State of California
THE RESOURCES AGENCY
Department of Fish and Game
Nongame Wildlife Investigations
March, 1978

STATUS OF THE BOBCAT IN CALIFORNIA

by

Robert C. Lee

INTRODUCTION

Taxonomy. Grinnell et al. (1937) describe four subspecies of wildcat (bobcat) that occur in California. These are the northwestern wildcat (Lynx rufus fasciatus) of the extreme northwestern coast belt into Mendocino County, pallid wildcat (L. r. pallescens) of the Great Basin area of northeastern California, desert wildcat (L. r. baileyi) of the Colorado and Mohave desert regions, and California wildcat (L. r. californicus) from the remainder of the state.

Legal Status. Before 1971 the bobcat was considered a nonprotected mammal with no restrictions on its take. In that year all nonprotected mammals became nongame mammals (Section 4150, Fish and Game Code). In 1974 a season from August 1 through February 28 was put on the take of bobcat to offer protection during its reproductive period (Section 473, California Hunting Regulations Part 1). Bobcats could be pursued for purposes of breaking, training or practicing dogs from March 1 to July 31 providing that no bobcats were injured or killed. The season for take was shortened in 1976 to November 16 through the last day of February and the season for pursuit by dogs was extended to March 1 through November 15. These seasons remained in effect for the 1977-78 season. There is no bag limit. A trapping license ($10 adult, $5 juvenile) is required to sell raw furs of furbearers and nongame mammals (coyote and bobcat). In 1976 a number of citations were issued to licensed hunters (predator hunters and houndsmen) who were found selling their furs without a trapping license.

NATURAL HISTORY

Habitat. The bobcat can be found in many habitat types throughout the state except on open plains and in densely populated settlements. Altitudinally the bobcat occurs from below sea level in Death Valley to 11,000 feet near Mount Whitney. Rocky ground, cliffs and dense brush are preferred throughout its range (Grinnell et al. 1937).

Food Habits. Detailed seasonal food habit studies have not been conducted in California but limited research reported indicate that deer, rabbits and rodents constitute the majority of prey items with birds and grass comprising a small percentage (Hunt 1920, Leach 1953). Grinnell et al. (1937) reported the following percent by bulk of 257 bobcat stomach contents: mammals 56, birds 5, fish 2, incidental waste material (grass), parasitic worms and unidentified material 37. Livestock was considered an unimportant part of the bobcat's diet.

Reproduction. Grinnell et al. (1937) report a litter size of from one to four, most frequently three, and a breeding season from February to September with most births occurring in April. Crowe's (1974) study in Wyoming showed that

females reproduce their first breeding season and males become sexually mature their second year. He concluded that Wyoming bobcats have a period of sexual activity from spring until early summer with most births occurring within two weeks of June 1. Crowe (1974) suggested a 70 day gestation period followed by 60 days of lactation (Young 1958).

Crowe (1974) observed a sex ratio of 1:1 during his study and his trapping results revealed equal proportions of three age classes (0-1 year, 1-2, older).

An exploited population of bobcats (subject to trapping or hunting) will suffer heavy natural juvenile mortality and constant adult losses of all ages because trap avoidence does not vary with age (Crowe 1974). This differs from an unexploited population which suffers heavy natural juvenile mortality and very few adult deaths until old age (Bailey 1973).

Movements. Grinnell et al. (1937) give 25 square miles as a typical bobcat home range with daily movements of four to five miles. He indicates that bobcats can be active at any time of the day or night and there is no evidence that they den up in winter. Ongoing studies by the Department of Fish and Game confirm the activity patterns of bobcat as given by Grinnell et al. but show that home ranges may be as low as one-quarter to one-half square mile where population densities are high.

DISTRIBUTION

Current statewide distribution data is largely taken from licensed fur trapper reports. Though this information is biased because many trapping reports are inaccurate or incomplete and trapping effort is not uniform throughout the state, bobcats still have been reported taken from all counties in the state except San Francisco County in the last 30 years. Recent trapping reports indicate substantial harvests from Humboldt, San Diego, Shasta, San Bernardino, Inyo, Modoc, Mendocino, Fresno, Siskiyou, San Benito and Santa Barbara counties (Table 1). Counties with high human populations or extensive agriculture usually report the take of few or no bobcats.

By soliciting observations from hunters, trappers and wildlife and land management personnel, Gould (1977b) determined the distribution of bobcats in northeastern California.

DENSITY

While fur trapper reports provide county distribution of take, it does not follow that this represents the relative abundance of bobcat in those counties. Preliminary results from Department studies reveal minimum densities of 0.25 bobcats per square mile in northeastern California and 4 bobcats per square mile in coastal chaparral habitat in San Diego County. The density of bobcats in Jose Basin, Fresno County, was reported as moderate to high by U. S. Fish and Wildlife predator population standards though no actual numbers were determined (Grippi 1976).

