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ALABAMA'S PREDATOR STUDIES

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Predator studies, in Alabama, were initiated on July 1, 1956. These studies are being continued. The object is to provide information on population densities, movements, longevity, etc., on predatory animals found on the various management areas of the state.

These studies also provide an activity for the various area managers during the non-farming and non-hunting seasons.

Method: The innate trapping ability of the "refuge managers" varies considerably. As many as 12 different individuals may be trapping in any short period of time. Any method used in the setting and running of traps should be a measure of animal populations rather than a measure of the individual's ability to trap.

After testing a number of methods, the following was adopted:

Site selection: A roadway running through the area of study is selected for a trap-line. A location near one end is chosen as a starting point, and a permanent number applied to a tree or post nearby. Other locations are selected strictly on a mileage basis, and they are usually located .1 mile apart. They, too, are marked as "permanent trap locations" which may be retrapped year after year. Some areas have more than twice as many sites as the manager has traps. On these areas, odd-numbered sites may be run one time and even-numbered sites another time.

This method has been used by other investigators and gives relatively uniform results regardless of the experience of the trapper. It also takes less time to set a series of traps than to select new trap sites each time. The catch per trap-night averages somewhat less when using this method than when trap sites are selected. It also is less selective as to species of animals. However, in tests using an "experienced trapper" the catch per trap-day was about the same because the trapper would set fewer traps.

Traps: Number 2 double spring steel traps are used. The trap is placed near the edge of the road at the numbered trapsite. A fire rake has been found to be a satisfactory tool for preparing the ground to set the trap. The trap is first covered with waxed paper. Then it is covered with sawdust, for concealment. Cracklings are scattered around the edge to serve as bait. Baits appear to affect the kinds of animals caught, and cracklings are used as a standard bait because of their relative low cost and ease of obtaining. They do not need to be fresh. A three or four foot pole is attached to the trap to act as a drag.

Length of settings: When this program first got underway, the area manager was requested to set for 10 consecutive nights. This required him to visit the trap line on at least one Saturday and one Sunday.

In order to determine on which day of setting the most animals were taken, the data from one area were examined. Oak Mountain Wildlife Management

¹ (A contribution of Federal Aid in Wildlife Restoration Project, Ala. 35-R).

Area had 13 settings of 10 days each. It was found that 19 percent of the catch was made the first night. Roughly 32 percent was taken the first two nights. It was revealed that more animals were taken during the first night of trapping than any subsequent night. Examination of data from other areas also showed that the first night did catch significantly higher than any other night. There was a tendency for the second night to be higher than following nights, but it was not significant.

In the areas tested, from 48 percent to 56 percent (average 51 percent) of a 10-day catch was taken during the first four nights. From 55 percent to 65 percent (average 59 percent) of a 10-day catch was taken during the first five nights. Trapping periods of five consecutive days and nights were begun in the summer of 1959.

Tagging: Although the animals are taken in steel traps and are sometimes injured, the area managers are instructed to tag and release such animals as they think will live. A number 1004-size 4-wing band tag of the National Band and Tag Company is used. In the beginning only one tag was used per animal and there were reports of torn ears and missing tags. Since July 1959, the animals have been tagged in each ear.

Results: From July 1, 1956, through May 31, 1962, traps have been set on 19 different areas in the state. The majority of these are game management areas and the trapping is done by the area manager. Some of the other areas were special study areas trapped by a "professional trapper" once employed by the State, but now retired.

Comparison between areas: Table I gives a list of the study areas and the catch adjusted to "catch per 1,000 trap nights." From this table it is possible to compare predator populations on the different areas. For example, it is obvious that there are more opossums on the Blue Spring Management Area than on the Scotch Management Area. Other areas can be compared directly and, if desired, statistics can be applied to see if the differences are "real" or are within the realms of probability.

