



**State of California
Natural Resources Agency
Department of Fish and Wildlife**



BLACK BEAR TAKE REPORT 2018

**September 29, 2021
Wildlife Branch
1010 Riverside Parkway
West Sacramento, CA 95605**

Executive Summary

The 2018 California black bear hunting season resulted in 1,342 bears taken, representing a 5.4% decrease from the 2017 season harvest of 1,418 bears. A total of 27,885 bear tags were issued. Overall hunter success was 4.8%. The success rate among hunters who reported an attempt to hunt was 9.6%. The bear hunting season ran its full length and closed December 30, 2018. The top five counties for reported take were: Trinity (12.8%), Shasta (10.5%), Mendocino (7.7%), Siskiyou (7.6%) and Humboldt (6.8%). In the Private Lands Management (PLM) Program for 2018, there were 30 licensees that turned in their general tags for PLM bear tags and resulted with a program harvest of zero bear.

Of the returned harvest report tags that reported sex, 36.55% (489) indicated a female was taken. Of the successful bear hunters who reported effort, approximately 79% (1,056) indicated they spent 7 days or less in pursuit of bear. Lastly, bears killed with the assistance of guides only accounted for 0.4% of the total bears harvested.

A premolar tooth was collected from the majority of hunter-killed bears (1,150) for age determination, which is one factor used to estimate the total population size within the bear hunt areas. Due to backlogs in sample processing, the teeth collected in 2018 have not been processed at the time of this report. The Department will revisit 2018 age data when it becomes available, but to fill this data gap in the short term, averaged age proportions from the most recent three years of data were applied to the 2018 harvest total. From this analysis, the California Department of Fish and Wildlife (Department) produced an estimate of 20,801 ($\pm 6,269$: 95% CI) bears in the area encompassed by the black bear hunt zone prior to the start of the 2018 bear hunting season. As bears occupy habitats outside the hunt area, the statewide population is likely greater than this estimate. The Department expects that the relatively lower population estimates found since 2013 are an artifact of reduced annual harvests rather than a true reflection of reduced population size. The Department's modeling method is explained in further detail in the Estimated Population Size section of this report.

Introduction

The primary goal of the Department's black bear management program is to maintain a viable and healthy black bear population. To attain this goal, the Department manages bears in accordance with the Black Bear Management Plan (1998), which provides guidance for balancing the needs of the 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.

For the state to meet these goals, the Legislature has delegated the power to regulate the take and possession of bears - amongst other wildlife - to the California Fish and Game Commission. The Commission, in consultation with Department 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 3), and the results of such monitoring are presented herein.

In 1957, the Commission initiated a tag reporting system for black bears taken in California. The black bear harvest tag reporting system enables the Department to monitor both the bear population and hunter's bear-hunting patterns by collecting harvest attributes via a self-administered questionnaire. Since 1982, all bear tag holders have been required to return their bear harvest report tags to the Department whether or not they successfully took a black bear. Since 2013, successful bear hunters have been able to complete their tag questionnaire on-line through the Department's Automated License Data System (ALDS). The data obtained from these harvest tag reports comprise a substantial portion of this report.

In addition to the data derived from the on-line reported or returned harvest report tags, the Department also relies on age estimates of bears taken during the season to develop population abundance estimates. Age data are obtained from bear premolar teeth collected from hunter-killed bears. The age-at-harvest data provide insight to the age structure of bears taken during the season. Furthermore, the Department utilizes age-at-harvest data in conjunction with sex ratio information in a population estimation model to monitor population trends. At the time of this report, however, teeth from the 2018 harvest are still being processed. To fill this data gap in the short term, averaged age proportions from the most recent three years of data were applied to the 2018 harvest total. The results of that analysis are also presented in this report.