A subjective evaluation of bobcat populations in northeastern California showed a probable decrease in numbers. Causes for the decline were believed to be increased harvest and a decrease in food supply.

HARVEST

Fur Trapping. The reported annual harvest of bobcat by holders of a California trapping license has increased from 241 (1966-67) to 3,618 (1976-77). This corresponds to a sharp increase in average pelt prices from $8.00 to a record high of $133.50 in 1975-76 (Table 2). The number of licenses sold increased from 650 in 1971 to 1,692 in 1976. These figures are representative of trapping take and some hunter take because any person selling fur whether the fur was trapped or hunted must have a California trapping license.

Hunting. An Annual Hunter Survey is conducted by the Department to estimate hunter harvest of game species. Due to statistical biases inherent in the survey, harvest figures are used only as indications of trends from year to year (California Department of Fish and Game, 1972). Since 1968 the bobcat and coyote have been included in the questionnaire directed to licensed hunters. Shimamoto (1976) cautioned against the use of bobcat bag data from the hunter surveys as representing the actual number of animals harvested in the state. Survey bag figures varied from 46,000 in 1968 to 20,400 in 1976. However, changes in survey methodology in 1973 and again in 1975 designed to improve the accuracy of data gathered does not allow for comparison to trend data compiled in previous years.

Recognizing potential reporting bias in the hunter survey as it pertains to bobcats, the Department undertook a separate follow-up survey of reported bobcat hunters in order to obtain a more realistic and accurate estimation of hunter harvest. As a result, Gould (1977a) established confidence limits on the 1976 bag at an estimated 9,600 to 11,400 bobcats.

Animal Control. California began a program to "control" predators in 1932. Trappers were employed until 1955 and 18,984 bobcat were reported taken during that time (Table 2).

Currently the U. S. Fish and Wildlife Service administers the major predator control program in California. This is a cooperative program involving agreements with State Departments of Food and Agriculture and Health and with 34 individual county governments. Thirteen counties carry out their own control outside the cooperative program. There are 11 counties without a predator control program (Ferrel 1976). The U. S. Fish and Wildlife Service reported 11,440 bobcats taken under the federal cooperative plan from 1967 to 1977 (Table 2). The number of animals taken reflects their competition with humans and does not necessarily indicate relative abundance and distribution. Fewer animals are being taken now than in the past due to a de-emphasis of blanket control and a concentrated effort in problem areas. Also, nontarget animals trapped incidentally during predator control activities are now released if they are uninjured. No data are available on control efforts by county agencies.

The total reported annual harvest of bobcats by fur trappers and animal control personnel has remained fairly constant since 1930 (Table 2). Fewer bobcat taken for animal control has been offset by increased fur harvest.

Export Restrictions. In 1977 the federal government, through the Endangered Species Scientific Authority (E.S.S.A.), began an active program to monitor the international trade of species believed to have the potential to become endangered. Such program was required of member nations to the treaty on International Trade in Endangered Species of Wild Fauna and Flora of which the United States is a part. As a result the E.S.S.A. requested states to institute a tagging program for bobcat fur to be exported. The State of California, through the action of

the Fish and Game Commission, complied by issuing 6,000 tags for the 1977-78 season (Section 479, Fish and Game Commission Order, Rules and Regulations for 1977). A $3.00 administrative fee is charged for each tag which must be affixed to a bobcat fur before the fur may be exported from California.

LITERATURE CITED

Bailey, T. N. 1972. Ecology of bobcats with special reference to social organization. Ph.D. Thesis, Univ. of Idaho. 82 pp.

California Department of Fish and Game. 1972. Report of the 1971 Game Take Hunter Survey. Calif. Dept. of Fish and Game, Wildlife Management Branch, mimeo report. 18 pp.

Crowe, D. 1974. Some aspects of reproduction and population dynamics of bobcats in Wyoming. Ph.D. Thesis, Univ. of Wyoming. 177 pp.

Ferrel, C. M. 1976. An evaluation of predatory animal management administration in California. Calif. Dept. of Fish and Game. 46 pp.

Gould, G. I., Jr. 1977a. Estimated hunter take of bobcat during 1976. Calif. Dept. of Fish and Game, Wildlife Management Branch, mimeo report. 9 pp.

_____. 1977b. Bobcat distribution in northeastern California. Calif. Dept. of Fish and Game, Wildlife Management Branch, mimeo report. 10 pp.

Grinnell, J., J. S. Dixon and J. M. Linsdale. 1937. Furbearing mammals of California. Univ. Calif. Press, Berkeley, Vol. 2. 600 pp.

Grippi, R. 1976. Bobcat distribution and abundance in Fresno County, California. Calif. Dept. of Fish and Game, Wildlife Management Branch, mimeo report. 11 pp. plus appendix.

Hunt, H. H. 1920. Food of the bobcat. Calif. Fish and Game 6(1):37.

