

**STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME
WILDLIFE MANAGEMENT DIVISION
NONGAME BIRD AND MAMMAL SECTION**

BOBCAT HARVEST ASSESSMENT, 1992-93

State of California
THE RESOURCES AGENCY
Department of Fish and Game

BOBCAT HARVEST ASSESSMENT, 1992-93

by

William E. Grenfell Jr.

December 1993

ABSTRACT

An estimated 1,429 bobcats were taken during the 1992 hunting year and the 1992-93 trapping season. According to export tag reports, trappers took 1,039 bobcats, and hunters took 342. The total take was a decrease of four percent from the 1991-92 year and was the lowest reported take in the last 16 years. The average pelt price decreased from \$74.15 last year to \$43.92 this year (Table 5). The average take per successful trapper increased, but the number of bobcat trappers decreased from 113 to 97.

Data on the bobcat harvest were gathered through the process of tagging bobcat furs for export; the annual trapping report and bobcat hunter report cards; and from U.S. Department of Agriculture, animal damage control records.

INTRODUCTION

Bobcat harvest increased in California from the 1960s through the late 1970s. This increase reflected high fur prices and an abundant population of bobcats. The sale of bobcat fur has brought the highest dollar income to trappers of any species harvested and sold in California since the 1975-76 season. In order to determine the magnitude of the bobcat harvest and the resultant effect on bobcat populations throughout the State, a number of studies were initiated. Field studies of local population dynamics were completed on unharvested populations in Siskiyou, Riverside, and San Diego counties and on a harvested population in San Diego County. Reports on these studies have been previously distributed. A statewide harvest monitoring system was used where the age and sex structures of the harvested population were sampled to determine the effect of the harvest on various bobcat populations and to identify the amount of harvest. The age and sex structure of the various bobcat populations in California stabilized during the mid-1980s. Currently, only the monitoring of harvest quantity is being conducted, since the demand and harvest have been declining since 1981-82.

Public interest in the bobcat, on both the domestic and international fronts, has increased greatly over the last 20 years. Prior to 1971, the bobcat in California was a nonprotected mammal, and there were no restrictions on its take. In 1971, this species was given nongame status by the California Legislature. Subsequently, in 1974 a six-month season was imposed on the take of bobcats. This season was further restricted to the standard 3½ month furbearer season in 1976. During the 1978-79 season, the export tag quota was reached by the end of January, effectively shortening the season by one month. During 1979-80, the season was reduced to 2½ months, but was closed on December 29, 1979, one month earlier than proposed, because the quota of export tags had been reached once again.

For the 1980-81 season, the State was divided into three harvest zones, each with a different season length, depending upon the status of the local bobcat populations. These regulations were a result of previous research and monitoring efforts. The 1981-82 season length was increased by one week, except in the northeastern California region, in order to have the bobcat season coincide with the season on gray fox. In 1982-83, the northeastern California season was set back two weeks, and its length was increased by a week.

The season limit for bobcat hunters was set at two for the 1980-81 season and increased to five for the 1984-85 season. Prior to 1982-83, the hunting season length and timing coincided with the commercial take season. In 1982-83, the hunting season was extended for two weeks at the end of the commercial season in Del Norte, Humboldt, Kern, Lake, Mendocino, Trinity, and San Diego counties. For the 1985-86 season, the hunting season was extended on a statewide basis to open a week before the commercial season and to last until February 15.

The Defenders of Wildlife petitioned the Secretary of the Interior in early 1977 to place the bobcat on the endangered species list. Subjective evaluation of data from animal damage control take, along with increased fur prices and commercial demand and take of bobcats, led this group to take this action. The Secretary later found that the petitioned action was not warranted.

In 1973, the United States became party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The treaty restricted trade in endangered species and established procedures to monitor the trade of other species that might be faced with endangerment in the future. The bobcat was one of the species deemed by the parties to the treaty as a candidate for future endangerment. The Endangered Species Scientific Authority (ESSA) was established as the scientific body to monitor the species status in the United States, and the U.S. Fish and Wildlife Service was

given the authority over trade as provided by the treaty. ESSA evaluated data to justify harvest and export of bobcat furs for three years.