TABLE I
PREDATOR CATCH PER 1,000 TRAP NIGHTS ON ALABAMA STUDY AREAS
July 1, 1956 - May 31, 1962

Area	Trap Nights	Opos- sum	Rac- coon	Grey Fox	Red Fox	Civet & Skunk	Bob- cat	Dog	Others
Lauderdale Mgt.	1,960	15.86	5.10	20.92	1.53	1.02	1.02	6.12	8.16
Thomas Mgt.	3,540	1.13	7.91	.56	...	5.08	...	2.82	7.90
Black Warrior Mgt. ...	4,023	2.73	20.63	7.41	...	3.98	.24	3.23	6.71
Choccolocco Mgt.	6,400	13.59	19.84	5.47	1.25	2.66	1.25	9.84	4.06
Oak Mtn. Refuge *....	6,345	10.09	13.08	7.25	3.31	6.62	.66	13.55	8.82
Oakmulgee Mgt.†	520	3.85	7.69	42.85	5.76	13.46
Wolf Creek Mgt.	1,655	3.63	1.21	11.48	.60	4.23	.60	4.84	4.84
Barbour Co. Mgt.	4,037	10.89	.74	.7474	...	3.71	4.71
Coosa Co. Mgt.	5,810	11.36	7.76	5.68	.50	5.85	1.20	4.99	7.57
Hollins Mgt.	3,570	11.20	2.24	15.97	7.28	2.24	.56	6.44	6.72
Tallapoosa Mgt.†	1,250	4.00	4.00	12.00	2.40	.80	...	8.00	.80
Macon Co. Tract ‡ ...	3,800	12.63	3.15	11.58	8.16	6.32	1.58	7.36	2.36
Yuchi Tract ‡	870	25.29	3.44	5.75	2.29	16.09	...	9.60	9.19
Valley Creek Mgt.† ...	400	12.50	10.00	12.50	5.00	7.50	...	5.00	42.50
Butler Co. Mgt.	7,235	15.24	6.36	2.90	.27	5.53	1.24	6.64	4.84
Blue Spring Mgt.	3,360	31.54	1.71	2.68	...	7.14	1.19	6.84	6.84
Covington Co. Mgt. ...	1,050	19.04	5.71	4.76	...	2.86	.95	.95	3.80
Rob Boykin Mgt.	2,240	11.61	2.68	4.46	...	1.34	...	2.68	6.69
Scotch Mgt.	2,560	3.90	1.17	1.56	...	1.17	.39	2.34	2.83

* Abandoned as Mgt. Area.

† No resident manager.

‡ Special study tract.

It is known that seasons and weather conditions affect the catch, both in numbers and species of animals taken. However, the project leader feels that there is now enough background information to analyze the data provided there are enough trap-nights reported.

Comparison between species: While predator populations can be compared between areas, they should not be directly compared between species. For in-

stance, the large catch of opossum as compared to raccoon on the Lauderdale Management Area does not necessarily mean that there are three times as many opossums as raccoons. The method is believed to be somewhat selective as to species because a change of bait during the trapping period, which has been tried, will make a noticeable difference in species composition of the catch.

Composition of catch: The species and numbers caught in the trapping periods are listed in Table II. In this table, only the animals caught and held are listed. Escapes, even when the species is known, are not listed. At least one deer and one goat have "escaped" from the traps. It should be noted that the list of species trapped is rather lengthy and contains some real oddities for catches by #2 steel traps.

