

BLACK BEAR

Western Region

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This status report contains information for the 2013 calendar year. Specific data on all black bears handled by Department personnel was first recorded in 1997 with a sample size of 12 individuals. Subsequent yearly samples for the last ten years are depicted in Table 1. These figures are for all bears handled including recaptures and all documented mortalities.

Table 1. Bears handled in the Western Region 2004-2013.

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bears Captured	69	74	88	159	68	40	79	78	83	97
Cumulative Total (since 1997)	309	383	471	630	698	738	817	895	978	1075

Includes recaptured bears previously handled and marked in the same or preceding years.

NDOW maintains a database containing various data on all bears captured or handled since 1997. Bears that were captured and released have been routinely marked with ear tags and tattoos since 1998. PIT tags were first applied in 2010 as an additional means of permanently marking each bear. To date, NDOW has marked 399 bears and collected data on 663 individual bears.

Harvest Analysis

Nevada's first managed black bear hunting season commenced on August 20th, 2011 and ended on December 31st, 2011. The 2012 and 2013 seasons were open from September 15th to December 31st. The harvest limits established by the Wildlife Commission remained at 20 bears each year. 45 tags were available each year to resident and non-resident licensed hunters. Applications for these tags increased each year with 1,156 tag applications received in 2011, 1,762 in 2012 and 2,021 in 2013.

NDOW's Black Bear Management Plan specifies annual harvest statistics will be analyzed along with harvest data from the most recent three years. Additionally, once NDOW has amassed 10 years of harvest data, the annual review will include an examination of the long-term data set, similar to analysis conducted for all other big game species. Therefore, because 2013 was the third year of Nevada's black bear hunt, this report will include a thorough summary of the harvest data collected between 2011 and 2013. It will also contain more detail than previous annual Black Bear Status reports in order to provide a more comprehensive review for the Wildlife Commission.

Criteria identified in the Black Bear Management Plan (Table 2) are consistent with maintaining a sustainable bear population, and are similar to criteria used by many other wildlife agencies. Further, to fully evaluate the demographics of the state's bear population, NDOW supplements this hunter harvest data with its progressive and extensive mark/recapture data. This allows NDOW the ability to evaluate various demographics of the bear population, both short-term and long-term, and to discern any remarkable changes in vital rates that might constitute a change in the bear hunt strategy.

Table 2. Black bear management plan criteria.

Parameter	Light Harvest	Moderate Harvest	Heavy Harvest
% females in harvest	<30%	30-40%	>40%
% adult females within female harvest	>55%	45-55%	<45%
Mean age of harvested males	>4 years	2-4 years	<2 years

Each tag holder or their licensed guide was required to attend a mandatory Bear Hunt indoctrination course prior to receiving their tag. Indoctrination courses were held in Reno and Las Vegas and covered information pertaining to bear behavior, bear gender and size identification, legal hunting areas, hunting methods, and field care of the hide and meat. Additionally, attendees were thoroughly instructed about open hunting units and specifically, on areas to avoid such as private Indian lands and the Tahoe Basin. All hunters were required to personally bring the hide and skull of harvested bears to a Department representative for check-in. Information on each kill was acquired including the gender of each bear, estimated age, physical condition, location of kill, method of hunt, etcetera.

Table 3. Number and average age, all bears 1997-2013.

Age cohort	Gender	# 1997-2013
Cubs ≤12 months	♂	73
	♀	71
Sub-adults 1-3 years	♂	148
	♀	73
Adults 4+ yrs/avg age	♂	147 7.2 yrs
	♀	116 8.6 yrs
All bears average age	♂	295 4.6 yrs
	♀	189 6.0 yrs

A total of 39 bears was killed in the first 3 years of Nevada's black bear hunt (Table 4). Based on the availability of 45 tags/year, hunter success was 29%. Examining all criteria outlined in Table 2 above, analysis of harvest data from the last three years indicate the bear harvest was conservative. Of the 39 bears killed, 29 were males and 10 were females, with average ages of 5.7 and 7.0 years respectively (Table 4). Interestingly, when data from all bears handled 1997-2013 is examined (Table 3) and compared to data specific to the hunt data, hunter harvested bears are slightly older than first-event bears handled for all reasons (n=484). The average age of 295 first-event male bears and 189 female bears handled from 1997-2013 is 4.6 years and 6.0 years respectively. Additionally, the percent of first-event adult females (≥4 years) handled during the same period was 61% compared to 80% of hunter harvested bears. This indicates older age cohorts are prevalent within the population. All indications are that the number and age cohorts of bears killed during the hunt can be considered light and well within criteria adopted to facilitate maintenance of a sustainable bear population (Table 3).

Of the 39 hunters; three were females, 87% packed out the bear meat, seven were guided by professional guides, two were non-residents and one killed their bear on private Indian lands in Douglas County after being invited to do so by the landowner.