In November 1979, Defenders of Wildlife brought suit against the ESSA. The suit was heard in December, and the court's decision reversed ESSA's findings for five states and parts of two others, but not for California. After the suit, the ESSA was dissolved, and the responsibility was given to the U.S. Fish and Wildlife Service, whose Office of the Scientific Authority (OSA) now has the responsibility for scientific monitoring.

An appeal by Defenders of Wildlife of the court's ruling to the Court of Appeals, District Court for the District of Columbia, resulted in a court order that prohibited bobcat pelts taken after July 1, 1982 from being exported. This ban was imposed until OSA could satisfy the court that export findings were based on reliable population estimates and that each state would enforce a predetermined take limit. Guidelines from OSA to the states to obtain this information were not accepted by the court. During 1982 there was legislative redefinition of the Endangered Species Act which effectively voided the court's ban on export. On December 1, 1982, the export ban was lifted and the major European market was reopened.

Since late 1982, there has been a period of intense management and monitoring of bobcat populations and harvest. The results of this management and monitoring are discussed in this report.

In 1993, legislation was introduced (Assembly Bill 380) to ban the hunting and trapping of bobcats in California. That legislation did not pass.

OBJECTIVES

1. Determine the annual bobcat harvest on a regional basis.
2. Use this information, along with previously gathered information on bobcat biology and population dynamics, to develop a statewide management plan and to manage local populations by manipulating season lengths and chronology, take methods, and harvest limits.

METHODS

The commercial take is determined through assessment of mandatory annual reports of licensed trappers and an export tagging program for all bobcat furs. Commercial fur trappers report their take at the end of each license year (fiscal year), giving the quantity of take of each species by county. Anyone possessing or wishing to sell or to transport a bobcat fur must have it tagged. As part of the tagging process, the trapper must supply information on the place, date, and method of take.

Information on hunting is gathered through the sale of hunting tags and their return. Hunters of bobcat are required to report their kill and provide information on their take.

All depredation take must be reported to the Department. This information is reported directly by the person taking the bobcat or by the public agencies responsible for the depredation control work.

RESULTS

For the 1992-93 season, the total estimated take of bobcats was 1,429 individuals (Table 1). This was four percent less than were taken during 1991-92 and the lowest estimated take in the

16 seasons since 1976-77. Commercial trappers continue to take the majority (73 percent) of bobcats. The total hunter take of 342 (tables 1 and 2) was lower (15 percent) than in 1991-92. The hunter take also was the lowest in 16 seasons since the 1976-77 season (Table 1). The total take of bobcats ranged from none in eight counties to 178 in San Bernardino County (Table 2). In the 1992-93 season, the bobcat take exceeded 100 in four of 58 counties. In the 1991-92 season, more than 100 bobcats were taken from only two counties.

TABLE 1
ESTIMATED ANNUAL TAKE OF BOBCATS BY HUNTING AND TRAPPING IN CALIFORNIA
1977-78 TO 1992-93

Season	Total Commercial Take (IA+IB)	Commercial Trapper Take (IA)	Commercial Hunter Take (IB)	Total Hunter Take (II)	Animal Damage Control Take* (III)	Total Annual Take (IA+II+III)
1977-78	5,150	4,650	500	15,300	208	20,158
1978-79	8,325	6,825	1,500	5,811	56	12,692
1979-80	7,809	6,686	1,123	7,708	32	14,426
1980-81	9,595	8,702	893	3,737	24	12,463
1981-82	9,337	8,162	1,175	3,037	34	11,233
1982-83	8,513	7,427	1,086	2,951	48	10,426
1983-84	7,362	6,576	786	2,077	43	8,696
1984-85	8,897	7,495	1,402	2,993	48	10,536
1985-86	8,099	6,927	1,172	2,861	36	9,824
1986-87	9,123	8,003	1,120	1,739	44	9,786
1987-88	8,994	8,017	977	2,773	47	10,837
1988-89	5,586	4,877	709	1,778	52	6,707
1989-90	2,980	2,677	303	715	63	3,455
1990-91	1,148	962	186	881	46	1,889
1991-92	1,089	1,089	0	401	12	1,502
1992-93	1,039	1,039	0	342	48	1,429

* Federal fiscal year data 10-1-91 to 9-30-92. Other data in this column 7-1 to 6-30.