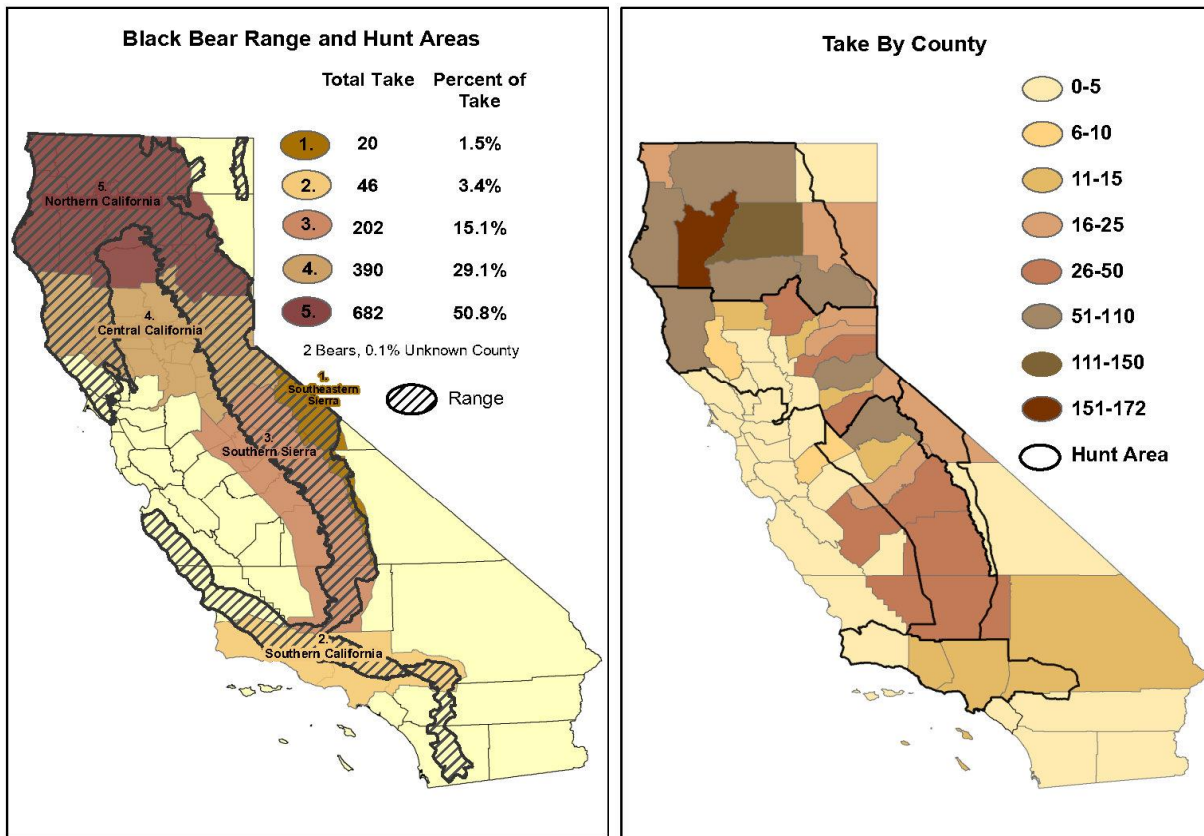
Summary of 2018 Bear Hunting Regulations

Black bears are widely distributed in California forests and ranges, with Department bear hunt areas encompassing approximately 87% of the total estimated bear range (Figure 1). The 2018 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. Additionally, persons possessing a valid bear tag were able to hunt during a 23-day archery-only season from mid-August to early September. The 2018 general bear season was to close when the Department received report of 1,700 bears taken, or on December 30, whichever occurred first.

There was no limit on bear tag sales. The bag and possession limit is 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 may not be taken. Beginning in 2013, the use of dogs to take bear was unlawful during both the bear archery season and the general bear season.

Figure 1. Black Bear Range and Take Summary

2018 Black Bear Range and Take Summary



2018 Hunt Season Results

Season Length

The 2018 archery bear hunting season opened statewide on August 18 and ended on September 9. 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 13 (the second Saturday in October). The bear season closed on December 30 (the last Sunday in December) pursuant to California Code of Regulations, Title 14, section 365, making it the eighth season since 2010 that the bear season did not close early.

Tag Sales

27,885 bear hunting tags were sold for the 2018 bear season. The total consisted of 27,790 resident bear tags and 95 non-resident bear tags. Total bear tag sales in 2018 was 0.1% (39) higher than 2017 bear tag sales (27,846) and 9.7% higher than the previous ten years' average. Non-resident bear tag sales increased by a total of 1.1% (1) from 2017 sales (94) with resident bear tag sales increasing by 0.1% (38) over 2017 sales. This reflects an overall revenue increase of \$31,224 from 2017.

Total Take and Sex Composition

During the 2018 black bear hunting season, 1,342 bears were taken. The 2018 bear take was 5.4% (76) lower than the 2017 hunt year (Figure 2) and 6.2% (83) lower than the previous three years' average take of 1,259 bears. Of the 1,342 bears taken, 849 (63.3%) were male, 489 (36.4%) were female, and 4 (0.3%) harvest report tags did not report sex (Figure 3).