Table 4. Hunter harvest data.

	2011	2012	2013	3 year	Harvest criteria indicator
Male bears killed	9	10	10	29	
Female bears killed	5	1	4	10	
% females in harvest	36%	9%	29%	26%	Light harvest
% adult females within female harvest	80%	100%	75%	80%	Light harvest
Mean age males	5.9	5.1	6.1	5.7	Light harvest
Mean age females	6.9	9.0	7.8	7.0	
Mean age all	5.9	5.5	6.6	6.0	
Male/female ratio	1.8	10.0	2.5	2.9	
Hunter success rate	31%	24%	31%	29%	
Hunter effort in days/kill	8.3	8.7	7.8	8.2	
Average days scouted	7.0	2.1	4.0	4.6	
Hunt Method:					
Dogs	12	7	8	27	
Spot/stalk	2	4	5	11	

Conflicts

In 2013 human-bear conflicts increased 110% over the conflicts recorded in 2012 with NDOW personnel handling approximately 498 complaints and reports of bears. With 2013 being the third consecutive drought year, the resulting lack of natural foods was likely the main reason for the increase. Yearly conflicts vary in number depending on climatic conditions and other factors but when the conflict history is viewed as 5-year periods, it is clear they have continued to rise (Figure 1).

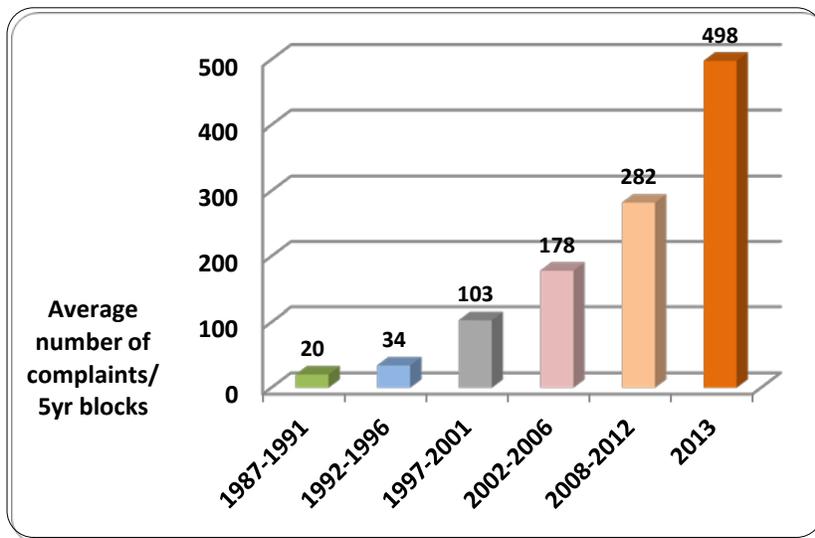


Figure 1. Statewide human-bear conflicts by 5-year block- (1500+ complaints in 2007 withdrawn)

Calls are usually either routed through NDOW dispatch or received directly by the biologist or wardens. The first action is to advise the complainant of ways to avoid conflicts by restricting access to human foods or other attractants. If the conflict persists or if the bear has caused substantial property damage NDOW personnel will usually respond to the area and investigate. Per NDOW policy, if the bear is classified as a Category 1 or 2 bear (dangerous, aggressive or depredating) personnel will respond, investigate

and if necessary, attempt to capture the bear. The majority, roughly 95%, of complaints received are of conflict bears accessing garbage, or other sources of human foods. Other common complaints were of bears damaging apiaries, breaking into garbage enclosures or sheds, damage to fruit trees, breaking into homes and vehicles, or just a bear frequenting a particular area.

The fall months of September-October are predominantly when most calls were received (66%) with over 170 complaints in October alone. This is the time of year when bears are in hyperphagia in preparation for the upcoming winter torpor. When natural hard and soft mast foods are unavailable during this period, bears become more opportunistic, and often bolder in their search for food which brings them into close contact with humans. Backyard fruit trees along the urban-wildland interface offer an irresistible food source. Coupled with the reliability (in place and time) of trash cans, human-bear conflicts spiked in areas of west Carson City, and in neighborhoods of the Truckee Meadows such as Verdi and Caughlin Ranch. The latter addressed the problem straightforwardly by altering their solid waste management contract to offer curbside Bear Resistant Container (BRC) pickup. Changes take place in January 2014. The Incline General Improvement District (IVGID) also tackled the human-bear conflict issue directly by proposing mandatory BRCs within their district. Final approval of the mandate is still being considered. Further, a private individual from Incline Village plans to implement a formal *Bear Smart* program in early spring of 2014, modeling the program after the successful *Bear Smart-Whistler* program in Canada. These programs are typically citizen instituted models targeting residents in their municipalities with human-bear conflict resolution advice and materials.