Leach, H. R., and W. H. Frazier. 1953. A study of the possible extent of predation on heavy concentrations of valley quail with special reference to the bobcat. Calif. Fish and Game 39(4):527-538.

Shimamoto, K. Analysis of the annual hunter survey in relation to bobcat and coyote. Calif. Dept. of Fish and Game, Wildlife Management Branch, mimeo report. 25 pp. plus appendix.

Young, S. P. 1958. The bobcat of North America, its history, life habits, economic status, and control, with list of currently recognized subspecies. Stackpole Company, Harrisburg, Pennsylvania, and Wildlife Manage. Inst., Washington, D. C. 193 pp.

TABLE 1

NUMBER OF BOBCAT TAKEN BY LICENSED FUR TRAPPERS BY COUNTY 1975-76, 1976-77 TRAPPING SEASONS

County	1975-76	1976-77
Alameda	18	10
Alpine	13	5
Amador	1	15
Butte	39	62
Colusa	7	5
Del Norte	2	80
El Dorado	15	62
Fresno	71	159
Glenn	28	39
Humboldt	224	298
Imperial	8	5
Inyo	118	136
Kern	71	42
Kings	0	10
Lake	75	111
Lassen	52	132
Los Angeles	39	40
Madera	9	14
Marin	0	18
Mariposa	20	29
Mendocino	66	177
Merced	8	11
Modoc	125	128
Mono	54	97
Monterey	0	104
Napa	17	19
Nevada	1	11
Placer	8	11
Plumas	20	33
Riverside	97	47
Sacramento	0	5
San Benito	39	184
San Bernardino	94	216
San Diego	190	149
San Joaquin	18	9
San Luis Obispo	40	53
San Mateo	0	45
Santa Barbara	21	195
Santa Clara	0	12
Santa Cruz	0	12
Shasta	122	193
Sierra	3	6
Siskiyou	107	118
Solano	94	47
Sonoma	34	24
Stanislaus	7	3
Tehama	73	107
Trinity	28	52
Tulare	30	171
Tuolumne	16	31
Ventura	41	38
Yolo	7	30
Yuba	33	8
	2,203	3,618

TABLE 2

HISTORY OF THE TAKE OF BOBCAT IN CALIFORNIA BY LICENSED FUR TRAPPERS, STATE TRAPPERS AND U. S. FISH & WILDLIFE SERVICE AND AVERAGE PRICE PER PELT
1930 - 1977

Trapping Season	Average Price Per Pelt	Licensed Fur Trappers	State Trappers	U. S. Fish and Wildlife Service	Total
1930-31	1.20	1,684		838	2,522
1931-32	.90	1,250		865	2,115
1932-33	.50	725	369	808	1,902
1933-34	.90	1,290	50	699	2,039
1934-35	.80	1.436	50	802	2,288
1935-36	1.00	1,994	50	1,261	3,305
1936-37	1.00	2,650	421	1,416	4,487
1937-38	.80	2,292	740	1,131	4,163
1938-39	1.00	2,254	1,123	1,465	4,842
1939-40	1.10	2,474	794	1,463	4,731
1940-41	1.70	2,776	1,017	1,400	5,193
1941-42	2.00	3,239	1,046	1,484	5,769
1942-43	2.70	1,923	718	1,317	3,958
1943-44	5.50	2,780	601	1,368	4,749
1944-45	3.10	2,063	545	1,162	3,770
1945-46	3.20	1,730	753	1,383	3,866
1946-47	1.60	1,072	1,194	1,817	4,083
1947-48	1.10	689	2,081	1,980	4,750
1948-49	.70	510	1,459	1,969	3,938
1949-50	.50	375	1,181	2,317	3,873
1950-51	1.00	293	1,255	2,195	3,743
1951-52	.90	239	1,026	2,138	3,403
1952-53	1.50	336	919	2,867	4,122
1953-54	1.30	144	796	3,055	3,995
1954-55	1.50	223	796	2,965	3,984
1955-56	1.70	228		2,409	2,637
1956-57	1.30	276		2,823	3,099
1957-58	1.90	202		2,687	2,889
1958-59	3.10	222		3,444	3,666
1959-60	4.20	175		3,664	3,839
1960-61	4.70	304		3,364	3,668
1961-62	3.30	205		3,375	3,580
1962-63	2.80	295		3,366	3,661
1963-64	3.40	361		3,327	3,688
1964-65	4.20	221		2,742	2,963
1965-66	11.80	489		2,479	2,968
1966-67	8.00	241		2,386	2,627
1967-68	13.60	276		2,093	2,369
1968-69	14.00	281		1,363	1,744
1969-70	10.60	588		1,697	2,285
1970-71	10.90	319		1,147	1,466
1971-72	18.80	588		936	1,524
1972-73	29.30	686		599	1,285
1973-74	45.00	1,244		348	1,592
1974-75	50.50	1,393		319	1,712
1975-76	133.50	2,203		347	2,550
1976-77	76.00	3,618		205	3,823