TABLE 2
TAKE OF BOBCATS BY COUNTY DURING THE 1992-93 SEASON

County	Licensed Trappers	Sport Hunters	Animal Damage Control	Total County
Alameda		2		2
Amador	1	1		2
Butte		1		1
Calaveras	4	3	1	8
Colusa	23			23
Contra Costa		1		1
El Dorado	4	6	4	14
Fresno	45	31		76
Glenn	17			17
Humboldt	41	4	3	48
Imperial		2		2
Inyo	27	3		30
Kern	37	13	2	52
Kings	2			2
Lake		2	1	3
Lassen	24	21		45
Los Angeles	48	1		49
Madera	5	11	1	17
Marin		1	3	4
Mariposa		6	8	14
Mendocino		9	1	10
Merced		1	2	3
Modoc	47	26		73
Mono	1	3		4
Monterey	13	14		27
Napa		3	1	4
Nevada		4	1	5
Orange		1		1
Placer		2	1	3
Plumas		9	2	11
Riverside	33	7		40
Sacramento	3	1		4
San Benito		3		3
San Bernardino	165	13		178
San Diego	86	16	5	107
San Luis Obispo		3		3
San Joaquin	1			1
San Mateo		1		1
Santa Barbara	72	6		78
Santa Clara	27	2		29
Shasta	31	24		55
Sierra		1		1
Siskiyou	100	14	4	118
Sonoma		6	8	14
Stanislaus		2		2
Tehama	35	14		49
Trinity	13	2		15
Tulare	99	31		130
Tuolumne	1	8		9
Ventura	34	5		39
Yuba		2		2
TOTAL	1,039	342	48	1,429

Seven of the 10 counties reporting the highest commercial take of bobcats were the same in 1992-93 as in 1991-92. However, Los Angeles, Modoc, and Tehama counties replaced Humboldt, Ventura, and Trinity counties.

TABLE 3
TEN COUNTIES REPORTING HIGHEST COMMERCIAL TAKE OF BOBCATS
1973-74 TO 1992-93

Rank	1973-74	1974-75	1975-76	1976-77	1977-78
1	San Diego	San Diego	Humboldt	Humboldt	San Bernardino
2	Modoc	Modoc	San Diego	San Bernardino	Humboldt
3	Tehama	Lassen	Modoc	Santa Barbara	Tulare
4	Tuolumne	Humboldt	Shasta	Shasta	Santa Barbara
5	Siskiyou	Inyo	Inyo	San Benito	Kern
6	Humboldt	Siskiyou	Siskiyou	Mendocino	Inyo
7	Mendocino	Colusa	Riverside	Tulare	Mendocino
8	Shasta	Riverside	San Bernardino	Fresno	Modoc
9	Lake	Fresno	Solano	San Diego	Shasta
10	Solano	Lake	Lake	Inyo	Monterey
Rank	1978-79	1979-80	1980-81	1981-82	1982-83
1	Humboldt	Santa Barbara	San Bernardino	San Bernardino	San Bernardino
2	San Bernardino	Humboldt	Monterey	Kern	Monterey
3	Shasta	Tulare	Santa Barbara	Monterey	Kern
4	Kern	Kern	San Luis Obispo	Santa Barbara	Santa Barbara
5	Siskiyou	San Bernardino	Humboldt	Tulare	San Luis Obispo
6	Santa Barbara	Siskiyou	Tulare	Humboldt	Tulare
7	Inyo	San Diego	Mendocino	San Diego	Humboldt
8	Modoc	Mendocino	Kern	Ventura	Los Angeles
9	Mendocino	Monterey	San Diego	Fresno	San Diego
10	Tehama	San Luis Obispo	San Benito	San Luis Obispo	Ventura
Rank	1983-84	1984-85	1985-86	1986-87	1987-88
1	San Bernardino	Kern	Kern	San Bernardino	San Bernardino
2	Kern	Tulare	San Bernardino	Kern	Kern
3	Santa Barbara	Monterey	Tulare	Santa Barbara	Monterey
4	San Luis Obispo	San Bernardino	Monterey	Tulare	Tulare
5	Los Angeles	Santa Barbara	Santa Barbara	Ventura	Santa Barbara
6	Monterey	San Luis Obispo	San Diego	Monterey	Siskiyou
7	Tulare	Los Angeles	Ventura	San Luis Obispo	Humboldt
8	San Diego	Humboldt	Humboldt	San Diego	Ventura
9	Ventura	Siskiyou	Los Angeles	Humboldt	San Diego
10	Humboldt	San Diego	Inyo	Fresno	San Luis Obispo
Rank	1988-89	1989-90	1990-91	1991-92	1992-93
1	San Bernardino	Kern	Kern	Kern	San Bernardino
2	Kern	San Bernardino	Tulare	Shasta	Tulare
3	San Diego	Ventura	Colusa	Siskiyou	Siskiyou
4	Santa Barbara	Fresno	San Bernardino	Humboldt	San Diego
5	Monterey	Monterey	Fresno	Tulare	Santa Barbara
6	Los Angeles	Los Angeles	Siskiyou	San Bernardino	Modoc
7	Ventura	San Diego	Los Angeles	San Diego	Shasta
8	Fresno	Siskiyou	Ventura	Ventura	Kern
9	Tulare	Tulare	San Diego	Santa Barbara	Los Angeles
10	San Luis Obispo	Humboldt	Shasta	Trinity	Tehama