Photo Courtesy of Lake Tahoe Wildlife Care

Figure 2. Annual Black Bear Take

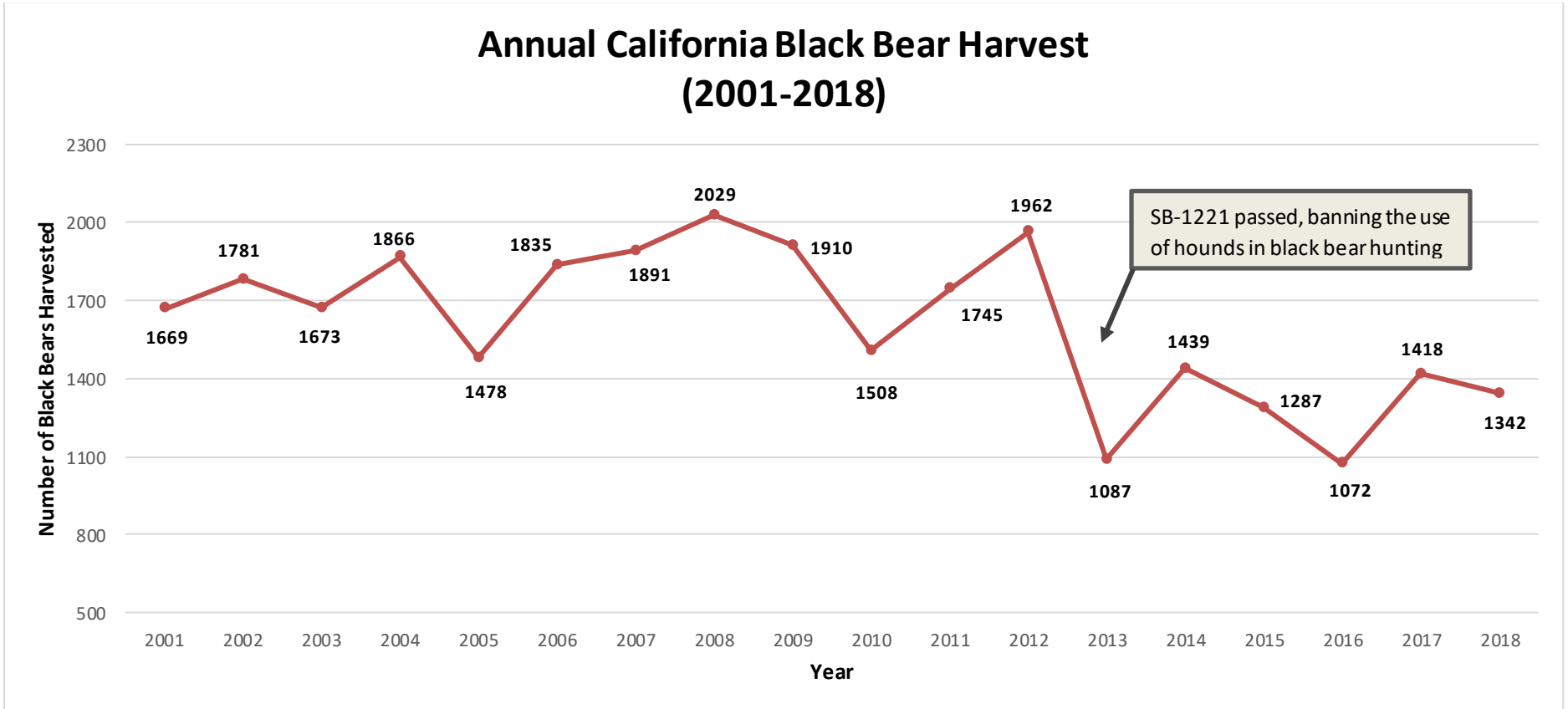
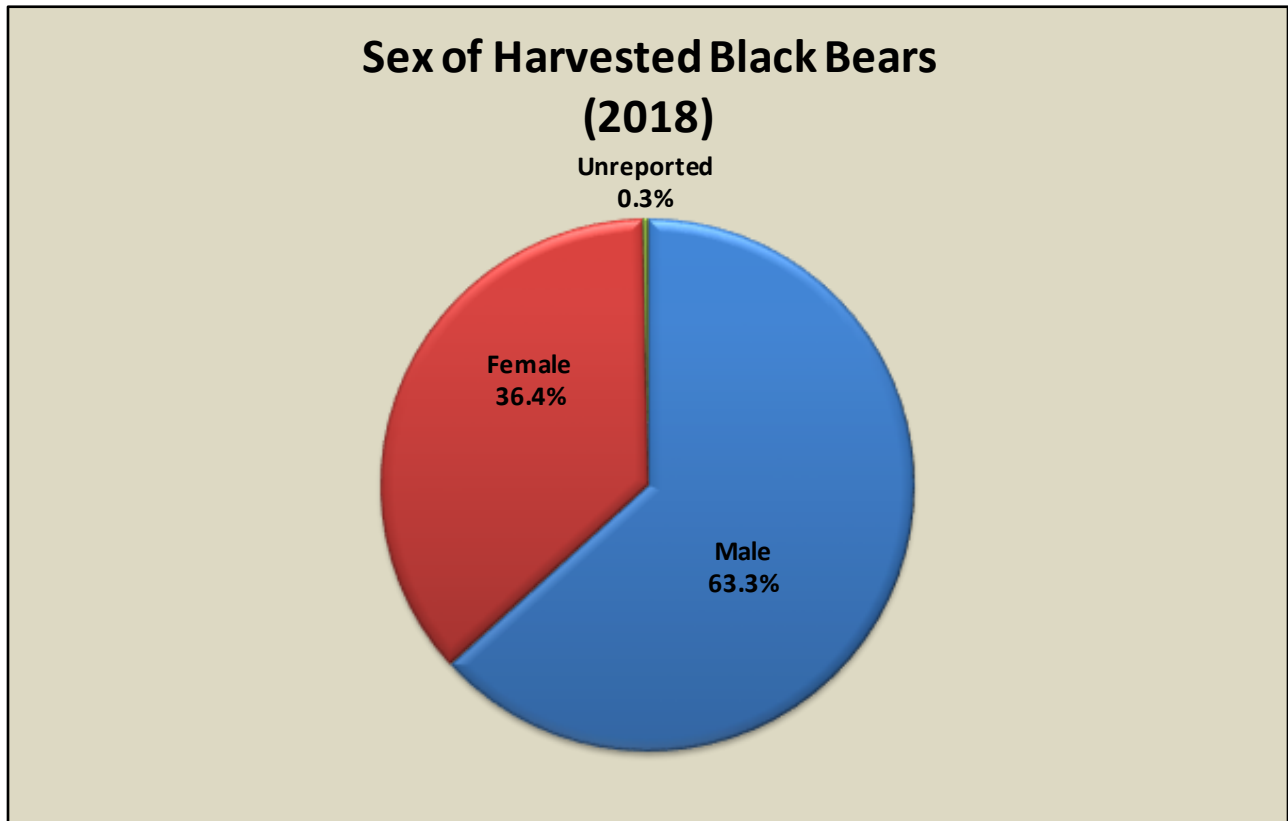


