the Mammoth Cave Post Office.

My plans for future work in the Mammoth Cave area are limited, because of the distance. I plan to continue some specific works with M. sodalis there. This is observations on hibernating population size in several of the caves. I plan to continue banding about 1000 each winter in Colossal and Coach caves, and recovering bands from previous winters that start back in 1956-57. I am interested in following the sex ratios of these groups and recovery rates from winter to winter in these two caves. I am particularly interested in Colossal Cave for a detailed study of habitat selection, exactness of cluster formation, numbers of individuals from year to year, etc. I believe that this type of problem is something I can get information on with a minimum of visits to the cave, since a lack of undue disturbance is important in this project. As far as summer work is concerned I would find it difficult to spend summers in Kentucky for a few years yet.

I do plan to continue one project in cooperation with Jim Cope along the same lines of our trial run this past September. This involves trying to get information on migratory routes by working several caves at the same time in late summer. We tried this the first week in September at Wyandotte, Ray's Cave, Wind Cave in Breckenridge Co., Ky., and the Mammoth cave area. We all caught a goodly number of bats, but none was caught twice at different places. We will probably try it next summer over a longer period of time.

As for M. grisescens, Nixon Wilson and I are writing up what we have at the present time. Much more remains to be done, especially finding more summer colonies, but I can't see how I can get to it for a while.

I am putting in for a grant for support of a project of locating and studying sodalis colonies in the West Virginia-Virginia area. This is closer to home and I believe the sodalis can be found. John Hall.

SOUTH CHARLESTON, W. VA. (912 Chittum Lane). During the late summer of 1960 and all summer 1961 I collected bats at a small woodland garbage dump near Raymertown, just out of Troy, N. Y. The predominant species was Eptesicus fuscus with an occasional L. borealis. The dump was not burned, and it attracted millions of insects, and the bats came in fair numbers. From Aug. 6 to Sept. 1, 1960, I collected 5 female and 8 male Eptesicus

and one female L. borealis. From April 27 to June 27, 1961, I collected 14 Eptesicus, all females. Nine were pregnant, all with 2 embryos except for one with 3. I took the last pregnant one June 11; its embryos were about 52 mm long. On June 27 I saw a female carrying two young in flight. I wish I had had bands and mist nets in Troy, for I could have banded several hundred Eptesicus. Two mist nets strung across the dump would have taken considerable numbers. Some nights 30-40 bats would be visible in the air at once, and they were continually going in and out of the woods, so that perhaps 70-100 were actually present. I've been in S. Charleston a year and have visited the local dump without much success. At most I have seen two bats at this dump. It is burned, and does not have the necessary insect life. Robert Yunick.

FINDING RED BATS

Several banders, including Mumford, Glass, and Myers, have been interested in banding red bats, but unfortunately the species is quite difficult to capture in numbers. A few are taken in nets, people bring a few in to a university in summer, and a few can be found in caves in Missouri in late summer. However, ~~even if~~ one is willing to spend a great deal of time at it, he is lucky to band a dozen in a season. It was therefore with a great deal of interest that I read an article that I happened to find in the old literature. It is by H. Elliot McClure, entitled Summer activity of bats (genus Lasiurus) in Iowa, and it appeared in J. Mammalogy 23: 430-434, 1942. It is an account of his finding the Lasiurids in the small town of Lewis, Iowa, by inspecting the 1650 trees of the town every other day in summer. He points out that the bats were readily observed because they were "dark brown against the leaves". He recounts 765 observations (46 of which were L. cinereus). He said bats increased with regularity from June 28 to the maximum count of 70 on July 24, 1939. He estimated that he found about half the bats in the village, and that the population was about one per acre.

It sounds as if this method should be worth trying. I have looked for red bats in the trees, but in my experience the reddish-brown dead leaves hanging from or caught in trees outnumber the red bats by several million to 0. Perhaps I just haven't caught on to how to find them. I will be on the lookout next summer. Since H. E. McClure is a subscriber to the News, perhaps he will write in and give us some tips on finding red bats? I could include his comments in the April issue, in time for the summer season.

RECENT LITERATURE

Adam Krzanowski writes to send information on a paper which lists some new distance records for bat flights: Zwei neue weitreichende Wanderungen der Fledermause, by I. Buresch & P. Beron. Izvestiya na zool. Inst. s Muzei, Sofia, 11: 47-57, 1962. Paper records flights of Pipistrellus pipistrellus - 1697 km., Myotis mystacinus - 1950 km., and Nyctalus noctula - 2347 km. Flights were made from the Soviet Union to Bulgaria, all in the SW direction.

Hanak, V., J. Gaisler & J. Figala., 1962. Results of bat banding in Czechoslovakia, 1948-1960. Acta Universitatis Carolinae. No. 1, p 9-87. This paper is primarily a summary of the movements recorded by the banding of 15,202 bats of 18 species in Czechoslovakia. Results are not much different from those found by previous workers in other parts of Europe. Once again I am impressed by the remarkable high rate of foreign recoveries which European bat banders get. For instance, of 4653 lesser horseshoe bats banded, they got 141 foreign recoveries! One of their more interesting

discoveries is that Rhinolophus hipposideros frequently winters in the cellar of the same building in which they spend the summer in the attic. They postulate that this allows the species to populate regions free from caves and mines.

Jegla, T. C. & J. S. Hall. A Pleistocene deposit of the free-tailed bat in Mammoth Cave, Kentucky. *J. Mamm.*, 43: 477-481, 1962. Describes a guano pile and skulls from Mammoth Cave dated at 38,000 plus years. The skulls are Tadarida brasiliensis.

Lenette, E. H., et al., 1960. A fatal human case of rabies following the bite of a rabid bat (Lasiurus noctivagans). *J. Lab. & Clin. Med.* 55: 89-93. Authors state that this is the first instance in which evidence for a cause and effect relationship of bat bite to infection is complete, since the virus was recovered from both victim and vector. Interesting to note that they do not say where this incident occurred. From the addresses of the authors, one gets the impression that it may have been someplace in California.

Davis, R. & E. L. Cockrum, 1962. Repeated homing exhibited by a female pallid bat. *Science*, 137: 341-342. An Antrozous pallidus homed 8 consecutive times from 6 directions from distances of 21 to 68 miles. They conclude that chance alone cannot be a major factor in homing. They say that most likely the majority of the flights were from territory outside the home range, and therefore representing homing from unfamiliar territory. I doubt this. I would not be at all surprised if the bat were thoroughly familiar with the territories covered in this experiment..

HERE AND THERE

R. E. MUMFORD reports that there were many Myotis keenii in the caves of Indiana in September.

JIM COPE was in Ray's Cave, Ind., in November and met a physiologist from Purdue coming out with a bunch of sodalis. Then when he got in the cave he found a hundred or so killed. It looked as if kids had taken a torch made of burlap and burned them out of a crevice.

LYLE CONRAD is making a pilgrimage into the sewers of Washington, D. C., to see if any bats winter there. I learned of this plan when I met him and JOHN HOLSINGER and GREG MARLAND in Franklin, W. Va., Dec. 26. They helped with my annual banding trip to Thorn Mt. Cave. Plans were to meet them and JOHN HALL at Greenville Saltpeter Cave, W. Va., Jan. 26, to do my bat work there, but we got snowed out. Temperature dropped to -21 at Lexington with the snow on the roads. After a few days of 0 weather, I went to Carter Cave on Jan. 29. The temperature had been -30 the night before, and it had been hard on the bats. Perhaps a hundred were seen dead and dying in crevices and on the floor near the entrance.

JOHN HALL went to Hellhole, W. Va., early in January to check on the sodalis population.

HAROLD HITCHCOCK went to Hibernia, N. J. in November. There he ran into JOHN HALL and PHIL KRUTZSCH. He found none of our bats from New England. During Christmas holidays he made what he says was probably his last Canadian bat banding trip, and then went mine hunting in New England. He found two new bat mines in N. Y., 2 more in N. H., and 2 in Me. He also visited an Eptesicus mine in Ct., and made two trips to the Chester, Mass., mine. He says he plans major trips to a couple of our good bat mines in N. Y.

ROBERT GOSLIN reports that he collected a specimen of M. grisescens from Carter Cave, Ky., on Sept. 6, 1931. It is interesting that this specimen has never been reported in the literature, for it is considerably out of the known range of the species. I suppose it was a straggler, but I will be on the lookout for the species there in late summer. I plan to do considerable work there at that season in the future. We may get some interesting information there with the nets. Bat banders who are looking for an interesting way to spend late summer vacation might consider camping out in Kentucky and joining the netting at caves down here.

Cave work at the University of Kentucky this winter has been mainly at Mammoth Cave area and the Carter Cave area where definite projects are underway. However, TOM BARR and I occasionally get out for some spelunking, primarily looking for good caves close to Lexington where some projects could be set up. One afternoon we went to Lee County where we found a couple of fine caves, which contained about 100 each of pipistrelles, M. lucifugus and M. sodalis. Last week I was in a cave only 17 miles from here where I found 33 pipistrelles. I plan to use this to study time of arrival and movements within the cave in this species.

Barr and I were down in Claiborn Co., Tenn., last fall and found a new cave which harbors quite a summer population of M. grisescens. Although they were gone for the winter, sign indicated that the group must consist of at least 40,000. The cave is only about 300 yards long and is within about 100 yards of the road. The colony is partially protected from human disturbance in that one must wade through waist deep water to get in. Seems like a fine place to study feeding range of the colony.

NEXT TIME

I would like to have a summary of activities from each active bander for the year 1962. There are several people from whom I have not heard for some time.

NEWS & CHATTER

Thanks for the fine response to my two requests in the last issue. We got lots of information on anodizing bands. Several people sent samples. The information obtained will be included in this issue for the use of readers.

So many people responded to my request for a summary of their activities in 1962 that I expect I will save part of this for the next issue. I expect many will find this information interesting, so I will use all such information I get. As long as we have this kind of cooperation we will have a newsletter.