The 1992-93 commercial take of bobcats increased in four of the geographic regions, decreased in five, and remained the same in one (Table 4). The Northeast region increased from 88 (1991-92) to 111 (1992-93), but is still well below the threshold of 425 animals.

Area	87-88 Take	Change <to> (%)	88-89 Take	Change <to> (%)	89-90 Take	Change <to> (%)	90-91 Take	Change <to> (%)	91-92 Take	Change <to> (%)	92-93 Take
North-east	601	-53	282	-28	230	-61	90	-2	88	26	111
North-west	1,355	-49	694	-48	362	-68	115	226	260	-31	180
North Coast	483	-35	312	-64	112	-1	111	-51	55	-27	40
Central Coast	120	-67	40	-32	27	+33	36	-100	0	2,800	28
North Sierra	24	-67	8	0	8	-100	0	300	3	0	3
Central Sierra	342	-63	127	-72	35	-9	32	-87	4	150	10
East Sierra	248	-71	73	62	118	-66	42	9	46	-39	28
South Coast	2,510	-30	1,753	-51	857	-79	180	20	216	-5	205
South Sierra	1,809	-43	1,026	-32	696	-46	375	-23	287	-34	188
So. Calif.	1,502	-15	1,271	-58	535	-69	167	-22	130	89	246
Total	8,994		5,586		2,980		1,148		1,089		1,039

The market for bobcat fur has become relatively stable in both political and economic terms. However, the average price of a bobcat pelt dropped by about 88 percent in the two years prior to 1990-91. It dropped from an all time high of \$167.33 in 1986-87 to \$17.91 in 1989-90 (Table 5). During 1990-91, the pelt price increased to \$49.50. There was no national or international regulatory action pending which might have influenced the demand for bobcat furs. The market appeared saturated during 1989-90 and 1990-91. During 1991-92 the price increased to \$71.32, but in 1992-93 the price dropped again to \$43.92.

TABLE 5
BOBCAT PELT PRICES 1970-71 TO 1992-93

Season	Average Price	Highest Price
1970-71	\$ 10.86	Not Recorded
1971-72	18.83	\$ 30.00
1972-73	29.33	6.00
1973-74	45.00	110.00
1974-75	50.00	110.00
1975-76	133.50	300.00
1976-77	76.00	225.00
1977-78	105.00	185.00
1978-79	120.00	426.00
1979-80	114.20	313.00
1980-81	129.90	325.00
1981-82	114.53	325.00
1982-83	105.85	342.11
1983-84	102.33	380.00
1984-85	121.96	368.00
1985-86	107.86	Not Available
1986-87	167.33	Not Available
1987-88	142.73	Not Available
1988-89	102.31	Not Available
1989-90	17.91	Not Available
1990-91	49.50	125.00
1991-92	71.32	74.15
1992-93	43.92	94.00

In the 1992-93 season, the average take per commercial trapper increased to 10.71 animals, as compared to 6.19 during 1991-92. However, the number of bobcat trappers declined from 113 to 97. In the last 12 years, the highest number of bobcat trappers was 909 in the 1981-82 season (Table 6).