TABLE II
NUMBERS OF ANIMALS CAUGHT, TAGGED, AND RECOVERED IN ALABAMA
PREDATOR STUDIES

Species	Number Caught	Number Tagged	Number Recovered	Movement between Recov. in Miles		Time between Recov. in Days	
				Avg.	Max.	Avg.	Max.
Opossum	707	644	45	.38	4.6	49	405
Raccoon	514	448	51	.78	5.1	256	1,794
Grey Fox	402	333	38	.82	5.0	252	992
Red Fox	102	75	9	.9	6.0	135	781
Civet and Skunk	262	0					
Bobcat	46	27	6	4.15	17.0	142	372
Dog	394	36	1	.9	.9	133	133
Housecat	31	4	0				
Rabbit	144	39	0				
Squirrel	27	9	0				
Crow	122	2	0				
Buzzard	8						
Ground Hog	2						
Wood Rat	10						
Song Birds	7						
Quail	1						
Dove	5						
Duck	1						
Turkey (Wild)	5						
Ground Squirrel	4						
Hawk	1						
Owl	1						
Turtle	5						
Bullfrog	3						

Tagging and recovering animals: Of the 2,804 animals taken in the 60,625 trap-nights, 1,617 (or 57 percent) have been tagged and there have been 150 recoveries. Table II gives some of the information on tagged animals and recoveries, but it might be of interest to note some additional information obtained during the study.

In this study, a recovery is a tagged animal on which there is additional data after the day of tagging. These data could be obtained from a retrap, a sight observation, or a kill.

Opossums were not only the most often taken, but they were the most often tagged. A total of 84 percent of the 707 opossums caught was tagged. Only 7 percent of the tagged opossums (or 45 out of 644) were ever recovered. It is possible that there was a greater loss of ear tags from opossums than some other animals. It is known that one double-tagged animal had lost one tag in 60 days, another double-tagged animal had lost a tag in 133 days. It is interesting to note that 33 percent of the recoveries occurred in the first 10 days after tagging. Only one was "recovered" off the study area and it was killed in a chicken house less than four miles from the tagging site. The maximum distance traveled was 4.6 miles in 185 days, but some animals were recovered at the same trap site as long as 36 days after the initial capture. Only two opossums were recovered twice.

Raccoon were handled on 514 occasions. Of these, 448 (87 percent) were tagged. Of these there were 51 recoveries (11 percent). Two raccoons had lost one ear tag; one after 155 days, the other after 180 days. Only 12 recoveries were noted in the first 10 days. Five animals were taken twice and one three times. One animal was taken 1335 days after its first capture and then again after another 459 days, or 1794 days after the initial tagging. There were nine recoveries after one year and three after three years. There were five recoveries by hunters but none were known to be more than six miles from the trapping site. (The 5.1 listed in the table is an actual measurement, the six miles an estimate.)

Grey foxes were caught 402 times and 333 (83 percent) were tagged. Of these 38 (11 percent) were recovered. One animal was recovered three times in two days (released from trap on a return trip of a trapline run) and was never more than .2 mile from the initial trap. Fifteen recoveries occurred in the first 10 days. Six animals were recovered after 350 days (five after a year) and two were recovered after 897 days. Two hunter kills were reported and only one of these may have exceeded the maximum distance of five miles listed in the table.

Red foxes were handled 102 times and 75 (75 percent) were tagged. Nine (12 percent) were recovered. Two of these were in the first 10 days. Only three were recovered after 10 days. Two were hunter kills and the estimated distances were "over four" and "over six" miles.

Bobcats were taken on 46 occasions and 27 (59 percent) tagged. Of these, nine (33 percent) have been recovered. Again two of the recoveries were by hunters. One was taken an estimated 5.5 miles from the trap site after 29 days. The other was taken an estimated 17.0 miles (in Florida) after 291 days. However, the one that was taken 372 days after tagging was retrapped one mile from the initial site. The 372-day animal was originally tagged with only one tag and it was plainly readable at the time of recapture.

Random catch at sites: During the early stages of this study it was desirable to know if the sites really affected the catch. During the first three years, traps were set at Oak Mountain on 15 different occasions. Actually no one trap location was used more than 10 times. A few were used only once. Of the 70 trap locations, 40 were used eight, nine, or 10 times. On these 40 trap sites, catches were made at least once.

