State of California
Natural Resources Agency
Department of Fish and Wildlife

2013 California
BLACK BEAR TAKE REPORT

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Executive Summary

The 2013 California black bear hunting season resulted in 1,078 bears taken, representing a 45.1% decrease from the 2012 season. A total of 23,397 bear tags were issued. Overall hunter success was 4.6%. The bear hunting season closed December 29, 2013, making it the third season since 2010 that the bear season did not close early. The top five counties for reported take were: Shasta (9.9%), Trinity (7.5%), Mendocino (6.7%), Tulare (6.6%) and Humboldt (6.0%).

Of the returned harvest report tags, 37% (400) indicated a female was taken. Of bear hunters who reported effort, approximately 88% (942) indicated they spent less than 7 days in pursuit of bear. Lastly, bears killed with the assistance of guides only accounted for 1.2% of the total bears harvested.

In 2012, state law was passed that made the use of dogs unlawful for taking bear. The law took effect on January 1, 2013 and applies to bear hunting seasons from 2013 forward. The last bear lawfully taken with assistance of dogs in California was an 11 year old male bear in Trinity County on December 18, 2012. The use of hounds is known to be an effective method in taking black bear. Without the use of this hunting technique, the 2013 bear hunter take decreased as was anticipated.

Additionally, because the California Department of Fish and Wildlife's (CDFW) black bear population estimate relies on hunter harvest in part, the resulting reduction in harvest due to changing method of take would result in an erroneous estimate of the population if the same method to estimate population were continued to be used. Because of this, a modified approach to estimating the population has been developed.

A premolar tooth was removed from nearly all hunter-killed bears for age determination, which is one factor used to estimate the total population size within the bear hunt zones. According to this analysis, the CDFW estimates 34,385 (±6,443) bears inhabited the area encompassed by the black bear hunting zones prior to the start of the 2013 bear hunting season. As bears occupy habitats outside the 2013 hunt zones, the statewide population is likely greater than this estimate.

Cover photo courtesy John B.

Introduction

The primary goal of the CDFW's black bear management program is to maintain a viable and healthy black bear population. To attain this goal, the CDFW manages bears in accordance with the Black Bear Management Plan (1998), which provides guidance for balancing the needs of this species with the diverse economic and recreational needs of the people of California. This plan was developed in accordance with the state's policy regarding wildlife resources (Fish and Game Code Section 1801), which states the following goals:

a.) To provide for the beneficial use and enjoyment of wildlife by all citizens of the state;
b.) To perpetuate all species for their intrinsic and ecological values;
c.) To provide aesthetic, educational, and non-appropriative uses;
d.) To maintain diversified recreational uses of wildlife including sport hunting;
e.) To provide for economic contributions to the citizens of the state through the recognition that wildlife is a renewable resource; and
f.) To alleviate economic losses or public health and safety problems caused by wildlife.

In order for the state to meet these goals, the Legislature has delegated the power to regulate the take and possession of bears, among other wildlife, to the California Fish and Game Commission. The Commission, in consultation with CDFW staff, reviews the factors which may affect the long-term health and viability of the black bear population. These factors are presented in the Black Bear Management Plan as a monitoring matrix (see Table 1), and the results of such monitoring are presented herein.

In 1957, the Commission initiated a tag reporting system for black bears in order to monitor the state's bear population. The black bear harvest tag reporting system enables the CDFW to collect harvest attributes via self-administered questionnaire in order to monitor the bear population and the hunting patterns of bear hunters in California. Since 1982, all bear tag holders have been required to return their bear harvest report tags to the CDFW whether or not they successfully take a black bear. The data obtained from these harvest tag reports comprise a substantial portion of this report.

In addition to the data derived from the returned harvest report tags, the CDFW also relies on the age of bears taken during the season to develop population indices. The age-at-harvest data provide insight to the age structure of bears taken during the season. Furthermore, the CDFW relies on a population estimation model which uses age-at-harvest and sex ratio data to develop a population index to monitor trends. Age data are obtained from extracting a tooth from hunter-killed bears. The results of these analyses are also presented in this report.