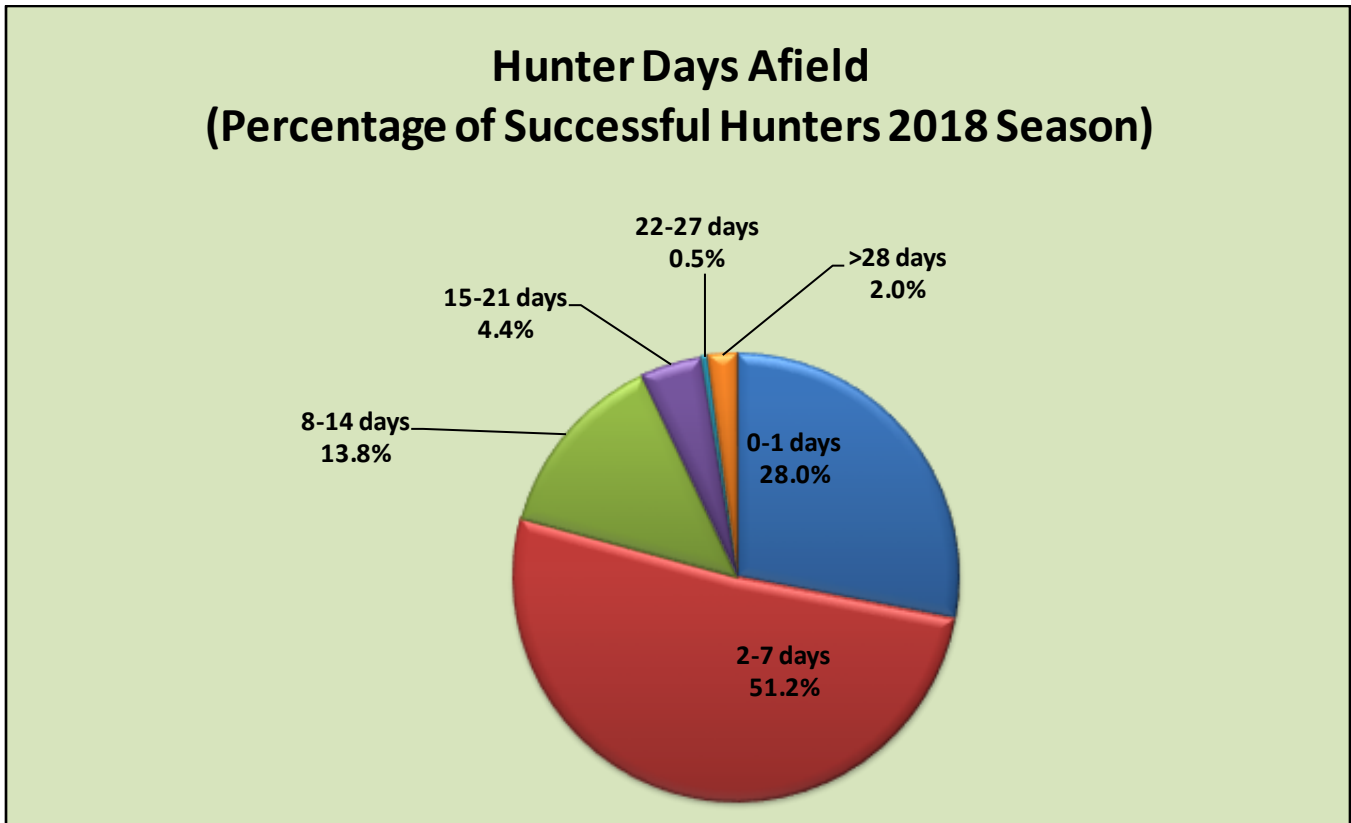
Figure 3. Bear Take Sex Composition



Hunter Effort

Similar to 2017, most bear hunters that were successful in harvesting a bear spent a week or less afield (Figure 4). Of the successful hunters who reported number of days hunting before take, 28% spent a day or less in the field while 51.2% spent 2 to 7 days in the field. The remaining 20.8% reported spending 8 or more days in the field. Successful hunters reporting effort spent an average of 5.2 days in the field before taking a bear. The 2018 season average represents a 13.0% increase in days spent afield for hunters when compared with the average of 4.6 days afield in the 2017 black bear hunting season.

Figure 4. Hunter Effort



Methods of Take

There are various methods by which Californians can legally harvest a bear. Of those who responded, the use of rifles accounted for 85.1% of bear take, followed by archery equipment (12.6%). Three archers used disabled archer licenses. Shotgun, pistol, muzzleloader, crossbow, and disabled hunter take comprised 1.9% of the total bear take (Figure 5). The remaining 0.4% did not report any method of take while harvesting bear. SB-1221 was passed in 2012 and prohibited the use of hounds in the take of bear. This law took effect January 1, 2013, so hounds are no longer listed in these reports as a method of bear take.

Individuals using a rifle spent an average 5.3 days in the field before taking a bear, whereas individuals using archery equipment spent an average 3.9 days and individuals using muzzleloaders spent an average 6.6 days in the field. Individuals hunting under a disabled archer license accounted for the lowest reported days afield average at 2.3 days before take.

Hunters were also asked to report whether a bear was taken while hunting exclusively for bear, or while deer hunting. Similar to previous years, the 2018 season hunters who took bear while concurrently hunting deer accounted for the majority (61.3%) of the total harvest scenarios (Table 1). Only 7.8% of hunters reported taking their bear using archery equipment while deer hunting. A total of 38.5% of

hunters took their bear while exclusively bear hunting, with 4.8% of those hunting exclusively for bear using archery equipment.

In the 2017 hunt season, seven (0.5%) of all successful bear hunters reported the use of a guide. Of all bear hunters reporting successful take in 2018, five (0.4%) reported the use of a guide, representing no significant change.

