

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.

TABLE I
PER CENT OF HUNTERS SEEKING EACH TYPE OF GAME

	<i>All Hunters</i>	<i>Home-County Hunters</i>
Squirrel	66	73
Rabbit	65.7	69
Quail	35.4	34
Groundhog	16.7	19
Dove	13.5	11
Raccoon	12	12
Deer	8	2
Waterfowl	4.6	4
Crow	9	8
Grouse	7.2	8
Fox	3.7	4
Woodcock	1.0	.76

TABLE II
PER CENT OF HUNTING TRIPS ON WHICH EACH SPECIES OF GAME WAS SOUGHT

	<i>All Hunters</i>	<i>Home-County Hunters</i>
Squirrel	31	35
Rabbit	25.4	25
Quail	15	13
Groundhog	7.7	8.8
Dove	4	3.1
Raccoon	6.7	6.1
Deer	1.75	.37
Waterfowl	1.9	1.3
Crow	3	3.3
Grouse	2.1	2.1
Fox	1.1	.69
Av. trips/hunter	15.9	16.1

TABLE III
PER CENT OF HUNTERS SEEKING EACH TYPE OF GAME IN EACH REGION

	<i>West</i>		<i>Central</i>		<i>Bluegrass</i>		<i>Mountains</i>	
	<i>All</i>	<i>Home Co.</i>	<i>All</i>	<i>Home Co.*</i>	<i>All</i>	<i>Home Co.</i>	<i>All</i>	<i>Home Co.</i>
Squirrel .....	.75	78	56	71	53	54	83	86
Rabbit .....	.59	57	57	66	79	85	69	68
Bobwhite .....	.50	47	36	42	28	27	27	23
Groundhog	6.2	9	20	21	20	23	20	23
Dove .....	.26	21	14	13	12	10	3	2
Raccoon .....	.15	17	9.2	11	10	5	14	13
Deer	2.7	.3	15	5	5	1	7.3	2
Waterfowl .....	.11	10	2.4	2	2	2	3.5	1.8
Crow	6.8	7	8	6	9.7	7	11.4	10.7
Fox	4.6	6	3.4	5	2.5	2	4.2	4
Grouse .....	..	..	.3	..	4.4	2	25	25

* This column does not give adequate weight to the sample from Louisville (33,580 hunters.)

Tables I, II and III show that the home county hunters lean a little more toward squirrels and groundhogs and less toward deer, doves and waterfowl. Table IV indicates that they are a little less efficient in bringing home the bacon. The average number of trips per hunter (Table II) was almost exactly the same for the two groups. The most striking feature of these tables is the similarity between the two groups of hunters.

TABLE IV
 AVERAGE KILL PER SEASON, AND AVERAGE NUMBER OF HUNTS FOR
 ALL HUNTERS, COMPARED TO THOSE WHO HUNTED ONLY IN
 THEIR HOME COUNTIES

	Kill Per Season		Number of Hunts	
	All	Home County	All	Home County
Gray Squirrel	11.1	10.8	7.54	7.7
Fox Squirrel	2.25	1.83	...	...
Rabbit	9.92	7.96	6.2	5.9
Bobwhite	14.8	13.5	6.8	6.2
Groundhog	10.5	9.62	7.4	7.4
Dove	19.5	18.1	4.8	4.5
Raccoon	8.1	7.13	8.9	8.3
Deer .....	.359	.522	3.5	3.0
Ducks	5.44	3.88	6.6	5.3
Geese .....	.806	.646	..	..
Crow	10.8	10.1	5.5	6.4
Grouse	2.55	2.14	4.6	4.3

This similarity may be partly due to the fact that while 47% of the hunters went beyond their home counties for at least one trip, 78% of all hunting trips were in the hunters' home county. Also, the home-county hunters were included in the total.

As an effort to isolate the casual hunter who is most likely to stop buying a license, this study must be considered unsuccessful. Some practical conclusions can be drawn, though, from this study and the original kill survey.