I am seriously considering changing the title of this newsletter next year to Bat Research News. I am interested in all phases of bat biology, and I expect most readers are too. Also more than half the subscribers are not banders, but are working with bats in other ways. The subscription list shows that just about everybody who does any serious research with bats subscribes.

Al Beck wants to know what technique can be used to remove bands from bats. He finds Antrozous consistently chew and compress LA bands until they cause injury and become illegible. He says he is now using #2 bands and is satisfied with the results. In answer to his question, I know two successful methods. Dr. Hitchcock takes a pair of fine scissors, puts the closed points just inside one end of the band, and opens the scissors. It sounds as if it couldn't possibly work, but it does. A method I have often used with good success is to run two wires (or both ends of a wire) through the band, grasp each wire, and simply pull the band apart. The wire used is the copper wire on which bands are strung. Neither method has been tried by us on any other than #1 bands. They may not work on heavier bands.

Everyone knows that flooding in some caves can be dangerous, but how dramatic it can be is rather awesome. Apparently the flash flood that drowned the two veteran Indiana spelunkers last year was rather spectacular. On March 16 I got to see how impressive a cave flood can be. I arrived at Carter Cave at noon. It had been raining all morning, steady, but not very hard. I was surprised that the stream was as yet no higher than normal when I entered the cave. Aware of the danger, I planned to stay within sight of the stream and the entrance. I had only about ten minutes work to do in the side passage, and I did it first. When I returned to the stream, it had risen noticeably. I then stood in the stream within sight of the entrance and examined the bat clusters for bands. Within twenty minutes the water was so high that I quickly left the cave, and had to wade water a foot deep to get out. At 2:30 I looked at the entrance and the water was over the top of the gate. It had risen 4 feet in two hours. The muddy roaring river coming out at that time was an impressive sight.

We are still getting favorable results regarding the injury problem with the no. 2 bands. I have previously reported that Myotis returning to a mine the next winter show no signs of injury or discomfort. However, there is the possibility that injured bats may not be able to return and may die. Data gathered by Hitchcock have now pretty well dispelled this possibility. At an iron mine in February he took a random sample of 347 bats and found 245, or 70.6%, banded. Since survival rate to maintain a population need be only 66.7% per year, this indicates the banded bats must be surviving as well as do the others.

Bat Banding News appears quarterly: January, April, July & October. Subscription rate is \$1.00 for two years. Waynd H. Davis, Zoology Dept., University of Kentucky, Lexington, Ky., U. S. A.

The demand for back issues of the News is high, and I have run into a problem. Some old stencils have been lost and I will have to have them retyped before I can reproduce a couple of issues. I have had the secretary help with this, but she is so overworked that I do not want to ask her to do any more. Perhaps someone who wants some back issues would volunteer to type some stencils?

I have received several comments about the problem of what constitutes "publication". Charles Mohr writes that he --"--appreciates the work involved in your publishing BAT BANDING NEWS". Al Beck comments: "I believe that Bat Banding News does constitute publication, no matter what the method of reproduction. It reaches a large enough group on a regular basis. I prefer keeping it as you have designed and maintained it. A newsletter which contains suggestions, new ideas, and a running account of 'who's doing what'" is more valuable to me than another journal. There is already too much material in journals that should rightly be in a newsletter of this sort. Please keep BBN informal and useful!". I think the most appropriate comment on the subject comes from Bob Martin. He points out that the CDC Newsletter is similar in all respects, and it is not considered publication. He says they give information prior to publication and one must write to the informant to get permission to use material. Bob says that this might be a good precedent for us to recognize in stating our contention that BBN is not a publication. I agree. I suppose that policy is up to the individual editors of journals. They could turn down a manuscript on the basis that material had appeared in BBN the same as they could reject it for any other reason. However, I do not expect that such would ever happen.

According to the NSS News the book on the caves of California has appeared. It has long been held up because of the realization that publication would lead to undesirable increase in traffic and cave destruction. For this reason its distribution is to be limited to "NSS--members, --students of accredited institutions, --conservation organizations." This seems incongruent with the note that price "reductions are available for quantity orders". The book is available from Dr. W. R. Halliday, 1117 36th Ave. E., Seattle, Wash. Price is \$4.70.

NSS News mentions a register put in a cave in Berks Co., Pa., After three months and five days it was found to be full. It contained 284 names plus several clubs. This is an example of what spelunker pressure can be.

We have been considering putting out a mimeographed Bulletin of the Institute of Speleology. This would carry news of what is going on in cave biology here and elsewhere. If you would be interested in such, write to Dr. Thomas C. Barr, Institute of Speleology, Funkhouser Bldg., University of Kentucky, Lexington, Ky.

Following the article on finding red bats in trees I received comments from several readers who had tried the method in the past with little success. D. H. Baldwin writes that he has been trying it for two years and has found two bats. I now have something else, though, that may be worth investigating. A biology student here, who was raised on a farm in Carter Co., Ky., has told me that in the fall bats swarm about the corn cribs on his farm. Since then I happened to be reading an article in J. Mamm., 1940, Vol. 21, p 424 by J. B. Lewis on the mammals of Amelia Co., Va. He says that Lasiurus borealis in late summer and early fall congregate "in large numbers" about corn cribs to feed on grain moths. Our biology student had also mentioned that his bats were feeding on moths which emerged from the crib. All right, dear readers, let's check this one out! I don't really expect much success, but since I will be working in Carter County this fall I will stop by and look at these corn cribs. In Lewis' article he mentioned

that he caught "considerable numbers" with a net at a corn crib. With modern mist nets, plus things like that monstrosity of a dip net I invented last summer, the possibilities here are worth investigating.

This summer I plan to build another hand net or two, and hope to improve upon my first model which was such a success. Its frame was a piece of $\frac{1}{4}$ inch steel rod 10 feet long. This made a net a yard in diameter. If a net were much larger, the steel frame would be too heavy. I need better material. Have you seen these fish landing nets which have come out in the last couple of years? The frames are of an aluminum alloy which seems to weigh almost nothing but is extremely strong. Does anybody know if this material is available on the market? If I am not able to find it, I will write to Alcoa or Reynolds and see if they would be willing to supply it in small quantities.

I continue to receive requests from state health officials for information concerning the migration of bats. The latest, the 8th such letter in the past two years, comes from a D. V. M. in the Animal Disease Laboratories of the State of Nevada. His laboratory has begun a survey of rabies in bats in Nevada, and he requests "--data relative to the migratory habits of the various bat genera ----. I feel that we could then make a much more intelligent approach to our problem." I answer such letters by supplying as much information as we have. However, the only North American bat in which migratory patterns have been worked out is Tadarida brasiliensis. All other published information on migration of our bats is extremely fragmentary. For the benefit of the public health people I would like to have a review paper on the migratory patterns of Tadarida brasiliensis, bringing together the findings of Glass, Villa, Cockrum, Herreid, Dick Davis, et. al. Would someone care to help out by doing this?

Does Myotis lucifugus ever really winter in buildings? I have always doubted that it does. I expect the problem of humidity would be too much. The occasional recovery sent in in winter may be from a bat which died last summer and was found in the house in winter. Live bats brought in in the cities during winter are nearly always Eptesicus, even where Myotis lucifugus is far more common in summer. However, recoveries of some of the more than 60,000 M. l. that Hitchcock and I have banded in New England have now turned up two or three apparently authentic records of live ones in buildings in winter. Hitchcock writes the finder for particulars on all winter recoveries, and he has learned that some were found alive in buildings in winter. However, since the species is known to move from one cave to another occasionally in winter, sometimes over rather long distances (Griffin, 1940), I suspect that these were stragglers, rather than bats actually wintering in buildings.

I have applied for an NIH grant to study colony behavior of Eptesicus starting this summer. Plans are to work out the feeding range of the colony, determine whether a young suckles only its mother, and determine whether it is the yearlings or the old adults which move out to new colonies. Also, since physiology is the only way to heaven, I plan to do some blood work with summer M. lucifugus.

During the past winter at Carter Cave I have been doing some work with natural waking patterns in bats, and have found some striking differences in different species. Pipistrellus is the most unusual in that they go to sleep in one spot and really stay there. Some of those that I marked on Feb. 9 are still in place now in mid-April. Other species of bats there move frequently. It is just a guess at this time, but I kind of suspect that Myotis sodalis just might move every night. Next winter I will find out. We have found some really wierd things with M. sodalis there this past winter. For instance the over-all sex ratio in winter is 1:1, but different clusters in the same room have strikingly different sex ratios.

The range in different clusters is from 21% males to 78% males. Even stranger is the fact that the ratio within clusters changes from week to week, even in mid-winter. I have not yet tested it, but I expect that these changes are quite significant. These findings are so interesting that I am now working on a grant proposal to study behavior of the bats which hibernate in Carter Cave.

ANODIZING BAT BANDS

Presented here is the information which I have received from readers concerning the problem of anodizing bands:

From Jim Anderson, Naturalist, Oregon Museum of Science and Industry, 4015 SW Canyon Rd., Portland 1, comes the following:

"The Portland Anodizing Co., 660 N. Thompson, Portland 17, Ore., put me on the road and into the banding program with what not only appears to be a properly 'worked over' band, but a selection of colors as a bonus. It appears the anodized band has not only the benefit of color, but also of hardness and smoothness of the surface. Perhaps the process will harden the surface of the band to such an extent that the bats will not be able to penetrate this new surface, thereby creating the solution to the chewing problem."