Figure 5. Method of Take Summary

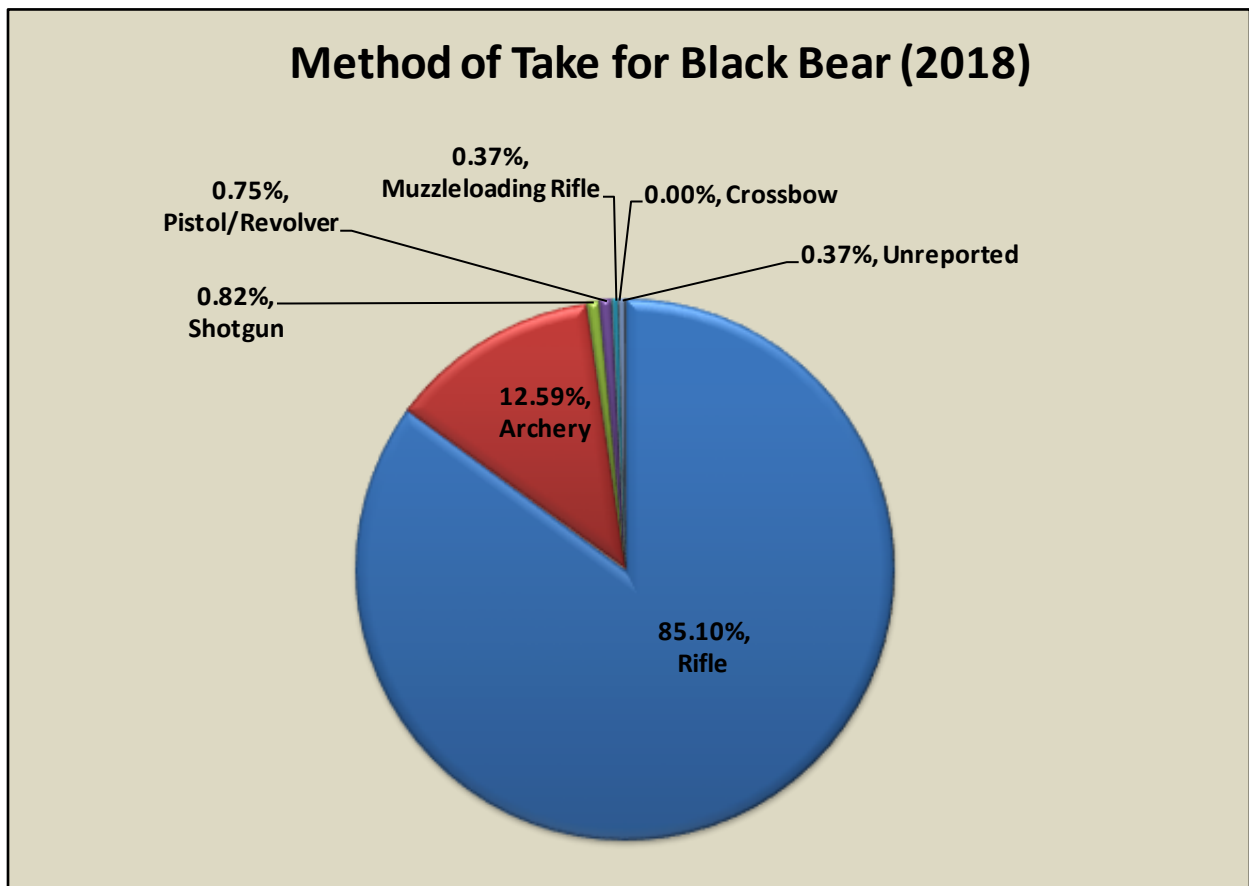


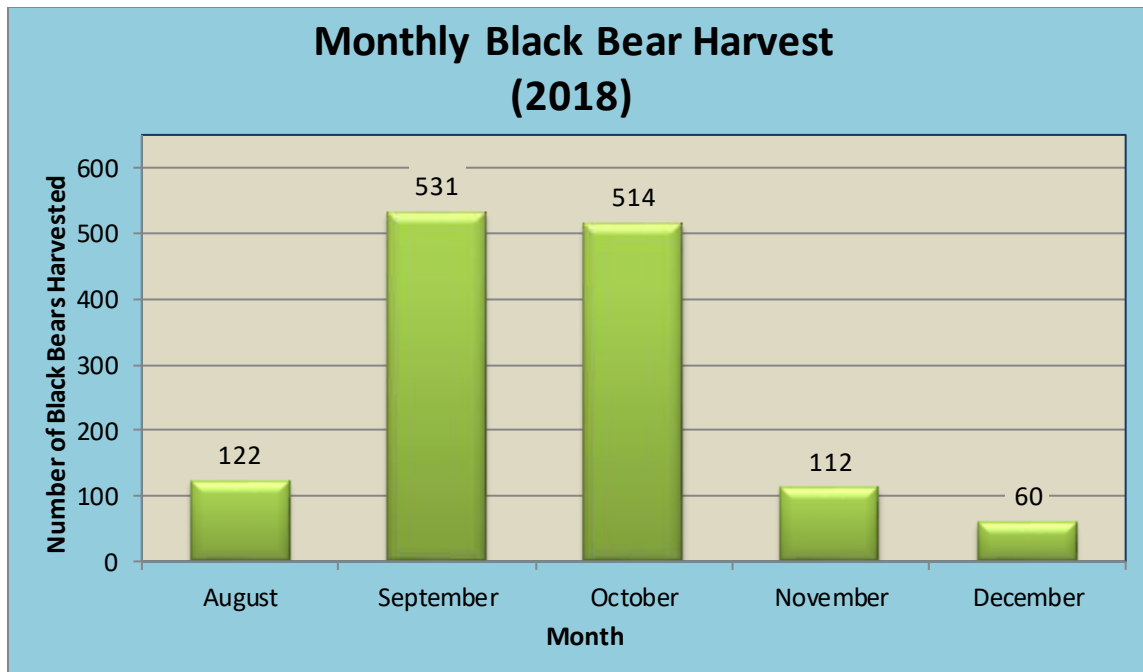
Table 1. Take Summary by Target Species and Method of Take (2018)