Table 1. Resulting Matrix for Monitoring California's 2013 Black Bear Take

Monitoring Technique	Threshold of Concern	2013 Data	Threshold Exceeded?
Median Ages of Hunter Killed Bears	Female ages <4.0 years old; -**or-** statistically significant reduction in median age for combined sexes.	Median Female Age = 5 Total Combined Median Age = 7 No statistically significant reduction in median age for combined sexes.	NO
Percent Females in Harvest	>40 percent.	37 percent	NO
Total Harvest	<1,000 **or** statistically significant reduction; only if reduction is independent of administrative action.	1,078 Statistically significant reduction in harvest not independent of administrative action (prohibiting use of dogs).	NO
Kill per Hunter Effort and Population Index	Statistically significant decline in **both** kill per hunter effort and in population index.	Significant decline in kill per hunter effort and population index	NO

Summary of 2013 Bear Hunting Regulations

Black bear are widely distributed in California forests and ranges and the CDFW bear hunt zones encompass approximately 86.6% of the estimated bear range (Figure 1). The general bear season opened concurrently with the opening of the general deer season in the A, B, C, D, X8, X9a, X9b, X10 and X12 deer hunting zones. In the remaining portions of the State where bear hunting is permissible, the general bear season opened on the second Saturday in October. The general bear season was to close when the CDFW received report of 1,700 bears taken, or on December 29, whichever occurred first. Additionally, persons possessing a valid bear tag were able to hunt during a 23-day archery-only season from August to early September.

There was no limit on bear tag sales. The bag and possession limit was one bear per hunter. Bear cubs (defined as bears less than one year of age or weighing less than 50 pounds) and females with cubs were prohibited from harvest. Beginning in 2013, the use of dogs to take bear was unlawful during both the bear archery season and the general bear season.

Results

Season Length

The 2013 archery bear hunting season opened statewide on August 17 and ended on September 8. The general bear hunting season opened concurrently with general deer hunting season in the A, B, C, D, X8, X9a, X9b, X10, and X12 deer hunting zones. In the remaining deer hunting X zones, bear season commenced October 12 (the second Saturday in October). The bear season closed on December 29 (the last Sunday in December) pursuant to California Code of Regulations, Title 14, section 365, making it the third season since 2010 that the bear season did not close early.

Tag Sales

In all, 23,397 bear hunting tags were sold. The total consisted of 23,328 resident bear tags and 69 non-resident bear tags. Total bear tag sales in 2013 was 5.93% less than 2012 bear tag sales and 3.0% less than the previous ten years' average. Non-resident bear tag sales represented the greatest decrease in overall bear hunting tag sales, decreasing by a total of 72.1% from 2012 sales (247); resident bear tag sales decreased by 5.27% for same time period. This reflects an overall revenue reduction of $68,229 from 2012.

Total Take and Sex Composition

During the 2013 black bear hunting season 1,078 bears were taken. The 2013 bear take was 45.1% less than hunt year 2012 (Figure 2) and is statistically significantly less than the previous three years' average take of 1,738 bears. The administrative action prohibiting the use of dogs to take bear is thought to be largely responsible for the reduction in take. Of the 1,078 bears taken, 655 (61%) were male, 400 (37%) were female, and 23 (2%) harvest report tags did not report sex (Figure 3).