From Al Beck: "Why hasn't anybody contacted Alcoa or Reynolds about the problem of coloring bands? They advertise the usability of aluminum products and claim to be able to do anything with them. They also should be able to color large numbers of bands for little or nothing. Perhaps they could come up with a better band with more legible numbers! "

Several people sent samples of anodized bands. From Hitchcock/^{came} samples of the finest workmanship. It had been done by The Aluminum Finishing Co., 569 Park Ave., Bridgeport 4, Ct. A letter gave the following information: Price 1 cent each or packed on wires 20 cents/ 18 inches. Bands should be strung on heavy aluminum wire, knotted at either end. Due to the size of the tanks, wires should not exceed 18 inches of bands. An extra 3 inches at each end is needed for attachment.

From Anthony Ross at the University of Arizona: A local metal plating man did thirty thousand for us last year for \$50. Later he informed me that he could do that amount for \$20 and still show a profit. If there is no need to keep the bands in consecutive order that amount could be done for under \$5 in about $\frac{1}{2}$ hour. The process involves oxidizing the surface of the bands and then submerging them in regular Rit dye. You have to substitute aluminum wire for the copper wire which corrodes the tank. It would be nice if the Fish & Wildlife Service would change over to aluminum wire. The pH and temperatures of the solutions are not known to me at this time; however, if you are interested I will be glad to obtain this. Apparently this coating can be done by anyone with little in the way of special equipment."

James C. Haught, Box 221, Funkstown, Md., has become interested in helping with the problem. He has sent me several strips of aluminum which he stained with ordinary biological stains such as eosin, fast green, etc. They look good! He described his process:

1. Clean the aluminum to remove oil film.
2. Prepare electrolyte. 165 g of sulfuric acid and 30 g aluminum sulfate in 1000 ml distilled water. Keep at 80-85°F. It is a good idea to use

air agitation or magnetic stirring to get good electrolysis. There is a surface-to-solution ratio but this is not critical when anodizing bat bands. Dr. William Guy, College of William & Mary, suggests adding 30 ml of glycerol to the above solution.

3. Time: variable and can be adjusted for desired color and thickness. I would suggest from 30-60 minutes.
4. Current: 12-16 amperes/square foot of anode surface. Direct current. Requires about 15 volts. A single band would require about 0.1 ampere. Both the anode and cathode can be aluminum. A carbon rod can be used for a cathode. Until you gain skill, watch the band because aluminum is removed from the anode.
5. Dyeing: Thoroughly wash and place band in a 1-2% solution of dye. Do this in water bath at 150 degrees for about ten minutes.
6. Sealing: Seal for 5 minutes in a solution of nickel acetate 0.5%. Adjust pH to 5.5-5.8.

Mr. J. H. Powers, Development Engineer, Alcoa, said advice and kinds of dyes could be obtained from: Carbic-Hoechst Corp., Westfield, N.J.; Sandoz, Ind., 61 Van Dam St., New York 13, N. Y.; Ciba, Inc., 627 Greenwich St., New York 14, N. Y.

One of the new fluorescent dyes might be interesting. Also radioactive substances could be used. I will be glad to work on any other aspects of anodizing.

If we can get anodizing to the stage where it can be done easily in one's own laboratory, the process will be most useful. After I received all this information from readers, Roger Barbour and I have put in quite a few hours with the chemicals and electronic equipment. So far we have had no success. However, after the many samples I have seen, I cannot agree with the metal plating companies which tell us it can't be done. Bryan Glass says it is kind of tricky. Whatever the trick is it must be rather subtle.

OBSERVATIONS AT GRAPHITE MINE, GRAPHITE, N. Y. Robert B. Peck

On March 22 I examined a sample of 100 Myotis lucifugus in the mine at Graphite. My findings confused me, since I determined the sex ratio to be 60 females to 40 males. This seems to oppose the findings of Mohr in Pennsylvania, Griffin (1940) in New England, and Hitchcock in Canada.

More than twenty times when attempting to remove a bat from a crack, two were removed. In each case the two bats were attached by hooked feet. In each instance the bats were paired as male and female. - Paul Smiths College, Paul Smiths, N. Y.

OPERATION CHIROPTERA calls

Operation Chiroptera is what Cope/his project of netting transients at the caves in late summer and fall in Indiana and Kentucky. The name follows the bird banders' Operation Recovery in which teams of bird banders operate stations during fall migration to net birds. With their numerous stations along the east coast they hope to recapture birds at different stations, and thus get information on speed of travel and lines of migration. The bat project is planned to work out similar information. Wyandotte Cave seems to be the congregating center for transients. Cope has banded many of them there. I have picked up some of these last winter at Mammoth Cave National Park and at Carter Cave. Cope has applied for a small grant to enable him to work on the project for about 10 days in succession this summer. It would be nice if we could get some work going at

some of the other caves at the same time. Anyone interested in spending a few days vacation camping out in Kentucky and netting bats should contact me or Cope. Cope and I will get together sometime to lay definite plans. I hope to have more about this in the July issue.

We must get the anodizing process down to a simple home laboratory procedure before this summer's Operation Chiroptera. We hope to be able to use different color bands at all the different major caves worked in this area. This way one could easily spot a foreigner among a large cluster of locally tagged bats. Unless we get this done, foreign recoveries at the caves where banding is being done will be very few and will not be very reliable. During the past winter I made several nice recoveries at Carter Cave, including some of Cope's bats and one of Tuttle's from Tennessee. This was done by inspecting the clusters each time I was there and picking out the small number 1 bands. Any of the recently banded bats, carrying the same type of no. 2 band as the several thousand which I had been tagging there, would have been missed. I made no attempt to check any but the small bands. Incidentally, small bands are quite difficult to spot in a cluster of M. sodalis. Many are missed. On the other hand colored no. 2 bands really stand out. A graduate student here is working on a homing project and using fingernail polish on bands. They are easy to spot.

BANDING IN NEW ENGLAND

Perhaps readers would be interested in a summary of the banding which Hitchcock and I did during our NSF project Feb., 1961, to Feb. 1963. The following is taken from the final report to NSF which Hitchcock prepared:

<u>Caves & Mines:</u>		<u>Summer Colonies</u>	
Vermont	24,520	Vermont	9,573
New York	16,096	New York	2,335
Maine	48	New Hampshire	2,486
New Hampshire	530	Maine	1,421
Massachusetts	704	Massachusetts	1,464
Connecticut	91	Connecticut	3,690
New Jersey	6	Rhode Island	1,201
Canada	648	Canada	100
Total	<u>42,643</u>	Total	<u>22,270</u>
Grand total	64,913		

The great majority of these were Myotis lucifugus. All other species wouldn't make up but about two thousand of the total.

HERE & THERE

MERLIN TUTTLE has been in Uruguay this past year collecting mammals and other specimens for the American Museum of Natural History. He writes that his father visited his large winter colony of M. grisescens. He found large sheets of ice in the large chamber near the entrance where about 100,000 usually hibernate. There were hundreds of dead on the floor and no live ones. Farther back in a warmer passage he found a cluster of about 100,000 and several smaller clusters.

PHILIP LEITNER has begun banding Tadarida brasiliensis and Antrozous pallidus in northern and central California as a part of a study of the physiology and ecology of these species.

LYLE CONRAD says it looks as though the Plecotus of Hoffman School Cave, W. Va., have had it. This is certainly a shame, because this was probably

the largest colony in the East. When I saw it in 1947, it seemed to contain over 1,000 individuals. This is a cave that we had hoped to save, but were too late. There is now only one sizeable colony of Plecotus townsendii remaining in the eastern U. S. It contains over 500. This cave is the only one where one can depend on finding the species in the East. It is a huge attractive cave which is rapidly becoming a spelunker trap (owner estimated to Conrad "3,000 cavers per year" now). Since this bat will not tolerate disturbance, it seems likely to be lost in the near future.

Conrad reports an answer to his questionnaire concerning conservation of cave organisms as follows: "My field is taxonomy; I'm not much good as a crusader. Extinction is a normal biological phenomenon; look at the fossil records." I would like to know who this was. I have never known any reputable taxonomist who has such an attitude. I have always thought that the Plecotus townsendii in the East was a relict population which was on its way out as a normal course of evolution. I would not favor steps to try to interrupt such a process, and would not be upset if the population disappeared entirely in a few million years. However, I do object to Man's destroying it.

PAUL PARMALLEE at the Illinois State Museum says that he is still banding a winter colony of big brown bats in the lead mines in northwestern Illinois. He has been working with them for seven years now.

HAROLD HITCHCOCK & BOB MARTIN visited one on the N. Y. mines on snowshoes in March. The snow was 3 feet deep, and the hike in is over a mile.

WILSON BAKER is now a graduate student in the Forestry Dept. at the University of Georgia. He writes that he is interested in doing some bat work there. He says that the Myotis in the caves are not common and do not form clusters.

MONROE HOLMES says he believes there is an epizootic of rabies in bats in Oregon. He says they have not been able to determine the full extent of the problem, but hopes future studies will ascertain the health hazards. He says he is having a problem identifying bats due to lack of a complete key. He would like to obtain a key if one is available. Seems to me that Hall & Kelson's book has keys to everything.

GRTTING MYOTIS IDENTIFIED

Several people seem to have had problems in getting Myotis identified correctly. This should not be a problem, because there are only 20 species in North America, and only 13 north of Mexico. All species are quite distinctive and easily recognized by anyone who is familiar with them. Apparently the problem is that few people are familiar with these bats. None of these few is at a major museum at the present time, and most people send specimens to the larger museums to be identified. The people most competent to identify North American Myotis include Russ Mumford at Purdue, myself, and W. Gene Frum, 311 Holswade Dr., Huntington, W. Va. I expect that Denny Constantine probably also knows the Myotis, and there may be others. I have collected in the field all the species except the three known from the type specimen only, from localities in Mexico and Central America. I expect that Mumford and Constantine have too.

RECENT LITERATURE

Menaker, M., 1962. Hibernation-hypothermia: an annual cycle of response to low temperature in the bat Myotis lucifugus. J. Cell. & Comp. Physiol. 59: 163-173. This is an excellent piece of work which brings to light the fallacy in our idea that bats hibernate as well at one season as another.