	Non-archer	Archery	Unreported	Total
Bear-targeted hunting	33.6%	4.8%	0.1%	38.5%
Took a bear while deer hunting	53.4%	7.8%	0.1%	61.3%
Unreported	0.0%	0.0%	0.2%	0.2%
Total	87.0%	12.6%	0.4%	100.0%

Timing of Take

Bears were predominantly harvested in September and October (Figure 6). Similar to previous years, fewer bears were harvested in November and December than in September and October.

Figure 6. Monthly Bear Take



Location

Bears were reported to be harvested in 39 of California’s 58 counties (Table 2). The top five counties for reported take were: Trinity (12.8%), Shasta (10.5%), Mendocino (7.7%), Siskiyou (7.6%) and

Humboldt (6.8%). These five northern counties combined account for about 45% of the total statewide 2018 bear harvest.

Table 2. Bear Take by County

County	# of Bears Harvested	Percent of Total Harvest
Alpine	25	1.86%
Amador	11	0.82%
Butte	28	2.09%
Calaveras	31	2.31%
Colusa	3	0.22%
Del Norte	25	1.86%
El Dorado	69	5.14%
Fresno	45	3.35%
Glenn	13	0.97%
Humboldt	91	6.78%
Inyo	4	0.30%
Kern	31	2.31%
Lake	6	0.45%
Lassen	20	1.49%
Los Angeles	11	0.82%
Madera	19	1.42%
Mariposa	13	0.97%
Mendocino	103	7.68%
Modoc	3	0.22%
Mono	16	1.19%
Napa	1	0.07%
Nevada	23	1.71%
Placer	45	3.35%
Plumas	66	4.92%
Riverside	1	0.07%
Sacramento	1	0.07%
San Bernardino	14	1.04%
Santa Barbara	3	0.22%
Shasta	141	10.51%
Sierra	18	1.34%
Siskiyou	102	7.60%
Stanislaus	6	0.45%
Tehama	62	4.62%
Trinity	172	12.82%
Tulare	35	2.61%
Tuolumne	53	3.95%
Unknown County	2	0.15%
Ventura	17	1.27%
Yuba	13	0.97%
Total	1342	100.00%

Estimated Population Size

A premolar tooth was collected from nearly all hunter-killed bears for age determination, which is one factor used to estimate the total population size within the bear hunt areas. Teeth are processed by an independent laboratory in Montana. An age-at-harvest model is used to produce a conservative estimate of total bear abundance within the bear hunt area at the time the black bear hunting season began. At the time of this report, teeth collected in 2018 are still being processed, and the Department will revisit 2018 age data when it becomes available. To fill this data gap in the short term, averaged age proportions from the most recent three years of data were applied to the 2018 harvest total to produce age estimates.