Figure 1. Black Bear Range and Take Summary

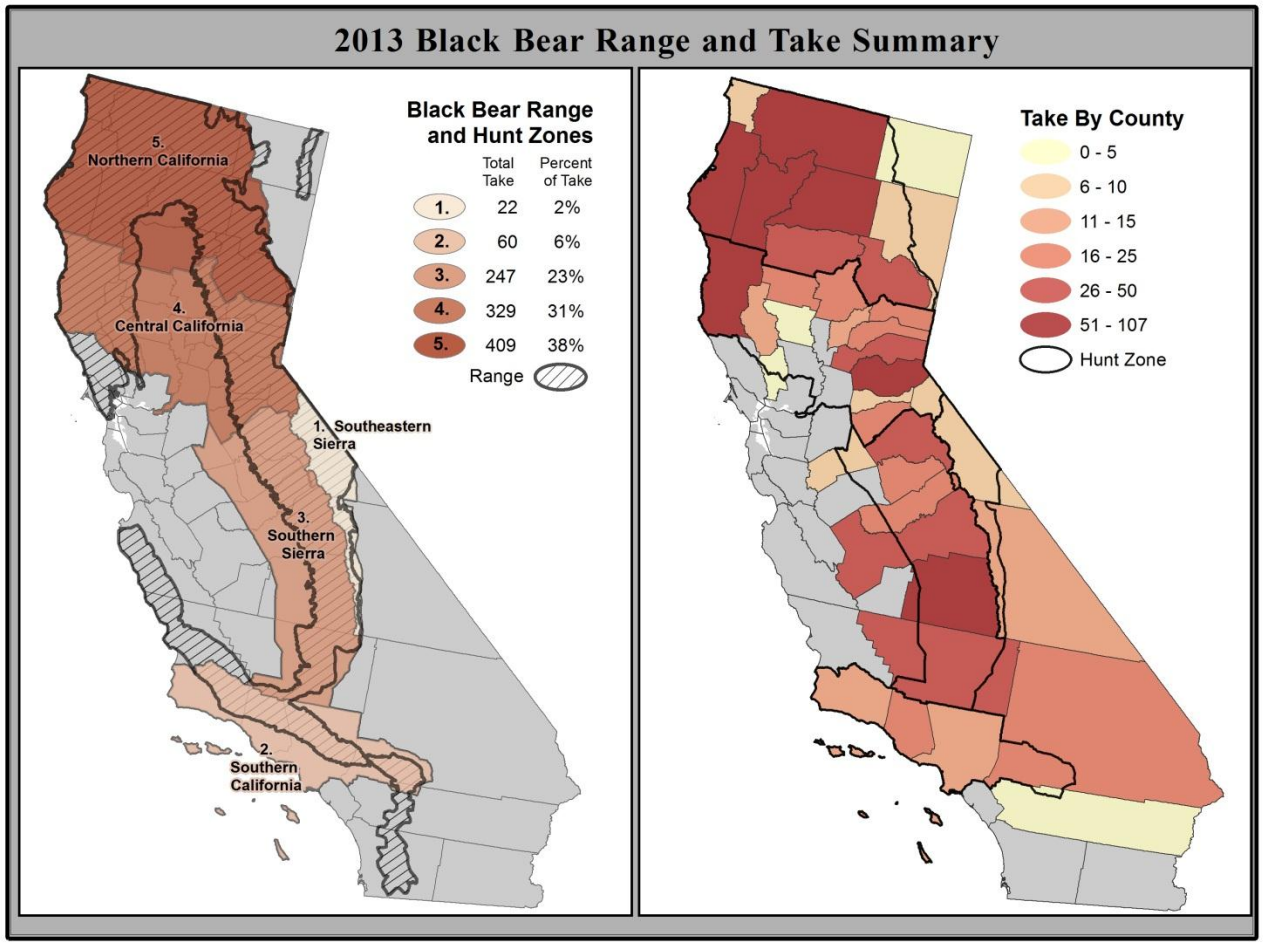


Figure 2. Annual Bear Take

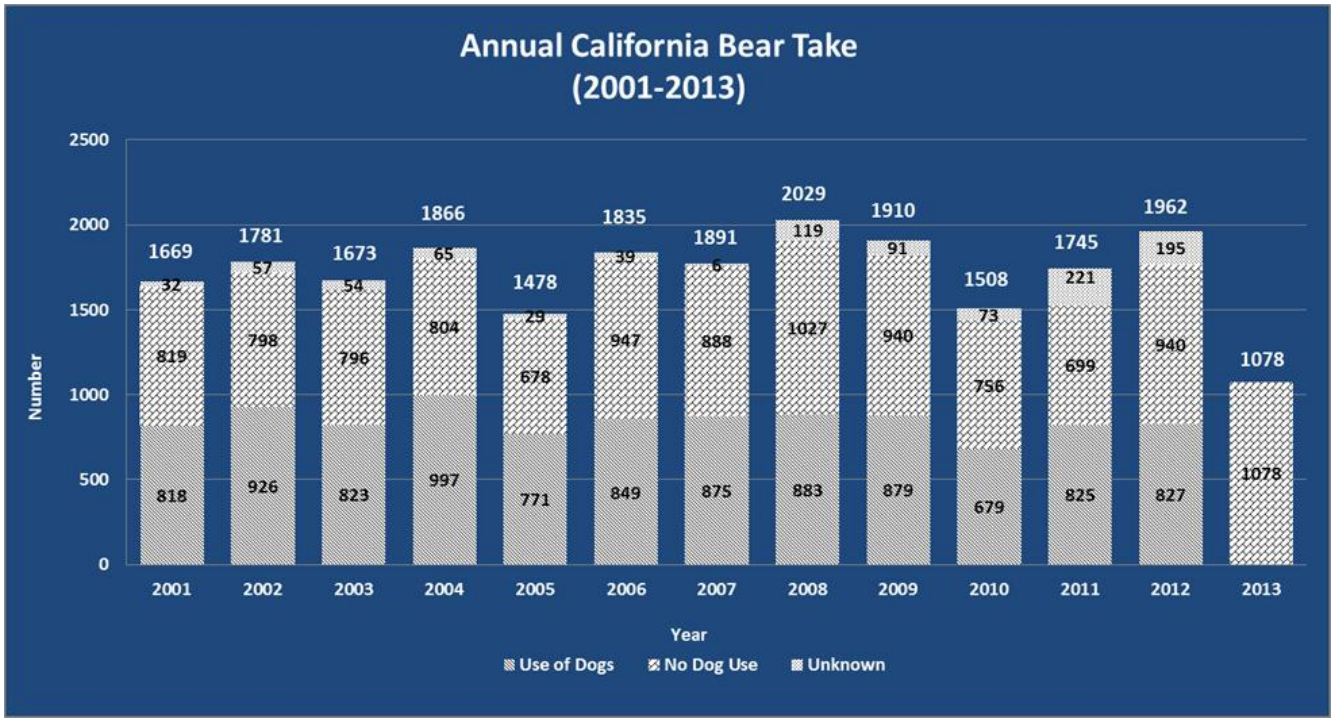
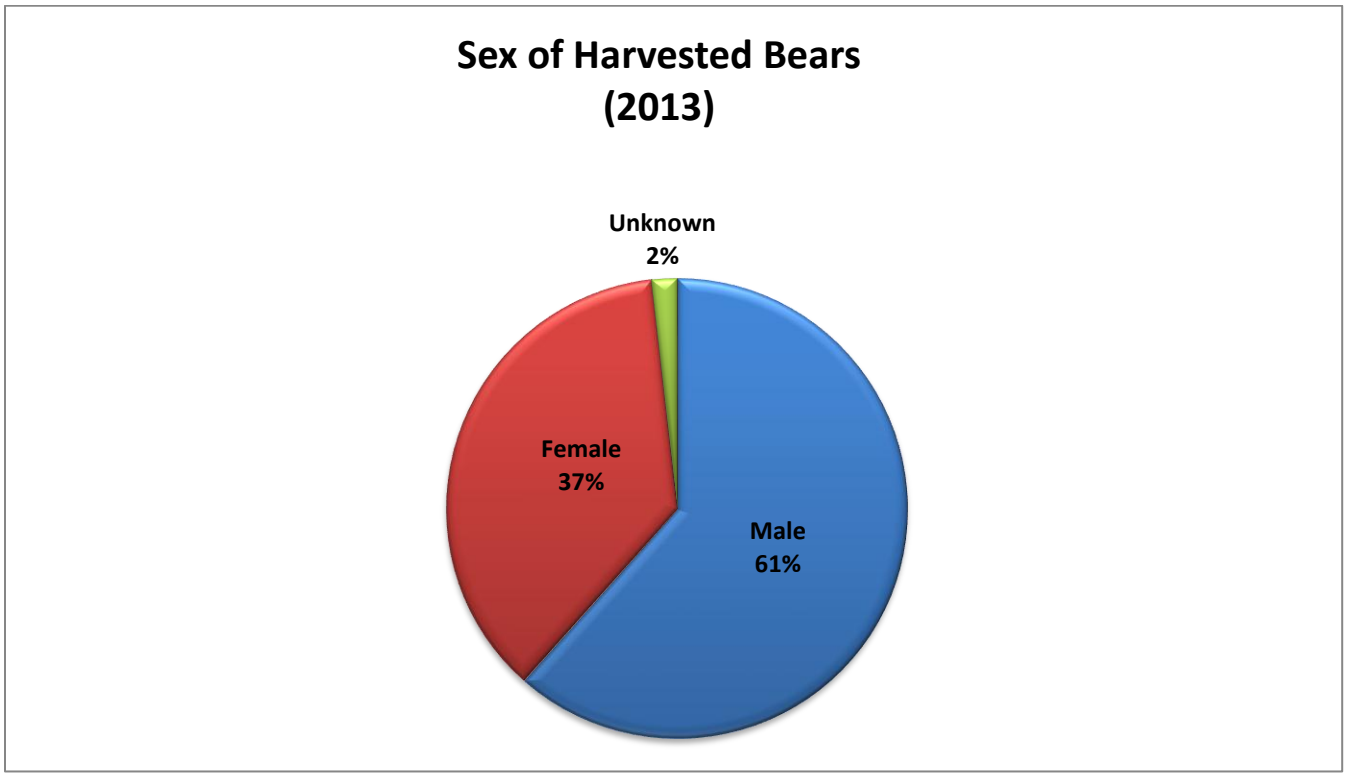


Figure 3. Bear Take Sex Composition



Hunter Effort

Similar to 2012, most bear hunters who were successful in harvesting bear spent a week or less afield (Figure 4). Exactly 48% of all successful hunters reported having spent a day or less in the field; 40% of successful hunters spent from 2 to 7 days in the field and the remaining 12% spent 8 or more days in the field. Of those who responded, successful hunters spent an average of 4.05 days in the field before taking a bear.