Menaker found that, in contrast to winter bats, those taken in summer and put into hibernation at 3°C did not have the ability to come out at that temperature. He found that they were able to arouse from hibernation at 7°C, and he points out that this species could not occupy the caves and mines in the Northeast in summer because they would not be able to arouse themselves. If they entered a mine and went into hibernation they would be trapped.

Davis, R. B., C. F. Herreid, & H. L. Short, 1962. Mexican free-tailed bats in Texas. *Ecological Monographs*. 32: 311-346. I will not attempt to review this paper which contains so much information. One of the interesting findings was information suggesting that this species migrates in flocks.

BANDERS' WORK IN 1962

The annual roll call of the bats in the storm sewer of St. Cloud, Minn., was taken as usual by H. H. Goehring. This time he had newspaper publicity which got onto the wire service. This was the 11th year of banding. Two of his Eptesicus returned after 10 years, and 5 after 9 years. Two were taken in attics of homes after spending several winters in the sewer. One returned to the sewer after spending at least one winter in an attic. Because of newspaper publicity the residents of St. Cloud report bats they find in houses to Goehring. In one city block he has found bats in the attic in winter in three homes. He also finds big brown bats in the second story of a hardware store which is cold but not freezing; the coal bin of a camera shop, which has frost on the outer wall; and the theater, where cold parts are used for hibernation. Bats have been found in each place from about Christmas to April.

Don Smith at Carleton University in Ottawa, Ontario, reports the following banding for 1962: Myotis lucifugus: 583; M. keenii: 28; M. subulatus: 6; Pipistrellus subflavus: 3; Eptesicus fuscus: 9; total: 629

Edwin Tyson banded bats on Barro Colorado Island, Canal Zone. All bats were taken by mist net except his Molossus and Myotis nigricans. He is working on home range. The following bats were banded:

Artibeus cinereus	78	Noctilio leporinus	1
Artibeus jamaicensis	363	Peropteryx macrotis	1
Artibeus literatus	23	Pronotus rubiginosa	24
Carollia castanea	23	Saccopteryx bilineatus	5
Carollia perspicillata	40	Tonatia bidens	8
Cormura brevirostris	3	Tonatia sylvicola	2
Desmodus rotundus	2	Uroderma bilobatum	3
Glossophaga soricina	19	Vampyressa minuta	8
Molossus colibensis	42	Vampyressa major	1
Myotis nigricans	682		

Al Beck banded the following:

Myotis yumanensis	1308	Plecotus townsendii	48
Tadarida brasiliensis	461	Eptesicus fuscus	26
		Antrozous pallidus	216

He says that he hopes to keep increasing his banding activities. Says he is finally getting some information which does more than suggest the nature of seasonal activity of Myotis yumanensis and Tadarida brasiliensis in northern California.

D. H. Baldwin, Ornithologist at the Royal Ontario Museum reports banding the following bats during 1962:

		<i>Myotis lucifugus</i>	148
<i>Lasiurus cinereus</i>	1	<i>Eptesicus fuscus</i>	3
<i>Lasionycteris noctivagans</i>	2	<i>Pipistrellus subflavus</i>	1

These were bats netted at several bird banding stations by members of the Ontario Bird Banding Association. Bat banding is secondary to the main purpose of the stations. Interest in the bat banding is increasing, and it is planned to continue the project indefinitely. They are especially interested in tagging the solitary species.

Gaston Moisan has visited his population of M. lucifugus at the cave at Desbiens, Quebec, three times during the year. On each visit he captured the entire population, read all bands, and banded the new bats. Bats banded in 1962 were:

February 10, 1962	227 males	58 females
May 1, 1962	92 males	12 females
November 17, 1962	105 males	49 females

He reports males return in good numbers, but females practically never.

John Tyers, Chief Park Naturalist at Wind cave National Park, Hot Springs, South Dakota, reports the following:

Banding of Plecotus townsendii began in Jewel Cave in December, 1959. During that month 1136 were banded. In 1960, 542 were banded, and 291 in 1961. In each case effort was made to locate all unbanded individuals in the developed portion of the cave. Only one foreign recovery has been reported. It was taken 4 mi. W of Fairburn, S. D., on the eastern flank of the Black Hills on September 1, 1960.

The past year a survey was made on November 23, and it was found that of 324 bats, 89 had no bands, 83 were banded and showed no signs of injury, and 152 exhibited varying signs of injury from bands imbedded in the flesh. Because of the 65% injury we have temporarily discontinued banding until a more suitable band is available than the # 1 band.

Because the Washington office is the source of our bands, we had hoped these people could be influenced to secure and distribute the improved European plastic band. We have tried to get help through our Washington office in this regard, but attempts have been unsuccessful.

Perhaps you or some of the readers of the NEWS could give me advice on how and where to secure these improved plastic bands.

Editor's note- I have never heard about this plastic band. If they really have a band which is better for bats than anything we have, I would certainly like to know about it. Considerable effort, time and money have been put into the testing of various tags and invention of new ones by people in recent years, most particularly by Dr. Hitchcock. A running account of this problem has been carried in the News. Also the problem of serious injury to Plecotus by banding has been pointed out here more than once, as well as the fact that the # 1 band should never be used on anything much larger than a beetle.

BUILD A BETTER BAT TRAP?

I intend to invent a bat trap this summer which will catch all the bats which fly into a cave. According to the experiences of others, the Constantine wire trap is effective only on Tadarida. I have several ideas, and, if a grant goes through, I will test them and let you know the results.

NEWS & CHATTER

The mammal meetings at Albuquerque have come and gone and were quite a success. As always there were many bat workers there and several papers on bats

were given. One of the most interesting was one by Wiebers and Stones of Purdue on keeping little brown bats in captivity. Until they solved the problem, it has been most difficult to keep these bats for long in an active condition before they get the "shakes" and die. Their secret is remarkably simple: they maintained a high temperature (about 95° F) in the environment. Actually this is quite logical if we just think about conditions in a bat attic.

One of the features of the visit at the University of N. M. was the Euderma specimens. Clyde Jones, a graduate student, has netted four of these remarkable bats down there recently.

It was interesting to talk to the University of Arizona delegation and learn about what is going on down there. There is probably more work in bat ecology going on there than anyplace else. They have made a trap which is a simplification of the Constantine wire trap, and in which they have had fair success with Myotis. They take four 2" x 2"s each 4' long and bolt them together to form a frame. Then they string 20 lb nylon fish line vertically 3/4 inch apart, wrapping it around nails separated at this distance. After stringing, the nails are driven in. A piece of plastic is placed at the bottom to catch the bats as they fall. At the cave entrance plastic or parachute material is used to close all of the opening except the space where the trap hangs.

Roger Barbour and I have received a three year grant from NIH to work on colony behavior of Eptesicus fuscus. We hope to work out the feeding range of colonies, the dispersal pattern of young, determine whether the young suckles only one adult, and other things. We have two graduate assistants also working on the project. We have a most fortunate location for such a project. These tremendous horse farms around Lexington, several of which belong to the University, have numerous barns and other buildings in which bats can be found.

One of our interesting discoveries this summer has been the finding of several colonies of Myotis lucifugus in Kentucky. Except for the mountains, I would not have expected to find this species this far south in summer. Two of the colonies are quite large, containing over 1000 adults in each. An interesting finding was that a high percentage of these bats were males. This is different from anything which has ever been reported before.

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

We have still been unsuccessful in all attempts to anodize bands. Now-
ever I now have what looks like the complete story on the subject from Al
Haar who works for Alcoa. I will get it into the next issue.

This fall we will have two new Ph. D. candidates working with Dr. Barr
on problems in cave biology. One is John Holsinger, well-known speleologist
who has been working on a biological survey of the Virginia caves for several
years. Also coming to Kentucky this fall is John Beauregard, who worked
with Dr. Hitchcock and me on our bat work in New England. He is a graduate
of Middlebury.

As usual the July issue is most difficult for me to get out. I am more
busy than at any other time. I must go to western Kentucky tomorrow for a
few days so must get this all done today.

BAT BANDING IN AUSTRALIA

I am one of the banders enrolled in our C. S. I. R. O. sponsored
Australian bat banding scheme and have been banding for several years. The
species on which I am working are Miniopterus schreibersi and Rhinolophus
Megaphyllus. In addition to this I am carrying out a more detailed study of
the first in one specific colony. This is a cave with some 200- 250,000
at peak populations, and is a maternity group. Unfortunately it is some
distance away, and can only be visited at intervals. We are currently
assembling a series of instruments in the cave wired to a bank of recording
clocks so that we will be able to keep a continuous record of conditions in
the cave and movements of bats therein. -Elery Hamilton-Smith, 17 Helwig
Ave., Montmorency, Vict., Australia.

BAND REMOVAL

I have tried scissors for band removal and found them inadequate for
larger bands. The solution to the problem is a tool which the bird banders
use. It is called Field Pliers, or Snap Ring Pliers, and is available
from Bearings, Inc., which has offices in most major cities. The manu-
facturer is Truarc Retaining Rings Division of Waldes Kohinoor, Inc., 47-16
Anstel Pl., Long Island City 1, New York. The tool is made in many different
sizes, so it is important that one specify the #-12 External size. This will
easily handle bands O-3A sizes. One modification must be made to make them
usable. They open only to 3/32". However one can grind or file away the
metal on one side, the pliers open enough to open a 3A band. These pliers sell
for about \$2.50. - Robert Yunick, 912 Chittum Lane, South Charleston 9,
W. Va.