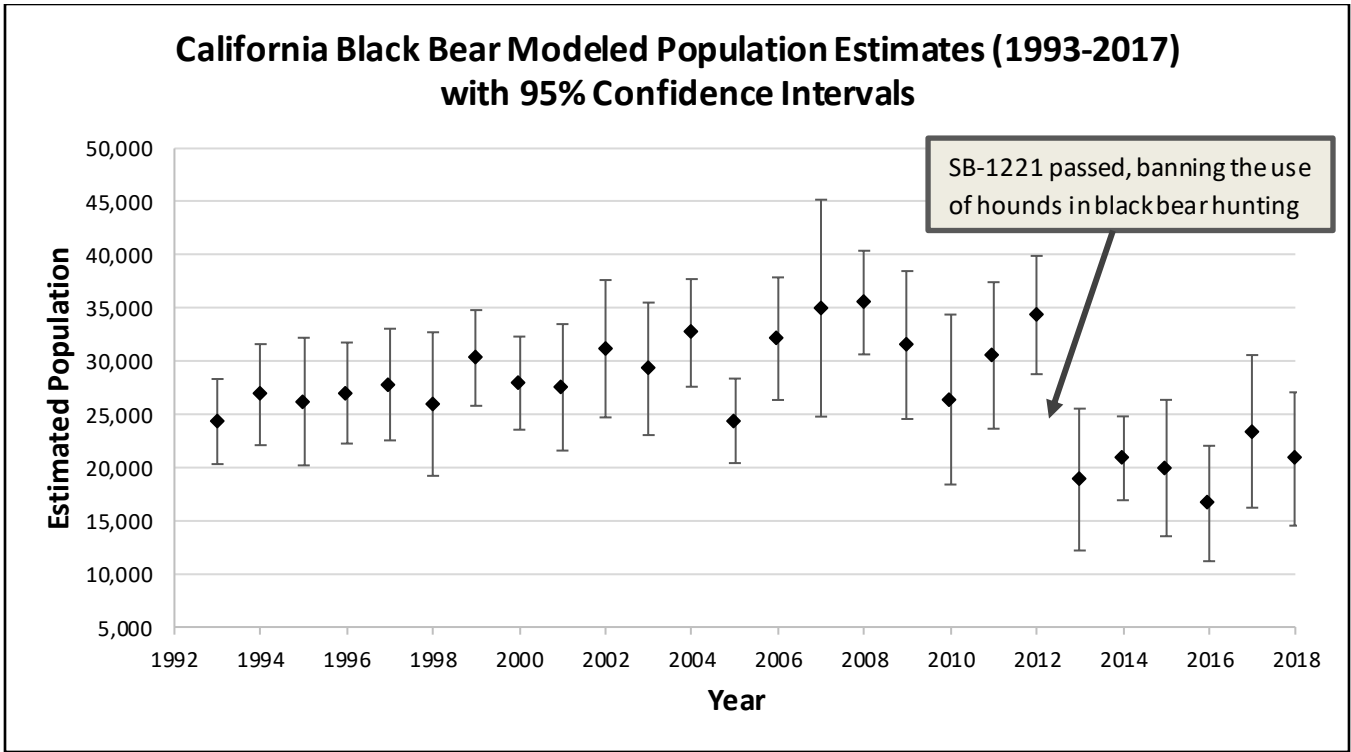
To produce a population estimate for a given year, the Department uses an age-at-harvest model reliant on the age and sex of bears harvested that year. In 2013, the use of hounds in the sport take of bears was prohibited, which violated a key assumption in the model regarding consistent hunter effort. Annual bear harvests have been relatively lower since this ban (Figure 2), resulting in correspondingly lower population estimates (Figure 7). The average population growth rate in the years following the ban (1.04 in 2013-2018) remains steady and on par with the average population growth rate in years before the ban (1.03 in 1993-2012). Due to this, the Department expects that the reduced population estimates are solely an artifact of the model's constraints. The Department is continuously working towards improving our methods of estimating bear abundance and changes in abundance over time.

The Department estimates approximately 20,801 ($\pm 6,269$; 95% CI) bears inhabited the black bear hunting area prior to the start of the 2018 bear hunting season (Figure 1). It is important to note that this method only estimates bears within the current bear hunt areas, prior to the commencement of the previous year's hunting season. As bears occupy habitats outside the bear hunt area, the statewide population is likely greater than this number.



Photo courtesy of UC Davis Aggie Transcript.

Figure 7. Yearly Modeled Bear Population Abundance



Monitoring Matrix

The Department 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 3). The plan states that if two or more of these thresholds are exceeded, the Department will recommend to the Fish and Game Commission that the bear harvest be reduced.

None of the four thresholds of concern were exceeded, but one was unable to be measured at this time. Teeth collected from harvested bears in 2018 are still being processed at the time of this report, so the Department will revisit this threshold when those data become available. Females comprised 36.55% of the harvested bear of known sex, which is below the 40% level of concern (Figure 3). Total bear harvest did not drop below the threshold (harvest less than 1,000), nor was there a reduction in harvest compared to the previous three years' average. There was a decline in kill per hunter effort, but it did not reach the specified level of statistical significance ($P = 0.06$).

To better reflect true population trends over time, the Department has re-calculated population estimates for 2013-2016 with the methodology used in this report, rather than what was previously

published. These are 18,868, 20,865, 19,948, and 16,616, respectively (Figure 7). There was therefore no decline in the population estimate compared to the 2015-2017 average.

Table 3. Resulting Monitoring Matrix

Monitoring Technique	Threshold of Concern	2018 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.	Information not currently available. To be revisited.	TBD
Percent Females in Harvest	>40 percent.	36.55% percent	NO
Total Harvest	<1,000 or statistically significant (< 95% CI) reduction; only if reduction is independent of administrative action.	1,342 No reduction in harvest.	NO
Kill per Hunter Effort and Population Estimate	Statistically significant decline in both kill per hunter effort ($P < 0.05$) and population estimate (< 95% CI).	No statistically significant decline in kill per hunter effort. No decline in population estimate.	NO



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