TABLE 6
AVERAGE BOBCAT HARVEST PER SUCCESSFUL TRAPPER PER SEASON IN CALIFORNIA*

County	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
Butte												
Fresno	9.1	8.5	11.9	10.0	12.1	17.6	15.3	16.1	17.4			
Glenn	5.5	6.8		5.8			10.7					
Humboldt	5.7	4.8	7.6	9.3	18.0	12.5	13.0	8.6	2.3			
Inyo	5.0	5.3	7.8	5.6	14.2	9.7	6.2					
Kern	10.8	12.2	16.5	18.4	14.7	13.0	14.2	9.1	11.7	16.9		
Lake	5.9	4.6	5.9			7.2	7.9					
Lassen	5.9	6.5	3.6	4.8	4.4	4.4	9.8	3.9	5.6			
Los Angeles	8.1	8.8	13.5	15.8	14.9	15.6	11.1	12.0	14.4	5.9		
Madera	8.9		11.3	12.7			7.3					
Mariposa	10.1	6.3		9.6	7.2	10.1	19.9					
Mendocino	4.5	5.4	6.1	5.9	5.1	6.5	6.2	5.4				
Modoc	4.6	5.5	7.7	7.2	6.3	6.2	7.2	7.2	3.0			
Mono	4.2	6.9	9.2					6.5				
Monterey	14.2	11.7	14.7	18.0	17.8	21.4	24.8	14.0	16.1			
Plumas	5.5	4.5										
Riverside	7.8	9.0	7.4	10.3	10.1	9.8	12.0	8.7	16.5			
San Benito	9.0	9.8		8.3		14.2						
San Bernardino	9.2	10.0	12.0	11.6	14.6	14.6	13.3	12.3	14.0	5.2	5.5	16.5
San Diego	9.4	9.8	10.6	11.8	10.8	11.6	14.0	16.9	16.8			
San Luis Obispo	8.5	10.6	14.4	11.1	10.8	14.7	14.4	10.4	7.5			
Santa Barbara	12.2	16.6	17.4	16.3	16.1	13.9	13.9	11.7				
Shasta	3.1	3.3	4.1	4.4	4.8	4.7	4.9	6.3	4.9			
Siskiyou	5.7	5.1	5.2	0.2	5.6	5.9	9.9	6.5	5.0	2.5	6.8	9.1
Sonoma	7.5	8.4	6.5	4.6		6.8		9.3				
Tehama	4.1	3.8	3.7	6.3	3.8	3.9	5.8					
Trinity	3.3	4.4	2.5	3.5		8.5	5.0	2.2				
Tulare	9.3	11.2	10.5	13.4	14.5	12.3	17.1	8.5	6.2	6.7		
Tuolumne	5.8	6.9	5.4				5.2					
Ventura	10.4	11.2	10.4	13.5	12.6	18.4	16.6	9.9	16.1			
Statewide	8.78	9.08	11.86	12.01	12.71	14.75	13.55	12.61	12.06	7.00	6.19	10.71
# Trappers Harvesting Bobcats	909	821	488	398	547	584	664	443	303	124	113	97
#Trappers Licensed	3,686	3,901	1,607	1,650	1,417	1,347	1,460	1,244	834	511	371	338

* County data from counties and years where more than 10 trappers per county reported.

As usual, the commercial take of bobcats was primarily by trapping (76 percent) (Tables 7 and 8). Hunting with dogs remains the second most common way to take bobcats. This method was most commonly employed in Tulare County. About 0.1 percent of the bobcat furs were salvaged from bobcats found dead; 0.6 percent were taken through the use of a predator call and 4.5 percent were taken by hunting where the specific method was not given. Predator calling is only occasionally used as a hunting method by persons holding a commercial trapper's license.