Of the 30 trap sites set less than five times, eight did not catch an animal. Four of these had been set only once. Without going into involved statistics, it appeared to the project leader that the locations at Oak Mountain caught on a random basis. Data from Choccolocco and Bankhead were examined and proved to be similar. At least at Oak Mountain it can be demonstrated that each site had slightly less than a 50-50 chance of catching during each 10-days period. This chance was different (but not significantly) on Choccolocco and Bankhead.

Non-random second catch at sites: It was noted that if a trap caught during one of the early days of a setting, it appeared to be somewhat more likely than pure chance that it would take another animal during that setting. A table was prepared from a chart made of nine settings at Choccolocco and fifteen settings at Oak Mountain. Table III is a record of the number of animals caught on these areas during this part of the study.

TABLE III
TRAP "ATTRACTION" TO VARIOUS ANIMALS

Species	Total Number Caught	% of Species Taken on First Trap Catch	% of Animals Taken on Later Trap Catches		% Traps That Had Multiple Catches
			Same Species	Other Species	
Raccoon	91	87	4	9	38
Opossum	69	68	6	26	19
Dog	57	45	9	46	19
Grey Fox	50	80	6	14	35
Civet Cat and Skunk	22	68	0	32	27
Rabbit	16	81	0	19	6
Red Fox	12	92	0	8	25
Bobcat	9	45	0	55	0

From the table it appears that dogs and bobcats are attracted to locations where other animals have been taken. Raccoons and foxes apparently attract other animals and this is also true of skunks and civets, even though the trap was often set across the road from where the skunk was originally caught.

Conclusions: A permanently marked trap-line, using baited-covered sets of #2 steel traps will give comparative population densities between areas of a given species.

Settings of four or five days at a time are ample, providing enough different settings are made during the year, or a particular time of year.

In spite of injury to the animals caused by the use of the steel trap, many animals can be tagged and used for other studies.

Data on movement are somewhat limited (and may not be valid because of the injury; however, this has not been proven by this study).

Longevity data are available by tagging such animals that have a good chance of survival.

Raccoons, in particular, are able to survive for a relatively long period. One adult lived for 1,794 days after its first capture.

The permanently-marked trap sites catch at random.

Dogs and bobcats are attracted to sites where other animals have been taken. Raccoons, foxes and skunks apparently attract other animals to the sites where they were first captured.

A STUDY OF KENTUCKY HUNTERS WHO HUNTED ONLY IN THEIR HOME COUNTIES

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From 1957 to 1961, sale of resident hunting licenses in Kentucky declined from 290,107 to 223,020. This was a 23% decrease, and resulted in a \$200,000 loss of income 1961. It seems desirable to try to regain these "customers" and the \$200,000 per year they would provide, or at least to stop this decline in license sales, if possible. A study of the habits of the hunters themselves might give some clue as to how this could be done.

This study was made to try to pinpoint the hunter who is likely to stop buying a license. If this can be done, an effort could be made to develop a game management program to keep him hunting.

THE HUNTER WHO IS GOING TO QUIT

According to the 1960 National Survey of Fishing and Hunting made by the Fish and Wildlife Service, the average number of hunting trips per man per year is about 13. But the median hunter only makes about eight trips. This apparently means that half of the hunters make eight trips or less, and a small percentage make more than 13 trips, and bring the average up to 13.

It seems logical that the hunter most likely to discontinue the sport would be one who made only a few trips. It also seems logical that most of these trips would be close to home. With this in mind, the segment of hunters selected for this study was those who hunted only in their home county.

METHODS AND RESULTS

A 2,207 hunter sample had been questioned for the 1961-62 kill survey in Kentucky. These had been selected by choosing a series of hunting license numbers, then sending a questionnaire to each hunter who purchased one of these. Conservation Officers interviewed most of the hunters who did not reply to the questionnaire.

Of these hunters, 1,176 (53%) had hunted only in their home counties. Data from these hunters were calculated and are compared with state-wide totals in Tables I, II, III and IV.