Methods of Take

California bear hunters use various methods to harvest a bear. Of those who responded, the use of rifles accounted for 76% of bear take, followed by archery equipment (10%), while shotgun, pistol, muzzleloader and crossbow use comprised 2% of the total bear take (Figure 5). The remaining 12% did not report any method of take while harvesting bear. Individuals using a rifle, archery equipment or a shotgun spent, on average, 4 days in the field before taking a bear, whereas individuals using a pistol spent 7 days and individuals using muzzleloaders or crossbows spent 1.5 days and 1 day in the field, respectively.

In 2012, a new state law was passed that makes the use of dogs unlawful for taking bear. This law took effect beginning January 1, 2013 and applied to the 2013 bear hunting season. The last bear lawfully taken with assistance of dogs in California was an 11 year old male bear in Trinity County on December 18, 2012. The use of hounds is an effective method in taking black bear. Without the use of this hunting technique, the 2013 bear hunter take decreased as was anticipated. The stacked bar graph in Figure 2 further illustrates the relative harvest by hunters with and without the use of dogs. In the majority of cases, hunters without dogs took more bears than hunters with dogs for this time period.

Differing from previous years (2010 - 2012), in comparison to hunters solely bear hunting, hunters who took bear while deer hunting during 2013 accounted for the majority (53%) of the total harvest (Table 2); only 5% of these hunters reportedly used archery equipment. Only 47% of hunters took their bear while only bear hunting and 5% of these hunters used archery equipment. In 2012, 5 (0.3%) of all bear hunters reporting successful take reported the use of a guide. Of all bear hunters reporting successful take in 2013, 13 (1.2%) reported the use of a guide, representing a 160% increase over 2012.

Timing of Take

Bears were predominantly harvested in October (Figure 6), most likely due to the general bear hunting season commencing in October. Similar to previous years, the number of bears harvested in November and December were less than the month previous, reflecting decreasing bear availability due primarily to denning chronology.