Conflicts were predominantly from Washoe County (70%), and in particular Incline Village which accounted for 17% of all calls received statewide (Figure 2). Note that at least 100 bear complaints were received by the Incline General Improvement District in 2013 and these calls were not forwarded to NDOW, and therefore were not included in this report (source-IVGID representative at a public meeting). Had these callers been advised to call NDOW, the number of bears trapped and released versus trapped and killed in Incline may have been different.

Property damage for the year was reported at over \$24,000. However, it should be noted that most people don't report damage unless it is significant and even then, these figures are not often recorded.

Including recaptures and multiple captures per event, 87 individual bears were handled on approximately 97 events. This included about 17 bears handled for research purposes only. Of the 87, 68 were first-event bears (those not previously captured or handled). Additionally, some bears were caught incidental to ongoing complaints but not necessarily as conflict bears.

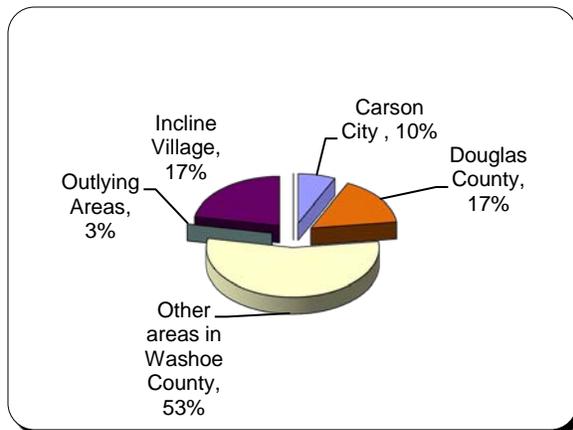


Figure 2. Human-bear conflicts by county of origin.

36 first-event bears were marked and released while 32 were documented as mortalities on the initial incident, i.e. sport hunt, unknown bears hit by vehicles, etc. (Table 6). Table 5 contains figures for both conflict and research-captured bears and provides an account of age cohorts for all first-event bears handled (minus two of unknown age/gender). Most bears were either caught in culvert traps or by free-ranging capture techniques. 11 cubs of the year were handled with 7 of these being marked and released (4 were first-event deaths).

Table 5. Number sampled, age cohort and sex of all first-event bears for past 10 years with average age in years for adults.

Age cohort	Sex	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cubs ≤ 12mo.	♂	8	7	9	12	5	5	1?	7	9	4
	♀	8	3	4	17	2	0	1?	7	8	7
Sub-adults 1 - 3 yrs	♂	7	9	8	25	12	4	3	11	9	15
	♀	1	5	6	11	4	3	8	6	2	10
#Adults 4+ yrs / Avg. Age	♂	2 @ 7.5	2 @ 6.5	17 @ 6.2	21 @ 7.6	5 @ 5.2	6 @ 5.2	13@ 6.2	15@ 7.2	17@ 6.1	14@ 6.5
	♀	6 @ 6.5	2 @ 11.0	5 @ 7.8	23 @ 8.9	1 @ 6.0	2 @ 13.5	8@ 6.6	8@ 8.5	9@ 8.2	17@ 9.2

Bears of unknown gender and/or age are not included.

Karelian Bear Dog and Aversive Conditioning Program

NDOW implemented aversive conditioning on released bears in 1997. The practice of utilizing on-site releases for conflict bears rather than automatically relocating each bear was initiated at about the same time. The first of two Karelian Bear Dogs (KBDs) was acquired by the bear biologist in 2001 and the dogs have since been established as an integral part of not only the capture/release protocol, but as ambassadors in the public education program as well. There has never been state funding for the KBD program.

The KBDs are primarily used for aversive conditioning when personnel are releasing conflict bears. The dogs barking, biting and chasing of the bear in theory produces a change in the bears' behavior, causing them to become less bold around humans. This aspect of bear behavior is hard to document, at least empirically, but NDOW has documented an increased tendency by bears to become more nocturnal in urban areas, and in many cases to leave the particular area altogether. Whether or not they quit seeking out anthropogenic foods in favor of natural foods is probably more directly related to the seasonal climatic conditions mentioned earlier. Bear conflict behavior is often progressive, with bears becoming bolder and more tolerant of humans with increased exposure and the positive food rewards that usually accompany anthropogenic experiences. Some bears progress from investigating trash and birdfeeders to breaking into cars and homes, bringing them into much closer contact with people. However, when bears are subjected to aversive conditioning or other management techniques before escalating to this level of conflict behavior, their progression up the conflict hierarchy may be averted. Efforts by bear advocacy groups to prevent NDOW from trapping conflict bears in these early stages of conflict behavior may have resulted in the progression of conflict behavior in at least two bears in Incline Village, ending in the death of these bears for public safety reasons. Ironically, the tampering of NDOWs traps only occurs in Incline Village, and it is in Incline Village where the majority of bears are killed for public safety reasons after progressing to the higher levels of conflict behavior.