TABLE 7
METHODS OF COMMERCIAL TAKE OF BOBCAT, 1992-93

County	% by Trap	% Salvaged	% by Hunting	% by Dogs	% by Calling	Sample Size
Amador				100		1
Calaveras				100		4
Colusa	100					23
El Dorado				100		4
Fresno	100					45
Glenn	76		24			17
Humboldt	32			59	9	41
Inyo	100					27
Kern	89		11			37
Kings	100					2
Lassen	75		21		4	24
Los Angeles	100					48
Madera	100					5
Modoc	72		21	7		47
Mono	100					1
Monterey	100					13
Riverside	100					33
Sacramento	66	34				3
San Bernardino	98		2			165
San Diego	93		7			86
San Joaquin				100		1
Santa Barbara	100					72
Santa Clara	100					27
Shasta	23		32	45		31
Siskiyou	49		4	46	1	100
Tehama	97		3			35
Trinity	61			39		13
Tulare	3			97		99
Tuolumne				100		1
Ventura	100					34
Total	78.6	.1	4.7	19.9	.6	1,039

TABLE 8
METHOD OF COMMERCIAL TAKE OF BOBCATS, 1980-93

Season	Method of Take (Percent of Total Statewide Take)						Total %
	Trap	Dogs	Calling	Misc. Hunt	Road Kill	Unknown	
1980-81	90.6	6.6	0.7	1.4	0.3	0.5	100.1
1981-82	86.2	9.5	1.3	1.8	0.3	0.9	100.0
1982-83	86.7	10.4	0.9	1.4	0.2	0.4	100.0
1983-84	89.0	9.3	0.4	1.1	0.2	<0.1	100.0
1984-85	82.8	13.5	0.7	1.7	0.3	1.0	100.0
1985-86	85.1	13.2	0.6	0.7	0.1	0.3	100.0
1986-87	83.4	10.6	0.8	0.8	0.1	4.2	99.9
1987-88	88.5	9.6	1.1	0.6	0.1	0.1	100.0
1988-89	85.5	11.8	0.9	0.4	0.1	1.4	100.1
1989-90	89.9	7.8	0.7	1.6	-	-	100.0
1990-91	83.7	13.2	2.4	0.5	0.2	-	100.0
1991-92	77.2	19.8	1.2	1.7	0.1	-	100.0
1992-93	75.6	19.2	0.6	4.5	0.1	-	100.0

Information on the extent and distribution of the hunting take of bobcats is gathered through the hunting tag program. Obtaining these tags and returning them to the Department upon taking bobcat are legal requirements of bobcat hunters. The Department sold 4,775 bobcat hunting tags during the 1992-93 season. Three hundred and forty-two were returned to the Department. The hunting take by county is shown in Table 2.

DISCUSSION

The total bobcat harvest decreased in the 1992-93 season from 1991-92. The number of bobcat trappers also decreased from 113 to 97. The decrease in trapping activity, including bobcats, appears to be related to changes in regulations recommended by the Department and enacted by the Fish and Game Commission in 1991-92. These regulations require that all leg-hold traps be of the commercially manufactured padded type (with some exceptions for aquatic sets). Many trappers apparently decided not to trap in 1992-93 because of the increased cost of converting to new traps and the relatively low bobcat pelt price.

Since the 1982-83 season, and with no change in season length, the harvest has remained below the 14,400 statewide harvest limit. Harvest monitoring will continue. If the statewide harvest reaches 14,000 bobcats, the age and sex structure monitoring will be reinstated.

The bobcat take in northeastern California has been monitored annually since 1980-81, based on the need to document and monitor the age and sex structures of this population. If the harvest in this local area increases to more than 425 for more than two successive seasons, additional management action will be taken to determine the effects on that population. The local harvest has been below this level for the last five seasons.

TABLE 9
RECENT COMMERCIAL HARVEST OF BOBCATS IN NORTHEASTERN CALIFORNIA

Season	County				Total Northeastern California
	Eastern Siskiyou	Modoc	Lassen	Plumas	
1978-79	81	306	246	47	680
1979-80	88	216	302	95	701
1980-81	82	126	96	39	343
1981-82	49	143	147	58	397
1982-83	74	238	177	35	524
1983-84	45	182	84	17	328
1984-85	54	231	188	33	506
1985-86	78	181	108	23	390
1986-87	78	237	139	60	514
1987-88	148	223	187	43	601
1988-89	60	107	85	30	282
1989-90	36	62	85	47	230
1990-91	22	30	29	9	90
1991-92	25	39	24	0	88
1992-93	40	47	24	0	111

RECOMMENDATION

Continue to monitor the take of bobcats by geographical area, and use that information to determine the management needed to maintain viable bobcat populations throughout California.