PLECOTUS IN KENTUCKY

An active colony of Plecotus, presumably P. townsendii virginianus Handley, was observed 29 June, 1963, by R. A. Kuehne and me in a remote cave in northwestern Lee Co., Ky. When first observed, the bats were hanging in two clusters, one approximately 250 individuals, the other about 50, but rapidly dispersed and flew about the cave before a more accurate estimate of numbers could be made. The locality is about 20 miles south of the Powell Co. record cited by Handley (1959, USNM Proceedings 110:203.) This observation is notable because of the paucity of Kentucky records of this bat, and the total absence of information about colony size. This Lee County colony is only slightly smaller than the one at Burkes Garden, Va., which I observed in April, 1962. - T. C. Barr, Institute of Speleology, University of Ky., Lexington.

PLECOTUS IN VIRGINIA

Over Easter weekend I was on a collecting trip to Tazewell Co. At Burkes Garden I noted a colony of P. townsendii numbering about 300. This, of course, only confirms an old record for this species, but in view of their rapid disappearance in W. Va., it might be of interest. This cave is seldom if ever visited by spelunkers. It may become the last stronghold of this species in the Appalachians.

I am still under the impression that other caves in the Tazewell Co. area may contain colonies of this bat. Greg Marland has seen them in another cave there. Maybe we can make a trip over from Lexington next year; It is only about 250 miles. - John Holsinger.

PLECOTUS IN WEST VIRGINIA

I want to comment on the situation of Plecotus in a cave where it has been reported that they are about gone. I visited the cave the past two summers and found at least 1000 adult bats, possibly as many as 2000. The cave contains very few Plecotus in mid-winter. However, in late March and April they enter the cave, and may form clusters near the entrance, becoming torpid and giving the illusion of being hibernating bats. I have banded them in march in a nearby cave and recovered them next day in one of these hibernating clusters. Thus a mistaken conclusion could be drawn if one should visit the cave in March or April and think he saw a lot of hibernating bats which actually were migrating bats, and then revisited the cave in mid-winter and found only a few. -John Hall, Albright College, Reading, Pa.

Editors note. - In the above three notes I have removed all cave names to protect the bats. A later letter from Hall reports findings only 300 bats in the colony, but finding 700 in another cave.

A TAILLESS BAT

Work at M. I. T. and Harvard in the last few years has shown that our bats catch insects in the interfemoral membrane, and occasionally (5%) in the wingtip. It is of interest then to note that this summer we found an old Eptesicus in a church at Clay City, Ky., which had no tail or interfemoral membrane. It looked like an old injury. How does this bat catch food? W. H. Davis.

BAT BANDING IN FLORIDA

The following have been banded during the past year:

<u>Lasiurus seminolus:</u>	2
<u>Myotis austroriparius:</u>	230
<u>Ploistrellus subflavus:</u>	73
<u>Tadarida brasiliensis:</u>	260

I have been especially interested in getting data on movements of free-tails in Florida, and we have had some interesting returns thus far. We have had 12 (5%) recoveries away from the original banding station. During the past couple of years we have accumulated enough information on one Tadarida colony to get some idea of the pattern of seasonal movements.

We have had one exciting experience with Tadarida. In February a colony of about 700 showed up in one of the campus buildings, and the animals were systematically killed and burned in an incinerator. We didn't find out about this until afterwards. The colony contained some of the bats we had banded in another campus building the month before. Two of the bands were saved for us, but we were later told that a number of other bats had bands like the ones saved. In addition, one of the people who was in on the killing said that he saw one bat with a band different from ours. He described it as wider and thinner than the others. It had numbers stamped on it, in addition to the phrase "Acalpulco, Mexico". He did not bother to save this band or even record the numbers. Dick Manville was unable to offer any clues as to the source of this band. Do you have any ideas? If the bat were indeed banded in Mexico, the implications are most interesting. James N. Layne, Biology Dept., University of Florida, Gainesville.

FINDING RED BATS

Since I mentioned McClure's old article on finding numerous red bats in trees in Iowa, I have heard from a number of people about the subject. At Albuquerque I talked to Denny Constantine. He said he goes to western Iowa to get red bats whenever he needs them (he was going the next week). He had got the idea and locality from McClure's article. He walks the fencerow of farms and inspects the bushes and trees. He says he and a couple of others can get about 20-30 bats in a couple of days of hard work this way.

Mumford writes that he has tried it but came to the conclusion that McClure had a site to work where red bats are numerous and perhaps restricted in their choice of roosting sites. Over 15 years Mumford has located about a dozen red bats in trees. Except for two, these were found by accident. Woodlots where he sees several at dusk do not reveal any in daytime. They are just too difficult to find.

Mumford says Dr. Robert Storer, University of Michigan Museum of Zoology, told him that in California workers find many red bats and hoary bats by searching the trees for them. They were catching bats for banding.

Roger Barbour says that he thinks red bats stay only on the tops of the ridges in eastern Kentucky. I asked why and he said because they always appear so high in the sky early in the evening and so must have come from the trees on the ridges. I have noticed this too in W. Va. The first red bats to be seen appear very early and fly at heights almost out of sight (perhaps 200' or more). Much later (20 minutes or so) they come down. As I remember they did not appear so high in Illinois around Urbana where it was so flat, so I wonder if there might be something here. Anyone have any ideas on this?

Harlan Walley wrote that he banded five red bats last summer. They had been taken from trees.

BATS AND CORNCRIBS

I have two other reports about bats gathering about corncribs in fall. Roger Barbour says he thought it was common knowledge about bats doing this. He says he has seen it often, and has shot pipistrelles about the corncrib.

Robert Yunick writes: "The grain crib situation brings to mind a discussion with a fellow worker last week. He described some experiences on his parents' farm near Hurricane, Putnam co., W. Va. He said that in late summer numbers of bats congregate about their corncrib and clean up the moths and other winged insects which frequent the crib. He also said that these and other bats came into the barn and around the chimney during this time. He is going to look for them again this year."

HERE AND THERE

BRUCE HAYWARD is said to be spending the summer in Africa.

RUSS MUMFORD is in Africa for a comparative population study of bats in different forest types.

JIM LAYNE has moved. He is now in the Department of Conservation, Cornell University, Ithaca, N. Y.

GEORGE DECOURSEY, Zool. Dept., Washington State University, Pullman, needs some Antrozous pallidus alive.

ROBERT USINGER, Dept. of Entomology, University of California, Berkeley, is doing some chromosome taxonomy and breeding work with the Cimex bugs which prey on bats, and is getting some very interesting results. We have supplied him with living material from several localities in Kentucky.

JACOB WIEBERS AND ROBERT STONES, Dept. of Biological Sciences, Purdue University, Lafayette, Ind., made observations on a colony of Eptesicus fuscus roosting in a barn near Delphi, Ind., during the recent partial solar eclipse, June 20, 1963. Between 3:30 PM and 6:00 PM the activity of the colony showed no apparent response. At 4:45, the height of the eclipse, the illumination and temperature were at lowest levels, 100 foot-lamberts on a Wesson light meter and 22.5°C, respectively, as compared with earlier readings of 1600 and 24°C, respectively. They would be interested to know if any others made observations of bat activity during the eclipse.

A card from ED SULENIN comes from Japan. He says he is looking for big browns over there. I wonder if they have a rabies problem with Japanese bats.

JOHN SEALANDER is spending a year at Fairbanks, Alaska. He says he heard there are a few bats there in summer and plans to take a few bands along.

BAT RABIES IN SOUTH CAROLINA

The July, 1963, CDC Veterinary Public Health Notes reports a rabid bat from Jasper County, South Carolina - the 34th state to report rabies in bats. The bat was captured after its peculiar behavior of flying into objects attracted attention. The bat was not identified, but it was diagnosed as rabid at the state laboratory and confirmed at CDC.

RECENT LITERATURE

BAKER, JAMES K. (National Park Service, Carlsbad, N. M.), 1963. Fossilization of bat skeletons in the Carlsbad Caverns. Bull. Natl. Speleological Soc. 25: 37-44. Vast deposits of skeletal materials were found in almost inaccessible rooms where bats apparently get lost and die. Most are Tadarida, but some Lasiurus, Myotis and Eptesicus were found.

DAVIS, WAYNE H., 1963. Aging Bats in winter. Trans. Kentucky Acad. Sci. 24: 23-30. Study skins of Fipistrellus subflavus show that young of the year can be recognized during hibernation in the northern part of the range of the species. Apparently growth ceases when bats enter hibernation, and young can be recognized by the epiphyses. Some individuals can be recognized as young at least as far south as Kentucky. Photographs of epiphyses.

HASSELL, MARION D. (Zool. Dept., of U. of Ky.), 1963. A study of homing in the Indiana bat Myotis sodalis. Trans. Kentucky Acad. Sci. 24: 1-4. Seven hundred bats were taken from Carter Cave on October 20, 1962, and released at 12 stations at 12 mile intervals west of the cave. They were tagged with red painted bands. Percentages of returns decreased steadily with distance from the cave.

CORRESPONDENCE

KRAKOW, POLAND. I have just received the Russian journal Animals Migrations, no. 3: 10-12, 1962; there appeared an article entitled: On the present state of knowledge of bats' migrations in the Soviet Union. Because the article is entirely in Russian, I want to tell you about the chief results: During the period 1925-1960, 11,593 bats, of 22 species, have been marked in the U. S. S. R. The longest flight was made by a Pipistrellus nathusii: 1650 km, from the Voronezh reservation to Turkey. All banding has been done in the European part of the U. S. S. R. - Adam Krzanowski.

LAFAYETTE, IND. I see no reason why we should be concerned as to whether Bat Banding News constitutes publication. Can't see how it possibly can. A publication, to my understand, must be printed.

One of my students has been working on bat populations in caves in Washington Co., Ind: He recently found a Plecotus refinesquii in one of them. Have had Eptesicus brought in all winter; they are evidently wintering on the campus in heated buildings; two of them have been banded animals. R. E. Mumford.