HUNTING HABITS

This study indicated that the annual state-wide kill survey is fairly accurate for the four physiographic and weather regions of the state (Mountains, Bluegrass, Central and Western). This was the first study of hunts within a specific region, since the state-wide survey included all hunts by residents of each region. Many of these hunts crossed regional lines.

One fact that was verified was that rabbits are far more important than quail or grouse in the Mountains (Table III).

Probably the most amazing fact in this original survey, including all hunters, was that small upland game accounts for 96% of all hunting trips in Kentucky, even though the survey exaggerated the number of waterfowl and deer hunters. Ninety per cent of all hunters sought nothing but small upland game.

While 47% of the hunters hunted outside of their home counties, only 28% went farther than the adjoining county. This crossing county lines to hunt was most prevalent along the boundary between the Mountains and the Bluegrass Regions. Mountain hunters go to the Bluegrass for rabbits and early squirrels. Bluegrass hunters go to the Mountains for quail and later squirrel hunting. Or, maybe each just enjoys getting into different scenery to hunt.

This indicates that hunters will travel, at least to an adjoining county, if there is fairly interesting hunting there.

From the National Survey of Fishing and Hunting, Page 3, is another important fact. The average number of miles driven for each hunting trip is only 42.7, or 21.4 miles one way.

VALUE OF THE CASUAL HUNTER

It is obvious that a state fish and game agency must be more concerned with an enthusiastic, avid hunter than with a casual hunter. The avid hunter is more certain to buy a license every year, is more likely to work for conservation and game management programs, contributes more to the P-R fund, and spends more money at tourist facilities.

Perhaps this enthusiastic minority is more important than the vast majority of casual hunters. Perhaps they will demand spectacular programs which, so far, can only be provided by deer and waterfowl management.

These programs cost money, though. In 1961, Kentucky spent approximately \$80,000 on waterfowl management for 6,047 waterfowl hunters—about \$13 for each \$3 hunting license. If the waterfowl hunter had to pay his own way, many of them would drop the sport, forcing the cost per man even higher.

There is only one source of revenue to make up this deficit—the casual hunter who buys a license and only hunts a few times. Not only does he make up this deficit, but he also pays for most of the overhead—law enforcement, information and education and administration—in many state fish and game agencies. In Kentucky, he supported the deer management projects for about 12 years before any deer hunting permits were sold. Therefore, this casual hunter must be kept in a mood to contribute his license fee each year or the deer and waterfowl programs must subsist on smaller budgets.

STATUS OF DEER HUNTING

In Kentucky, deer hunting permit sales have been increasing, while general hunting license sales have been decreasing. This has led to some thinking that deer will provide the solution to hunting and financial problems of the Kentucky Department of Fish and Wildlife Resources.

With five successful deer seasons, though, only 12,023 hunters (about 5%) bought deer permits in 1961. Deer provided about two per cent of the hunting during that season. Therefore, before deer can become one of the leading game species, there must be a fantastic increase in deer hunting, or a catastrophic decrease in other types of hunting, or both.

SMALL UPLAND GAME MANAGEMENT

Small upland game management is difficult. At present, the most practical technique seems to be to conduct surveys and base seasons and bag limits on the abundance of game.

This is of value to the small minority of superior hunters who frequently kill their limits, or utilize a significant amount of the hunting season allowed. Table IV shows that the average number of trips, and the average season's kill is far below the limits permitted. Therefore, larger bag limits and longer seasons do not significantly benefit the general hunting public, nor entice them to buy licenses.

It may be coincidence that the decline in hunting license sales in Kentucky is rather closely correlated with the decline in the farm game habitat management program. This definitely was not due to a decrease in game produced by the farm game program. This program was not effective, state-wide. It may have been, though, that, as this state-wide program was abandoned, contact with the average hunter was lost, and with it, the slight encouragement that determined whether or not he bought a license.