Mortalities

There were 42 documented mortalities recorded this year, (Table 6) and 11 of these were marked bears (recaptures). The total consisted of 25 males, 16 females and one of unknown gender. There were five bears killed by management for public safety reasons or chronic nuisance behavior, all males. Wildlife Services also removed one depredating bear responsible for killing 2 domestic sheep valued at approximately \$800. In early October a two-year male bear was captured and released near Dayton, Nevada after repeatedly accessing trash at a trailer park. Per NDOW policy this bear was released with aversive conditioning, utilizing Karelian Bear Dogs and less-lethal ammunition. Less than three days later it was observed in Incline Village with another bear, and less than three weeks after that it was captured and euthanized in the same Incline Village location after breaking into the same home at least twice.

An analysis of total bear mortalities pre and post hunt shows an average of 35 bear mortalities were documented for the past 3 years. The previous 5-year average was also 35 indicating there has been no detectable change in total bear mortalities following the addition of a bear hunt in Nevada.

Table 6. Documented Mortalities 2004-2013

Mortality Type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total (1997-present)
Hit by Car	9	14	22	35	6	8	8	3	9	12	170
Public Safety	3	1	4	10	17	3	12	8	4	5	84
Other	1	0	1	8	2	1	3	6	4	9	48
Sport Hunt	NA	14	11	14	39						
Depredation	0	2	5	5	1	0	2	1	2	2	34
3 - Strikes	NA	NA	NA	1	6	3	8	0	1	0	19
Illegal	0	0	0	3	0	0	1	1	0	0	6
Total	13	17	32	62	32	15	34	33	31	42	400
Cumulative Total (since 1997)	102	119	151	213	245	260	294	327	358	400	

Marked Nevada bears killed in other states (22 since 2001) are not recorded in Table 1.

Expenditures

Expenditures for the time period covered by this report include monies spent on drugs and medical supplies, bear trap maintenance and capture equipment. Monies spent on controlled substances totaled approximately \$2500. For all operating accounts (Category 58) a total of \$15,085.64 was expended in calendar year 2013 for bear management related activities.

The Department's public education program, *Bear Logic* (formerly *Bear Aware*), has remained static over the last four years due to funding shortfalls. Handout materials are limited to stock on hand. Regardless, several public presentations were given throughout the year.

Research

NDOW continues to cooperate with the Wildlife Conservation Society, the University of Nevada, Reno, Columbia University (New York) and the University of Tennessee on ongoing research projects. Ongoing projects include: DNA mapping; Production and recruitment of wildland bears; and an Isotope analysis of urban/wildland bears. As a result of Heritage funding NDOW currently has nine adult female bears deployed with satellite collars as part of the study looking at production potential and recruitment in wildland bears.

Status

Nevada's bear population is believed to be part of the larger Sierra Nevada population, estimated at 10,000-15,000 bears. A viable population of black bears exists in the Carson Range of the Sierra Nevada, the Pinenut Mountains, Virginia Range, Peavine Mountain, Pine Grove Hills, Wassuk Range, Sweetwater Mountains, East Walker River area, and likely the Excelsior Range. Occupation in historic habitat has been documented but it is likely viable populations do not exist at this time and these are just bears in a transient state. One can conclude from these analyses and long-term trends in the data set, along with empirical data collected from captured bears, sightings and mortalities that Nevada's black bear population is thriving, and likely increasing in distribution, both numerically and geographically. The thresholds of harvest criteria set forth in the Black Bear Management plan were not met in 2011, 2012, or 2013 indicating sport harvest was conservative.

The bear population, as evidenced by annual conflict complaints, depends on adequate production of natural food resources such as soft mast (berries), hard mast (pine nuts), forbs, grasses, insects and a mammalian prey base. These resources are most often dependent upon annual climatic conditions, thus when northern Nevada experiences drought conditions bears will seek out other sources of food causing human-bear conflicts to increase. The winters of 2011, 2012 and 2013-14 registered below average for precipitation. This resulted in the increased number of conflicts reported in 2013, and should precipitation levels remain depressed for the remainder of 2014 then human/bear conflicts could reach levels not seen since 2007. Nonetheless, the long-term viability of the bear population appears favorable. Modeled population estimates were calculated in 2008 at 262 ± 31 , and in 2011 at 456 ± 39 for the area encompassing the Carson Range, the Virginia Range and the western portion of the Pinenut Mountains. Using data collected over the past year in Game Division's deterministic population reconstructive spreadsheet model that is used for all big game species, the preliminary updated estimate for 2014 is just over 600 animals. This updated estimate compares favorably with the Mark estimate calculated in 2011 that put Western Nevada's bear population between 400-700 animals.