LITTLEROCK, CALIF. (Rt. 1, Box 21E). Thanks for sending me all the back issues of BBN which I have read with interest. One does not realize the problems that present themselves until you get involved with banding. At this point I cannot make one suggestion; the boys in the game seem to be working out their problems pretty well. Unfortunately, I am not in a bat banding locale and would have to travel a good many miles to do any. The buttes in the valleys no doubt harbor individual pipistrelles and myotis. Some day I must look into the old mines out Mohave way. Not having someone out here to go with is one drawback. No fun going by yourself.

The rabies deal to me has all the earmarks of the black widow scare that came out some years ago. When you figure all the deaths from bats, black widows and rattlesnake bites compared to our population, it is hardly worth talking about. - Luther Little .

Ed. note: Luther Little is one of the grand old timers of mammal work in California. He worked with Howell, Grinnel and Vernon Bailey. He and Howell probably banded the first bats ever banded. He is much interested in bat banding and became a subscriber when I met him at the mammal meetings.

OPENED BANDS

From EBBA News May-June, 1963, p. 33, I got the following item: "Allen Duvall, Banding office chief (birds), announced he was planning to issue some bands pre-opened, and that bands in sizes 3 and up would be made of a tougher alloy than at present."

I wonder if we could get this done for bat bands? We waste many hours opening bands. And to get a band that they couldn't chew up so easily.



DARN THESE ARTIFICIAL SPIDER WEBS

That seems to be what this little brown bat is saying after his encounter with the mist net used by the University of Kentucky team of workers at Mammoth Cave National Park during Operation Chiroptera in August and September, 1963. Story inside. Photo by Roger W. Barbour.

NEWS & CHATTER

All back issues of the News are now available again, thanks to Sgt. James Hedges and Robert G. Schwab who typed stencils for a couple of missing ones.

Delaware became the 39th state to report rabies in bats according to the CDC Public Health Notes of August, 1963.

A clipping from the Arkansas Gazette of August 5 reports a rabid bat from Little Rock. Harry Stephens, who sent me the clipping, says he thinks this is the first report for the state.

We had quite a rabies scare in Kentucky this summer. A boy in Hopkinsville was bitten by a bat which the Tennessee Health Dept. tested as positive for rabies. The health department in Hopkinsville then gathered up 4 more bats, including 2 red bats, and had them tested at Frankfort. Three were positive. We then went down and visited the elementary school from the yard of which came the bat which bit the boy. It was evident to us from the dead babies (bats, that is) that the building was inhabited. There were several on the ground outside. Upstairs in the school we saw over 20 dead bats, including some adults. In the attic we found a good colony of Eptesicus. Most were inaccessible, but we banded about 80 and brought 6 back to Frankfort. They tested them and declared 5 of them positive.

Old Nickajack Cave, type locality and one of the best colonies of Myotis grisescens still in existence is scheduled for destruction. TVA is going to build a dam and flood it. TVA headquarters in Knoxville informed Dr. Darr that it will be three years before the cave is flooded.

Well, Denny, you dont have to go to all the trouble and expense of searching Iowa fence rows for red bats any more. We found how to take them in fair numbers (12-20 per night) during Operation Chiroptera. But Wilson Baker outdid us. He caught 63 one night at a cave entrance in Georgia!

In July we came up with an unusual find. Among a colony of Myotis lucifugus in an old building at Oakville, Logan Co., Ky., we found one juvenile female M. sodalis. This locality is next to the Tennessee border in south central Ky. Another thing of interest here was that the temperature in the attic of this building was 55°C. That's 131° F. And many of the thousand bats living there were right up in the rafters. This strange old building was covered entirely with sheet metal. And we worked up there for two hours. This is one reason my graduate assistants thought it was a rough summer.

Harold Hitchcock is spending the school year at Stanford studying embryology. His address is Apt. 3, 1806 Higdon Ave., Mt. View, Calif.

We have just had 10,000 bands anodized by a company in Louisville. They did an excellent job, but the cost is rather high- \$100.00. They told us the cost would be very little to anodize the aluminum sheets before they are made into bands. Possibly the stuff wouldnt roll after anodizing, but it is certainly worth a try.

Ever try to open (or close!) a #2 band after it has been anodized? The band is much harder. They actually cut into our plastic openers. And we now have 8,500 anodized bands. It took three of us most of a night to open the ones we used last week.

I have written to both the Gey Band Co., and the Fish & Wildlife Service about the possibility of getting the kinds of bands we need for bat research. Wouldn't it be nice if we had bands with legible numbers, with rounded edges, opened, and in a choice of 4 colors? Think of the time, money and errors that would save!

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

I have a letter from Defenders of Wildlife, Inc., 809 Dupont Circle Bldg., Washington 6, D. C., asking for an "article on bats, emphasizing their importance in nature, their aesthetic and economic value to man, which might be used in our Defenders of Wildlife Bulletin." I declined the invitation, but would like to see such an article written for them. Would any of you do it?

I found out why I had trouble catching bats in a mist net. The nets I had were no good. Their construction is such that they have no pockets for catching bats. I bought them from Bill Davis. I remember now that Myers wrote me once that the nets Davis sells are no good. He says he gets his from Bergstrom in Connecticut- a bird bander. I have been getting good nets from the Bleitz Wildlife Foundation, 5334 Hollywood Blvd., Hollywood 27, Calif.

I heard about a handy bat cage from the Arizona banders. They take a plastic garbage can, line it inside with hardware cloth, and cut a hole in the top. We started to get one and then decided it would take up too much room in our vehicle, so we are sticking with the Myers collapsible cages which we find very satisfactory.

There is an interesting article in Spectrum (Pfizer Laboratories) Vol. 2, March-April, 1963, which Wilson Baker brought to my attention. It concerns bat rabies and the possibility that bats may be the reservoir which maintains the disease in nature. It is not very reassuring to the bat handler. It mentions animals that have died despite high antibody titres.

Last winter I undertook the problem of finding out at long last where the M. sodalis of Carter Cave spend the summers. Although several thousand have been banded there in past years by many different banders, I know of no one ever getting a recovery. So with the help of a faculty research grant of a couple hundred dollars, several graduate students and I made a dozen or so trips up there and banded 17,000 sodalis and 2,000 M. lucifugus. To date we have 8 recoveries of each species. The M. lucifugus are all from southernmost Ohio between Cincinnati and Portsmouth. The sodalis are scattered northward to Columbus, Toledo and into Michigan. After about two more summers we should be able to publish a pretty complete picture of the dispersal of these species from Carter Cave.

Hitchcock and I have been working on our paper on migrations and life history of M. lucifugus in New England during the past year. I have over a hundred recoveries still to be plotted on the dispersal maps, and more are coming in all the time. Though recoveries will probably continue in numbers for the next 10 or 15 years, we have decided finish our maps with this calendar year. We now have a pretty complete picture of where the bats go I think. I hope we can submit this paper for publication next spring.

ANODIZING BAT BANDS

by Al Haarr

Procedure:

1. Solvent clean (acetone)
2. R3 etch (35 gm/L CrO₃ plus 100 cc/L H₂SO₄ dissolve in a L of H₂O). Treat for 5' @ 150°F.
3. Water rinse
4. R1 etch (5% NaOH in L of H₂O). Treat 2' @ 150°F.
5. Water rinse
6. Rinse in R3
7. Good rinse in distilled H₂O.
8. Anodize bands for about 30 to 60 minutes (depending on how lasting you want the bands to be) in 5% by volume concentrated H₂SO₄ at 70° ± 2°F. Use current of 2 amp./ sq. ft.

9. Dyeing. Here are a few dyes:

(Red) Oxanal Fast Red BLW. Ciba Corp. - 10 minute dip in 4gm/L @ 150°F.
pH of 6.0

(Bronze) Oxanal Bronze L. Ciba. 10 minutes in 5gm/L @ 150°F. pH of 6.0

(Blue) Pontamine Fast Turquoise 8 GLA Conc. 150%. DuPont de Nemours & Co.
10 minute dip in 2.0gm/L @ 150°F. pH of 6.5

(Gold) Ferric Ammonium Oralate, Chas. Pfizer & Co. 10 min. in 20.gm/L
 $\text{Fe}(\text{NH}_4)_3(\text{C}_2\text{O}_4)_3$ @ 85-90°F. pH of 5.0.

(Yellow) Aluminum Yellow A. Sandoz Chem. Works. 10 min in 4.0 gm/L
@ 150°F. pH of 7.0

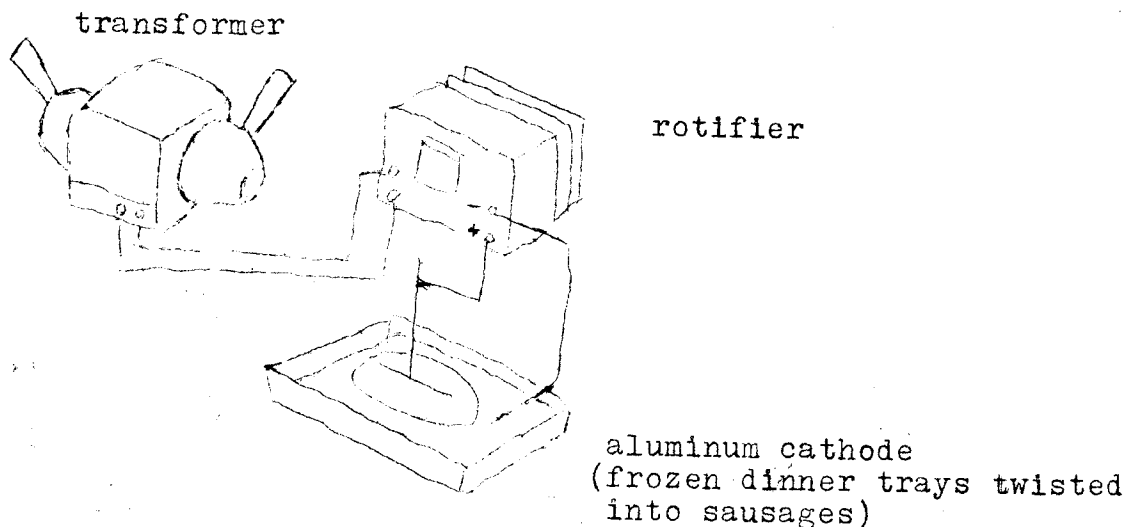
(Black) Aluminum Deep Black MLW. Sandoz. 20 min in 10.0gm/L @ 150°F. pH 4

NOTE: pH of all except the gold can be adjusted with acetic acid or NaOH.
10. Seal bands for 15 minutes in boiling distilled water.