Figure 4. Hunter Effort

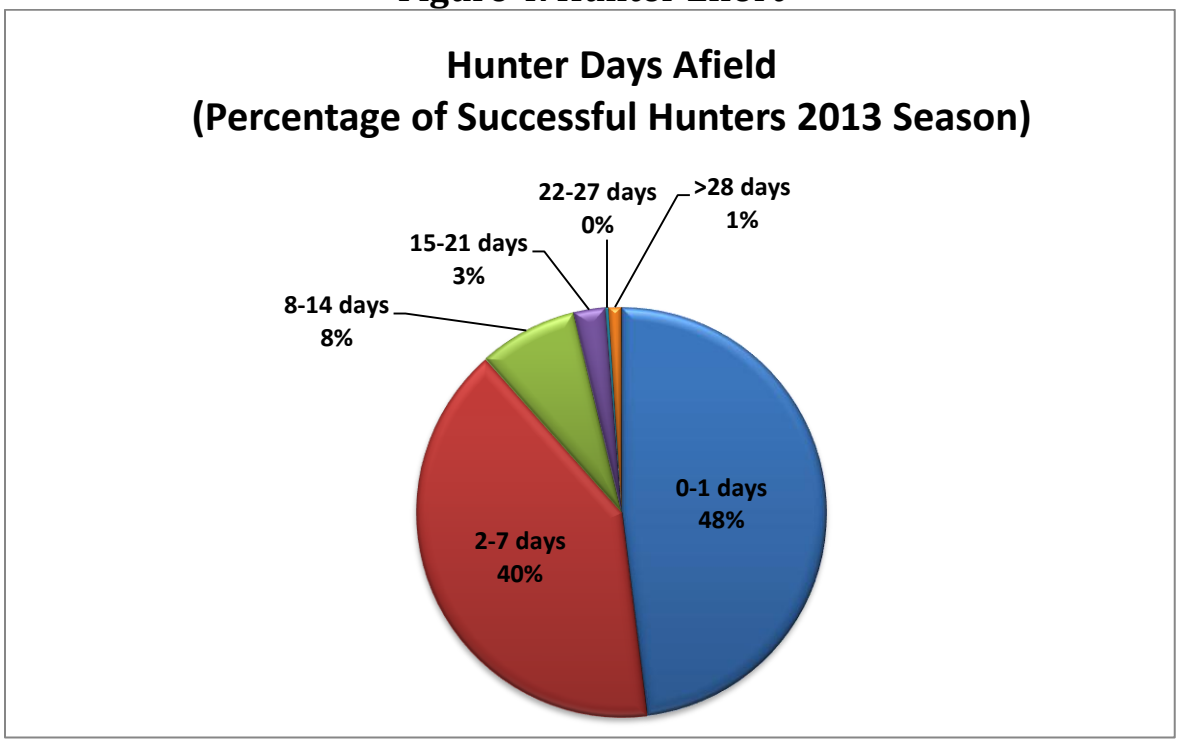


Figure 5. Method of Take

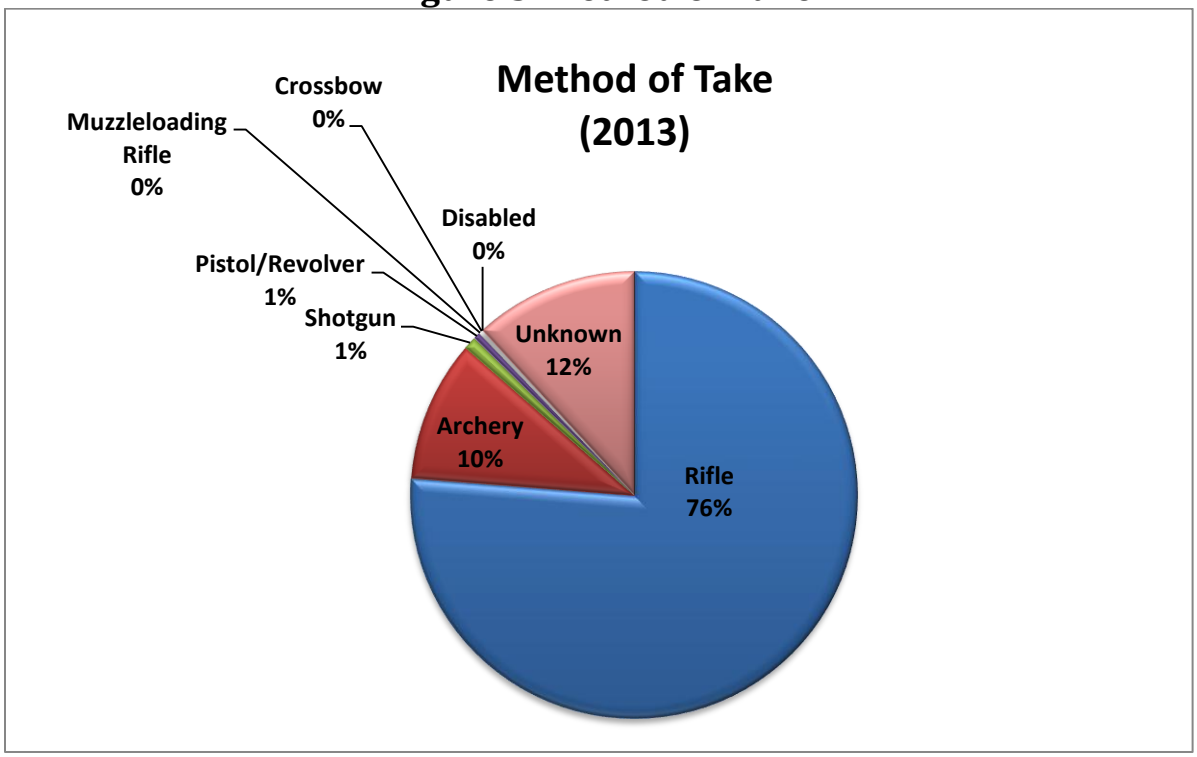


Table 2. Method of Take Summary

	General Hunting	Archery Hunting	Unknown	Grand Total
Bear Hunting	30.6%	5.1%	11.0%	46.7%
Took a Bear while Deer Hunting	47.4%	5.1%	0.2%	52.7%
Unknown	0.0%	0.0%	0.6%	0.6%
Grand Total	78.0%	10.2%	11.8%	100.0%

