

ARKANSAS BLACK BEAR HUNTER SURVEY

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Abstract: Questionnaires were mailed to black bear (*Ursus americanus*) hunters in Arkansas following the 1980–84 bear seasons to determine participation, hunter success, and number of bears observed by hunters. Man-days of hunting to harvest a bear ranged from 148 to 671 and hunter success ranged from 0.4% to 2.2%. With the exception of 1980, number of permits issued, man-days of bear hunting, and bears harvested appear affected by hunting permit cost.

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Until 1923, Arkansas was unofficially known as "The Bear State." Both major physiographic regions of the state (Gulf Coastal Plain and Interior Highlands) supported black bears. Bear skins and fat were sold at a premium during the French and Spanish occupations, and during the 1800s thousands of bears were harvested annually (Holder 1951). This indiscriminate harvest by traders and subsequent habitat loss resulting from extensive timber harvest led to the near extirpation of black bears in Arkansas. The hunting season was closed in 1927. Holder (1951) reported that bears had been nearly eliminated in the Interior Highlands and only a few (40–50 bears) remained in and around White River National Wildlife Refuge in the Gulf Coastal Plain by the late 1940s.

Between 1959 and 1968, 254 black bears were trapped in northern Minnesota and Manitoba, and released in the Interior Highlands of northwestern Arkansas. The bear population increased rapidly and Rogers (1973) estimated 600–700 bears in Arkansas and Conley (1978) later estimated the population exceeded 1,000 animals. This restoration effort is probably the most successful reintroduction of black bears, and perhaps large carnivores, ever attempted.

The objective of the bear restoration effort was reached in 1980 when the 1st bear hunt in 53 years was held in the Interior Highlands. Season length and restrictions on methods of take were conservative. Objectives of the hunting season were to introduce Arkansas sportsmen to black bear hunting and obtain biological information on the population from these hunter-killed animals.

Regulations during the 1980 season restricted hunters to 4 wildlife management areas, prohibited the use of bait and dogs, protected bears weighing less than 34 kg, and protected females with young. Regulations for the 1981–84 seasons permitted taking

of any bear and opened additional wildlife management zones with large bear populations. These zones encompassed almost all of the Interior Highlands. The 1980–84 seasons were 1–6 December, 26 October–1 November, 16–22 October, and 3–6 November, respectively. Bear hunting permits were required from 1980 to 1984, but were discontinued because of increasing administrative costs.

Mail surveys of sportsmen have been used widely by wildlife managers to determine attitudes, recreational opportunity, harvest, and other human activities related to wildlife (Durrell 1962, Legler and Hayne 1967, Wright and Lancaster 1972, Dubrock et al. 1978, Filion 1980). From 1980 to 1984, the Arkansas Game and Fish Comm. surveyed black bear hunters after each hunting season to determine hunter effort and participation, number of bears observed, and harvest rates.

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METHODS

Survey questionnaires were mailed to bear hunting permit holders soon after the close of each bear season. Initial mailings included a cover letter, survey form, and stamped return envelope. Nonrespondents were sent up to 2 additional questionnaires. Surveys were mailed to every permit holder during 1980–82, and 40% of the 1983–84 permittees. Responses from 1983 to 1984 were extrapolated to approximate those for the complete file of permits issued. Man-days of hunting per harvested bear was calculated by dividing the total number of man-days by the number of hunter-checked bears. Hunter success was estimated

¹Deceased.

Table 1. Permit fees, permits issued, survey response, and hunter participation during 1980–84 bear hunting seasons in Arkansas. The 1983 and 1984 observations are extrapolated from sample data.

Year	Permit fee	Number of permits issued	Number of respondents (%)	Number of hunters (%)
1980	\$25	1,338	1,008 (75.3)	856 (84.9)
1981	\$10	989	788 (79.7)	718 (91.1)
1982	\$10	958	733 (76.5)	654 (89.2)
1983	free	5,247	1,759 (83.8)	2,542 (51.9)
1984	free	4,624	1,589 (85.9)	2,410 (60.7)

by dividing the total number of bears harvested during a hunting season by the estimated number of permittees hunting during that season. The Student's *t*-test was used to compare means between years.

RESULTS AND DISCUSSION

Response rates to the 1980–84 surveys ranged from 75.3% to 85.9%. Because these rates are so high, we do not believe nonresponse bias would alter our general conclusions. Therefore, we did not analyze nonresponse bias.

The number of permits issued decreased from 1980 to 1981, remained relatively stable during 1982, increased substantially in 1983, and remained relatively stable in 1984 (Table 1). Fluctuations in the number of permits may be due to changes in permit price. The number of permits issued increased when the fee was eliminated and, except for 1980, were relatively stable during consecutive years when permit prices remained the same. The 1980 hunt was the 1st Arkansas bear hunting season in 53 years, and hunters were anxious to participate. As a result, the number of 1980 permits may have been inflated, even though it cost \$25.

The proportion of permittees that hunted was significantly higher during the years permit fees were

Table 2. Pre-season scouting rates, man-days of hunting, and pre-season scouting during the 1980–84 black bear seasons in Arkansas. The 1983 and 1984 observations are extrapolated from sample data.

Year	Number of hunters that scouted (%)	Man-days of hunting	Man-days of pre-season scouting
1980	525 (62.1)	2,873	1,806
1981	448 (68.0)	2,355	2,100
1982	436 (65.9)	2,273	2,051
1983	1,430 (56.2)	6,280	6,426
1984	1,402 (58.2)	5,930	7,305

Table 3. Harvest, permit fee, mean number of man-days of hunting per harvested bear, and hunter success during the 1980–84 black bear seasons in Arkansas.

Year	Harvest	Man-days of hunting per harvested bear	Hunter success (%)
1980	5	671	0.4
1981	20	148	2.2
1982	19	155	2.2
1983	31	203	1.0
1984	31	191	1.1

required (1980, 1981, 1983) than when they were not required (1983, 1984) ($P < 0.05$). As might be expected, permittees that paid for a permit were more likely to use that permit.

With the increase in the total number of permits issued in 1983 and 1984, there was a corresponding increase in the total number of man-days of hunting and pre-season scouting reported by the respondents (Table 2). However, the percentage of hunters that scouted declined during 1983 and 1984 as compared to hunters during 1981 and 1982 ($P < 0.05$).

Increased man-days of hunting during 1983 and 1984, resulting from the elimination of permit fees, appear to have resulted in a higher bear harvest (Table 3). Hunter success rates, however, were lower compared to 1981 and 1982 ($P < 0.05$). These statistics demonstrate a great deal of consistency during periods of stabilized permit fees. These data suggest that permit fees affect hunter effort and, ultimately may be helpful for regulating bear harvest in Arkansas. Given the 5-fold increase in the number of permits issued from 1982 to 1983, however, numbers of bears killed did not increase proportionately. Lower hunter success rates and hunter participation during 1983–84 reduced the overall effect increased number of permittees might have had on the yearly harvest.

Bear observations per man-day of hunting were erratic over the 5 years of the survey (Table 4). These data may not be highly correlated with changes in

Table 4. Bear observations by hunters during the 1980–84 black bear hunting seasons in Arkansas.

Year	Number of observations	Man-days of hunting	Observations per man-day of hunting
1980	74	2,873	0.026
1981	134	2,355	0.057
1982	125	2,273	0.055
1983	426	6,280	0.068
1984	285	5,930	0.048

bear density and may, therefore, represent a method for monitoring only gross population trends.

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