Comments on finishing bat bands: The hardest job was getting a good electrical connection. Best contact was made by placing band on aluminum screws and tightening a nut. Use aluminum connectors, wires and screws in solution. Tray should be glass or non-metal. Do not use steel or other metals except aluminum.

Test for anodizing: Use a flashlight battery and bulb and a pair of round-tip test probes. Rinse the band and test at several spots. If the bulb remains unlit, anodizing is complete.

Colors: Also usable are liquid shoe dyes, ink or food coloring. The oxide can be likened to a series of very small straws. The color gets in and then is retained by the sealing action.



SYSTEM FOR ANODIZING

50 Clover Drive
Delmont, Pa.

BAT PRONGS
by Harlan Walley

Davis (Bat Banding News 2(3): 26, 1961) mentioned use of placental forceps in getting bats out of tiny crevices and drill holes. I recently made a device, which is almost costless, easy to carry, and more flexible than any instrument previously described for this task. This new tong can be made any desired length.

Materials are 2, 3 or 4 foot lengths of # 12 wire, uncoated. This can be obtained from any hardware. Number 10 could possibly be used, but would require strength in bending and shaping, though would be better if the tongs were to be longer than 6 feet. Also needed are 2 fourteen inch lengths of strong tension wire (piano wire) for the graspers.

First make finger grips by forming a double loop on one end of a 4' piece of # 12 wire (Fig. 1). Make loop to fit thumb ($1-1\frac{1}{2}$ "). Now shape 2 finger grips on the second length of wire, as shown in Fig. 2. The 2 lengths of wire are then entwined to form one unit. This is done by looping the section with 2 finger grips over the section with one, about one inch from the grips. Next take the wire with one finger grip and continue looping over at about 6 or 7 inch intervals. This will give adequate support and also play for easy mobility. See Figs. 3 & 5. Now make a small loop on the end of the wire with 2 grips to serve as an attachment for the graspers. A small loop should also be made on the section with one grip, as this will serve as a guide for the graspers, and will actually close the grippers when in use. See Fig. 4. The grippers are then shaped from the piano wire, attached to the loop mentioned above, and passed through the guide loop. Some experimenting is needed to adjust these properly.

Some adjustment might be needed, but I am certain this tool will be of great assistance in getting those hard to get bats.

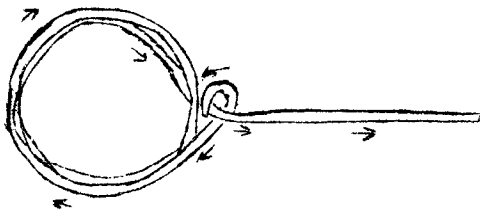


Fig. 1

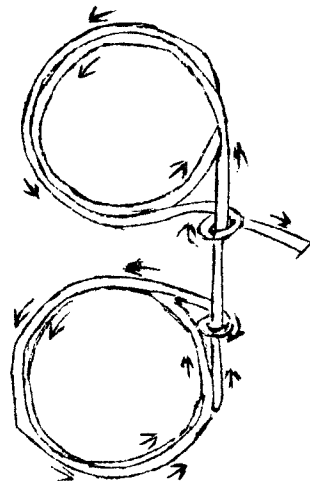


Fig. 2

29.

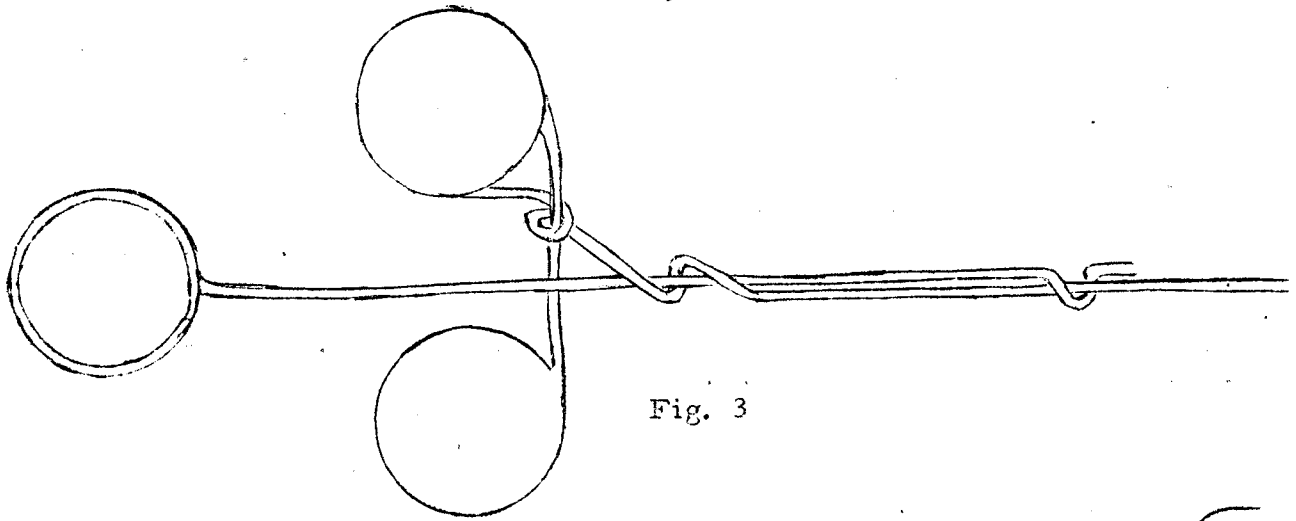


Fig. 3

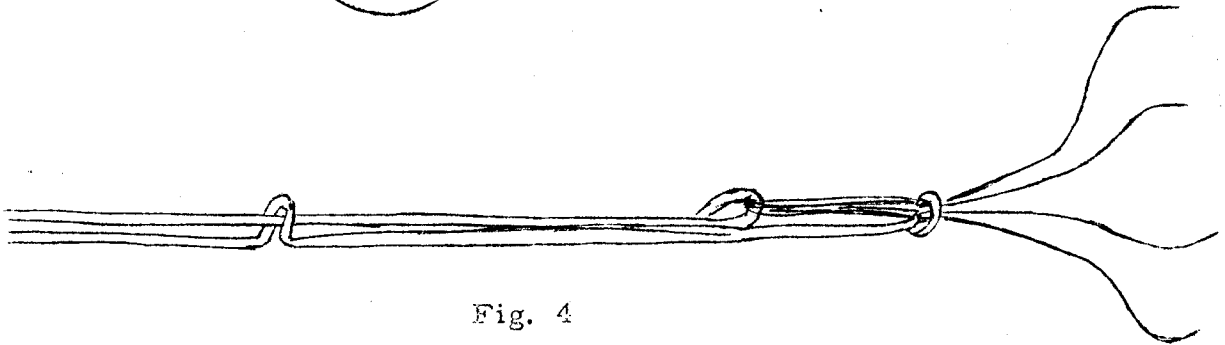


Fig. 4

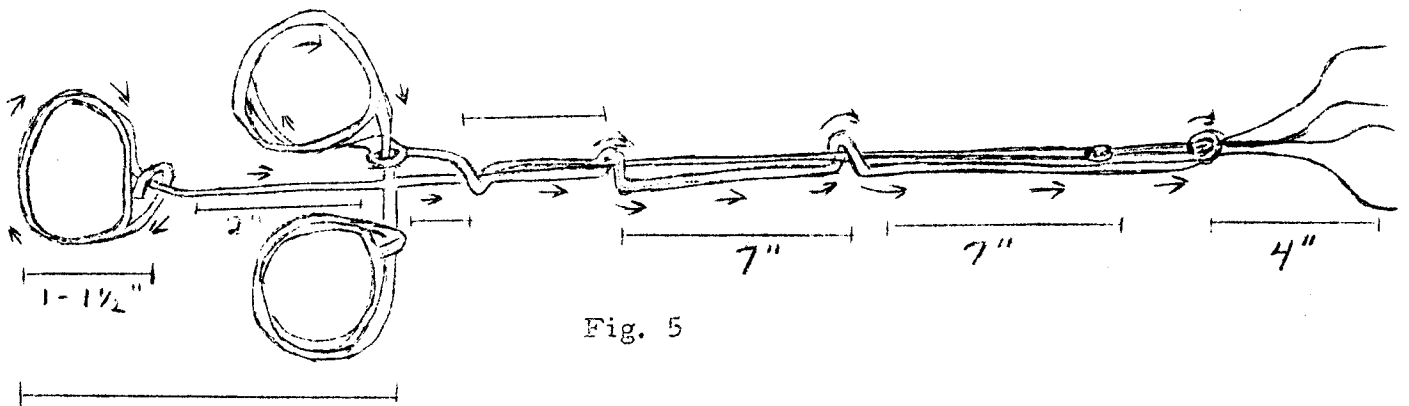


Fig. 5

312 East 4th Street
Sandwich, Illinois

OPERATION CHIROPTERA, 1963

Operation Chiroptera, the netting of fall transients, was a remarkable success. The bats cooperated so well that there was seldom a dull moment at the nets. Three or more people were sometimes kept busy at a net. Traffic was sometimes as heavy as 500 captures in less than three hours in one net.