Figure 6. Monthly Bear Take

Location

Northern California counties provide some of the better bear hunting in the state (Table 3). Figure 1 further illustrates bear take by bear hunt zone and county. Shasta, Trinity, and Mendocino counties accounted for 9.9%, 7.5% and 6.7% of the total bear sport take, respectively. Tulare, Humboldt, Siskiyou, El Dorado, Kern and Fresno counties accounted for 6.6%, 6.0%, 5.7%, 5.4%, 4.4% and 4.4% of the total statewide 2013 bear sport take, respectively. These counties provide some of the better bear habitat in the state – areas of mixed aged conifers interspersed with open meadows and mixed hardwood forests that provide ample amounts of calorie-dense berries and nuts.

Estimated Population Size

A premolar tooth was removed from nearly all hunter-killed bears for age determination, which is one factor used to estimate the total population size within the bear hunt zones. Teeth are sent to an independent laboratory in Montana for age determination. The age and sex ratios of bears in the harvest are input into a statistical model that produces a conservative estimate of bear abundance within the hunt zones prior to the commencement of the hunting season.

Through 2012, the age and sex ratios of bears taken with and without the use of hounds have been input into the statistical model. As previously stated, beginning in 2013, the use of dogs in the sport take of bears is prohibited thereby eliminating this type of data to be input into the statistical model for population estimation. A regression best fit graph line using data of bears taken without dogs was subsequently developed to determine population trend information (Figure 7). The trend information from this regression line for 2013 of 383 additional bears (y=383) was applied to the 2012 bear hunt zones population estimate of 34,002.

According to these analyses, the CDFW estimates approximately 34,385 (±6,443, 2008-2012 average confidence interval of take with dogs) bears inhabited the area encompassed by the black bear hunting zones prior to the start of the 2013 bear hunting season (Figure 1). It is important to note that this method only estimates bears within the current hunt zones, prior to the commencement of the previous year's hunting season. As bears occupy habitats outside the 2013 hunt zones, the statewide population is likely greater than this number.

Table 3. Bear Take by County

County	# of Bears Harvested	Percent of Total Harvest
Alameda	0	0.0%
Alpine	8	0.7%
Amador	7	0.6%
Butte	21	1.9%
Calaveras	25	2.3%
Colusa	5	0.5%
Contra Costa	0	0.0%
Del Norte	6	0.6%
El Dorado	58	5.4%
Fresno	47	4.4%
Glenn	18	1.7%
Humboldt	65	6.0%
Imperial	0	0.0%
Inyo	12	1.1%
Kern	47	4.4%
Kings	0	0.0%
Lake	11	1.0%
Lassen	6	0.6%
Los Angeles	11	1.0%
Madera	23	2.1%
Marin	0	0.0%
Mariposa	17	1.6%
Mendocino	72	6.7%
Merced	0	0.0%
Modoc	3	0.3%
Mono	10	0.9%
Monterey	0	0.0%
Napa	1	0.1%
Nevada	25	2.3%
Orange	0	0.0%
Placer	43	4.0%
Plumas	37	3.4%
Riverside	1	0.1%
Sacramento	0	0.0%
San Benito	0	0.0%
San Bernardino	20	1.9%
San Diego	0	0.0%
San Francisco	0	0.0%
San Joaquin	0	0.0%
San Luis Obispo	0	0.0%
San Mateo	0	0.0%
Santa Barbara	11	1.0%
Santa Clara	0	0.0%
Santa Cruz	0	0.0%
Shasta	107	9.9%
Sierra	24	2.2%
Siskiyou	61	5.7%
Solano	0	0.0%
Sonoma	0	0.0%
Stanislaus	10	0.9%
Sutter	0	0.0%
Tehama	43	4.0%
Trinity	81	7.5%
Tulare	71	6.6%
Tuolumne	32	3.0%
Ventura	17	1.6%
Yolo	0	0.0%
Yuba	11	1.0%
Unknown County	11	1.0%
Total	**1078**	**100.0%**

Monitoring Matrix

The CDFW monitors the black bear population in accordance with the 1998 Black Bear Management Plan. Contained within this plan is a matrix of thresholds of concern for the statewide black bear population (Table 1). The plan states that if two or more of these thresholds are exceeded, the CDFW will recommend to the Fish and Game Commission that the bear harvest be reduced. None of the four thresholds of concern were exceeded. The median age for females in the harvest was 5 years old, and the median age of all bears in the harvest increased from 6 years old in 2012 to 7 years old in 2013. Females comprised less than 40% of the total harvest (Figure 3). Total bear harvest did not exceed the threshold as total harvest was greater than 1,000, nor was there a statistically significant reduction in harvest independent of administrative action (use of dogs unlawful while taking bear) when compared to the previous three years' average.