WHAT KIND OF PROGRAM?

It is not the purpose of this paper to propose a specific method of increasing hunting license sales, or for game management. Facts established in this study, though, do suggest some generalizations.

1. It appears imperative that some type of effective program be devised for the most popular game, which is small upland game in most states.
2. To benefit the vast majority of average and below-average hunters, the program must be widely distributed. These hunters apparently will not travel far to hunt.
3. There seems to be no solution that does not involve use of private land. Therefore, close cooperation with those agencies which control land use (Forestry and Agriculture) seems necessary.

SUMMARY

This study was an effort to identify the casual hunter who is likely to discontinue buying a hunting license. It was prompted by the fact that hunting license sales in Kentucky declined by 67,000 (23%) in four years, resulting in a \$200,000 loss of revenue in 1961.

Individually, the enthusiastic hunter deserves more consideration than the casual hunter, and may insist on the spectacular programs that only deer and waterfowl provide. His license fees, though, will not support these programs. The vast majority of casual hunters must make up these deficits and pay for the administration and law enforcement of the state fish and game agencies.

Hunters who restricted their hunting to their home counties were thought to be less enthusiastic, and more likely to quit hunting than those who traveled farther. Questionnaires and interviews of 1,176 home-county hunters, though, showed little variation from the state-wide average. They hunted squirrels and groundhogs a little more, deer, doves and waterfowl a little less, and killed a little less game.

A survey of all hunters in Kentucky in 1961-62 indicated a vast preponderance of small upland game hunting. Ninety per cent of the hunters sought no other type, and small upland game accounted for 96% of all hunting trips.

Only 47% of the hunters left their home counties to hunt, and only 28% went farther than the adjoining counties. The National Survey of Fishing and Hunting indicates that the average hunting trip is only 42.7 miles, round-trip.

PINTAIL AND TEAL FOODS IN SOUTH LOUISIANA ¹

By LESLIE L. GLASGOW ² and JOHN L. BARDWELL ³

The pintail (*Anas acuta*) is second only to the mallard (*A. platyrhynchos*) in popularity among hunters. According to Smith (1961), the wintering population of pintails in Louisiana averaged about 300,000 birds for a 12-year period from 1949 to 1961 but in the late 50's the population increased to an average of about one-half million birds. This fact is supported by the *Midwinter Waterfowl Inventory* (1962), which showed a population of 514,150 pintails. Louisiana always supports the great majority of the pintails wintering in the Mississippi Flyway. Atwood and Wells (1960) reported a kill of approximately 44,000 pintails during the 1959-1960 waterfowl season.

As reported in the 12-year study by Smith (1961), Louisiana's mid-December population of green-winged teal (*A. carolinensis*) averaged 350,000, and in some years over one-half million birds were present. This is in agreement with the 1962 *Midwinter Inventory*, which reported 506,900 green-winged teal in Louisiana in early January. Louisiana winters over 90 percent of the Mississippi Flyway population in most years. Atwood and Wells (1961) reported a kill of 26,328 green-winged teal in Louisiana in the 1959-1960 hunting season.

Although many blue-winged teal (*A. discors*) have always migrated through Louisiana, few remained over winter prior to 1957. Since that time, Smith (1961), has reported a winter population of about 300,000 ducks. The *Midwinter Inventory* (1962) indicates that 298,700 blue-winged teal were wintering in Louisiana. Atwood and Wells (1960) reported a kill of about 36,000 in Louisiana during the 1959-1960 season.

Thus in Louisiana, pintail and teal are not only among the more abundant of the wintering ducks but they also contribute heavily to the hunter's bag.

Data for this report were obtained during a study by Bardwell (1962) of the nutrient contents of foods removed from 65 pintail and 140 teal crops collected in South Louisiana. The purpose of this paper is to report the kinds and amounts of food eaten by these ducks.

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