Caves and dates worked were as follows; Wyandotte Cave, Indiana, August 25 through Sept. 4 (Cope); Wind Cave, Breckenridge Co., Ky., Aug. 28 through Sept. 4 (Wilson Baker); Carter Cave, August 6, 12, 20, and Sept. 27 (U. of Ky. workers); Long Cave, Edmonson Co., Ky., Aug. 17 & Sept. 14 (U. of Ky.); and Dixon Cave, Edmonson Co., Ky., July 30, 31, Aug. 1, 16-18, 26 through Sept. 1, Sept 13-15 (U. of Ky.).

Lots of interesting material was accumulated. Different species had peaks at different times. Sex ratios changed. Non-cave bats were taken, as were species considered heretofore as rare. Many recoveries were made. We netted in Edmonson Co. 9 of Cope's bats which he had banded at 7 different summer colonies in Indiana. We got quite a few that he had banded last fall during his netting at Wyandotte, but none of this fall's, though there was plenty of time for them to fly between the two localities if they were going to.

We already have several recoveries of bats banded this fall. They all were going back north. This is similar to what Hitchcock and I found in Vermont where the bats went back to their summer territories after the August convention at the cave.

We banded one M. lucifugus at Dixon Cave August 30 and Cope picked it up in one of his summer colonies in a building over 100 miles north on Sept. 5.

Here is a rundown of the numbers of bats handled at each locality:

Dixon Cave:	netted at night	in cave by day	Total
Myotis lucifugus	4176	2440	6616
Myotis sodalis	1171	5183	6354
Myotis keenii	3		3
Myotis grisescens	4	125	129
Myotis subulatus	22		22
Eptesicus fuscus	145		145
Pipistrellus subflavus	353	97	450
Lasiurus borealis	53		53
Nycticeius humeralis	4		4
Carter Cave:			
Myotis lucifugus	401		
Myotis sodalis	701		
Eptesicus fuscus	34		
Pipistrellus subflavus	45		
Lasiurus borealis	19	9	
Long Cave:			
Myotis lucifugus	146		
Myotis sodalis	110		
Myotis grisescens	1		
Myotis subulatus	2		
Eptesicus fuscus	1		
Pipistrellus subflavus	80		
Lasiurus borealis	1		

Wind Cave:		Wyandotte Cave:
Myotis lucifugus	1618	2964
Myotis sodalis	215	202
Myotis keenii	15	15
Myotis subulatus	5	
Eptesicus fuscus	5	140
Pipistrellus subflavus	1171	705

Our red bats and Nycticeius at Dixon Cave were all taken after we moved the net out of the cave entrance and onto the path in front of the cave. The first few nights we had netted in the cave mouth. We could work much easier outside, could use a longer net, and the catch was as high. These non-cave species apparently are simply joining the flock of migrants. This seems comparable to the situation in birds where migrating flocks often contain several species. A warbler wave - a bat wave.

Nearly all the M. subulatus were taken in hand nets. They fluttered like moths about a foot above the cave floor. They were easily recognized, and were not difficult to catch. We took 11 at Dixon the night of July 30, and could have probably caught that many more that night if we could have spared a man on the dip net more frequently.

At Carter Cave we netted inside the entrance, and here we did take red bats. We even found some in the cave torpid during the day. They were in a dead end room which is accessible only via a small crawl. We got 4 on each of 2 days and a single one on another. All were healthy. For a review of red bats in caves see the paper by Myers in J. Mamm. a few years ago. He gets them in large numbers in certain Missouri caves.

We plan to net again at Dixon Cave October 11.

LITERATURE

Woloszyn, B. W., 1962. Nietoperze z jaskin Gor Swietokrzyskich. Przegląd Zoologiczny. 6: 156-162. Bats were observed during 2 winters in 44 caves plus some mines in the Gory Swietokrzyskie Mountains (Poland?). Eight species were found. As best I can make out the paper seems to contain information about choice of resting sites, temperatures, and fluctuations of numbers. Distribution map and some spectacular photos of bat profiles.

Beron, P., 1963. Le baguage des chauves-souris en Bulgarie de 1940 a 1961. Acta Theriologica. 7: 33-48. A review of the history of bat banding in Bulgaria plus the results of the author's own works. He banded 13 species and 2991 individuals. Paper discusses the status of each species in his region and the movements as revealed from banding. Tables list all banding recoveries.

Hanak, V. 1963. Vyskyt letavcu stehovavych (Miniopterus schreibersi) v jeskyni "aksamitka" v Pieninach. Lynx. 2: 1-7. A summer colony of about 10 of these bats was found in a cave in the Pieniny Mountains in northern Czechoslovakia. The species was previously known from here only as winter residents and as summer stray males. Map shows known seasonal distribution of the species in Czechoslovakia. German summary.

Sklenar, J. 1963. Rozmnozovani netopyru velkych (Myotis myotis Borkh.). Lynx. 2: 29-37. This bat matures in its second year. They breed in autumn; also in spring. Gestation lasts 46 to 59 days. Ovulation occurs after the females arrive at summer quarters. Earliest embryos were seen was 3-4 May. One young per female, occasionally two. French summary.

CORRESPONDENCE

Sackville, New Brunswick. We found 118 bats in 2 visits to our mine in 1962. Fifty-six were retakes; we banded the rest. We were surprised at the large number of new bats found on the second expedition. We had been hoping that we were getting all the bats in the mine except 10 or 20, but on the second expedition found 55 bats of which 32 were new ones.

We still suspect hybridization between Myotis lucifugus and M. keenii and are gradually acquiring the apparatus and ability to run electrophoretic patterns so that we can check this with small samples of blood from both species and from suspected hybrids. These will have to be collected carefully, and skins and skulls prepared as well as photos made of the external characteristics.

We are still watching the juvenile proportion in the population and find that it is extremely variable. Sometimes there are great numbers and at other times none at all; these years do not seem to correlate with any obvious weather conditions like temperature, and we are beginning to suspect that the numbers of juveniles are a behavioral idiosyncrasy. We plan to do at least some summer banding in 1963 to assess the probably flight distance of these animals from the point of view of their importance as rabies carriers and also to indicate how far afield we may go in choosing other hibernating sites to investigate without going beyond the bounds of the population we have started with. Our local government Animal Pathology Laboratory has agreed to do rabies tests on anything up to 1,000 specimens from our summer's work. W. B. Stallworthy

Berrien Springs, Michigan (Andrews University). Recently I spent a week and a half visiting nearly all of the caves in Va., Tenn., and Ala., known to harbor M. grisescens. There is no question about its occurrence in Va. I examined about 300 there and found several of my banded ones.

We checked Nickajack Cave thoroughly, using a boat, and found only about 2,000 M. grisescens. As it contains many times this number in spring and fall, it seems to be a congregating place for migrants. From guano deposits, I doubt that Nickajack has contained any large summer colonies for several years at least. I found 2 banded M. grisescens which were not mine. It will be interesting to see where they came from.

In Alabama I found about 200,000 M. grisescens in Sauta and Blowing caves. These 2 are close together and likely connect. I saw two banded ones but was unable to catch either. I examined about 4,000 in Sauta for sex ratios. I was very disgusted to learn that Sauta Cave is being turned into an air-raid or rather a civil defense shelter. It is already equipped with electricity and other equipment. I am wondering how long it will be before they decide to exterminate the 200,000 bats now using the cave. They will probably be considered a health hazard. This would certainly be a terrific blow to this species. Nearby authorities nearly prevented me from even entering Sauta Cave. Merlin D. Tuttle.

Athens, Ga. (U. of Ga. Forestry School). I worked for Jim Cope at Wind Cave in "Operation Chiroptera". He told me about your getting Myotis subulatus by sweeping and that they didn't get caught in mist nets. While netting Wind Cave I noticed some smaller bats flying low and slower but not getting caught. I then used a butterfly net and got one. We got 5 in all: 2 with the butterfly net and 3 by chasing and knocking them into the mist net. Wilson Baker.

SOME MYOTIS PROBLEMS IN GEORGIA

Wilson Baker mentioned that he has been taking Myotis grisescens in a tunnel on the campus of the University of Georgia at Athens. He has also netted them at a cave in Polk Co, Ga., where he took the red bats. These are probably the first records of this species from the state of Georgia. Golley lists the species in his new book on the mammals of Georgia (U. of Ga. Press) on the basis of the old specimen in the National Museum in Washington which is labeled "Shellmound, Ga." He says he could not locate this locality, and that it might be Shellman, Randolph Co. Actually, Shellmound is in Tennessee, just across the line from Georgia. Nickajack Cave is near there. The type locality of M. grisescens is given as Nickajack Cave, Shellmound, Tennessee. Likely this old specimen labeled as being from Ga. is really from Nickajack Cave.

Golley's map of the distribution of M. lucifugus shows it to be state-wide and includes localities across the southernmost tier of counties. Since I have always doubted that this species occurs in Georgia beyond the cave country in the northwestern part of the state, I wrote to Golley and asked him upon what specimens the map was based, with the intention of borrowing them when they could be located. I asked to borrow any that were at the University of Georgia from the southern part of the state. When I saw him at Albuquerque he said that he did not know what was at Athens and did not know upon what the map was based. I asked Baker to look at the collection and see what was there. This is what he wrote about it:

"I don't know where Golley derived the information about M. lucifugus in the southwest part of the state or from N. Fulton and McIntosh counties, nor do I know where the specimens he lists from Charlton and Harris counties are. The Washington County ones were actually M. austroriparius. I've only found M. lucifugus from north Georgia in Dade, Bartow, and Polk counties."

The type locality of M. lucifugus is always considered in the literature as probably the LeConte Plantation, Riceboro, Liberty County, Georgia. This locality is on the coast in southeastern Georgia. Because of this apparently, people have long assumed that the bat we now know as M. lucifugus is widely distributed throughout the south. However, from LeConte's original description it is not possible to tell what species of bat is described. If he was really describing a Myotis from Riceboro, it is most likely that it was the bat which we now commonly know as Myotis austroriparius. But I will stop right now and leave this subject to those who enjoy changing a long-standing and widely used name and applying the old name to a different species.