Because of the elimination of the use of dogs for bear hunting, CDFW anticipates reduced total harvest levels in the future, and perhaps a reduced kill per hunter effort as well. Because of these changes to the method of bear harvest, the matrix will be re-evaluated and revised to reflect the current conditions under which black bear are taken.

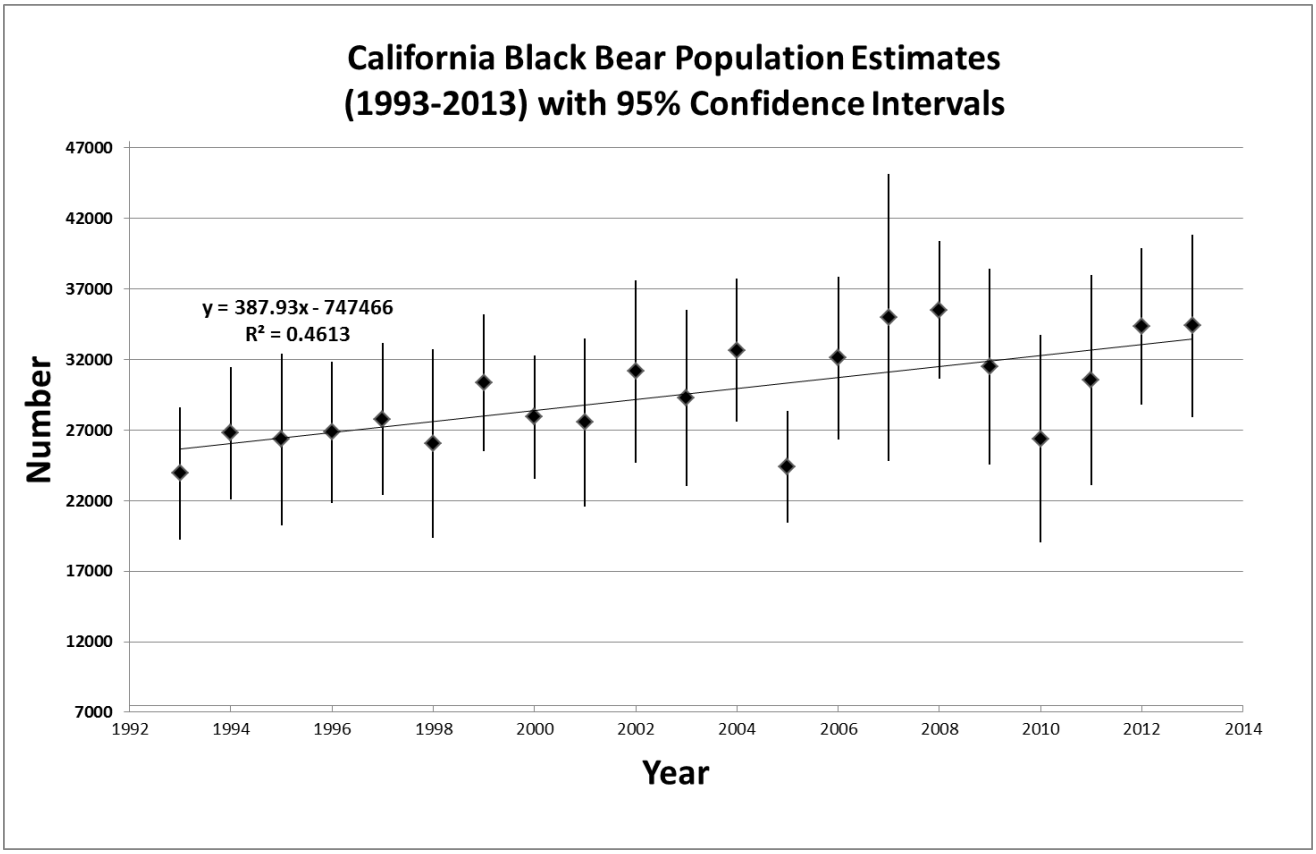



Figure 7. Bear Population Index