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**CHAPTER 6: BROWN BEAR MANAGEMENT REPORT**

From: 1 July 2012  
To: 30 June 2014<sup>1</sup>

**LOCATION**

**GAME MANAGEMENT UNITS:** 7 (3,520 mi<sup>2</sup>) and 15 (4,876 mi<sup>2</sup>)

**GEOGRAPHIC DESCRIPTION:** Kenai Peninsula

**BACKGROUND**

Brown bears are found throughout the remote lowland forests and intermountain valleys of the Kenai Peninsula, with the possible exception of some coastal portions of Unit 7 and the eastern side of Kachemak Bay. Historical brown bear range remains occupied. Field observations and data analyses indicate brown bear densities are highest in the forested lowlands and subalpine areas west of the Kenai Mountains.

Seventy-one percent of the Kenai Peninsula is federal land. The U.S. Forest Service (USFS; Chugach National Forest, 2,000 mi<sup>2</sup>) and the National Park Service (NPS; Kenai Fjords National Park, 885 mi<sup>2</sup>) are the principal landowners in Unit 7. In Unit 15 the U.S. Fish and Wildlife Service (FWS; Kenai National Wildlife Refuge) is the primary landowner responsible for management of 3,062 mi<sup>2</sup>. Ownership of the remaining 29% of the Kenai varies among municipal, state, Native corporation, and private lands.

A detailed historical account of regulations was reported in previous management reports (Selinger 2013). In January 2012 the Alaska Board of Game adopted a new registration permit hunt for brown bears. Season dates would be 1 October–30 November during 2012 then changed to 15 September–30 November during 2013. The management objective remained the same until fall 2012. Hunters who obtained drawing permits for regulatory year 2012 (regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2012 = 1 July 2012–30 June 2013) (the application period was November–December 2011) could still hunt, but the drawing permit system would be totally replaced by the new registration permit system after those permits expired (15 June 2013).

At the March 2013 meeting the board adjusted the brown bear season dates again to 1 September–31 May and eliminated any cap on the number of human-caused brown bear mortalities for calendar year (CY) 2013. They also put in place a cap of 70 total or 17 adult female human-caused mortalities for CY14.

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<sup>1</sup> At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

In 1984, representatives of the Alaska Department of Fish and Game (ADF&G), FWS, and USFS formed an Interagency Brown Bear Study Team (IBBST) to discuss brown bear management and research needs on the Kenai Peninsula and to coordinate joint studies. NPS joined this effort in 1990. IBBST was not active during this reporting period.

In 1995, ADF&G initiated a research project in cooperation with the other members of IBBST to evaluate a cumulative effects model, assess brown bear habitat, estimate survival of bears, and ultimately model the brown bear population on the Kenai (Schwartz and Arthur 1996; Schwartz et al. 1999). A cumulative effects model was developed to identify brown bear habitat on the Kenai at risk from human activities (Suring et al. 1998).

## **MANAGEMENT DIRECTION**

### **MANAGEMENT OBJECTIVE**

- Monitor harvest and other reported human-caused mortality on a calendar year basis: 1) maintain a cap of 10 adult female bears in CY12; 2) monitor mortality only in CY13 (no cap); and 3) maintain a cap of 70 bears or 17 adult female bears in CY14.

## **METHODS**

Cost-effective survey techniques to determine brown bear population size over large forested areas have not been developed and tested. Del Frate (1993) derived a population estimate for the Kenai by combining results from a habitat-based model and a density estimate using expert interpretation by comparing estimates of bear density to other parts of Alaska. Results from a 2010 census conducted by FWS and USFS released in 2013 estimated approximately 42 bears/1,000 km<sup>2</sup> on FWS and USFS lands. Extrapolating this number to all brown bear habitat on the Kenai Peninsula produces an estimate of 582 bears (Morton et al. 2014).

The *Kenai Peninsula Brown Bear Conservation Strategy* (Alaska Department of Fish and Game 2000) and *A Conservation Assessment of the Kenai Peninsula Brown Bear* (Interagency Brown Bear Study Team 2001) are used to provide guidelines for management activities.

All reported brown bear mortalities are recorded and entered into the state bear-sealing database. Individuals who kill a bear in defense of life or property (DLP) are also required to complete a DLP report that is reviewed by area staff and a representative from the Alaska Wildlife Troopers.

## **RESULTS AND DISCUSSION**

### **POPULATION STATUS AND TREND**

#### *Population Size*

Miller (S. Miller, Wildlife Biologist, ADF&G, personal communication) suggested the density of brown bears on the Kenai was probably lower than the 27.1 bears/1,000 km<sup>2</sup> (7.0 bears/100 mi<sup>2</sup>) he reported for his middle Susitna study area (Miller 1987). Using the available information, Del Frate estimated the bear density on the Kenai to be 20 bears/1,000 km<sup>2</sup> (5.2 bears/100 mi<sup>2</sup>), and calculated the suitable habitat to be 13,848 km<sup>2</sup> (5,347 mi<sup>2</sup>). He derived a brown bear population estimate for Units 7 and 15 by multiplying the estimated suitable habitat by the estimated density. Del Frate (1993) generated the estimate for the Kenai brown bear population. The estimate was probably conservative when comparing brown bear densities in other coastal

regions of the state. We believe the population increased from the early 2000s until about 2012. We believe the population decreased from 2012 through 2014 due to increased harvest. The exact extent of the decrease is unknown because no censuses were conducted during that time period.

In 2013, FWS released the population estimate results from the DNA mark-recapture study they completed in 2010. They calculated 42 brown bears/1,000 km<sup>2</sup> on FWS and USFS lands. Extrapolating this density estimate to all brown bear habitat on the Kenai Peninsula gave a population estimate 582 brown bears (Morton et al. 2014).

### *Distribution and Movements*

Brown bears inhabit most of the Kenai Peninsula with the possible exception of some coastal areas of Kenai Fjords National Park (KFNP) and the southern portions of the peninsula (Schloeder et al. 1987). In the late 1990s, members of the public and park personnel started observing a few brown bears in KFNP (Nuka Bay). Occasionally, individual bears have been observed on the eastern side of Kachemak Bay and 1 adult female was captured (she was with a boar at the time in that area during spring 2008) and another collared bear was sighted there in October 2008. These routine observations suggest brown bears may have extended their range on the Kenai.

## **MORTALITY**

### *Harvest*

Season and Bag Limit. The bag limit for Units 7 and 15 is 1 bear every regulatory year with season dates of 1 September–31 May. Hunting is administered through registration permit RB300.

Alaska Board of Game Action and Emergency Orders. At the March 2013 meeting the board adjusted the brown bear season dates again to 1 September–31 May and eliminated any cap on the number of human-caused brown bear mortalities for CY13. They also put in place a cap of 70 total or 17 adult female human-caused mortalities for CY14 and allowed for brown bears to be harvested at black bear bait stations from 15 April through 31 May.

FWS took administrative action to close brown bear hunting on Kenai National Wildlife Refuge lands that went into effect on 26 October 2013. Refuge lands were open to hunting brown bears for the spring season during CY14, but it was illegal to harvest a brown bear at registered black bear bait sights on refuge lands.

Harvest by Hunters. During RY12 and RY13, hunters harvested 31 and 96 bears respectively (Table 1). An additional 15 and 20 nonhunting, human-caused brown bear mortalities occurred during those respective years. Nonresidents harvested 2 bears in RY12 and 7 bears during RY13 (Table 2). Seventy-three bears were harvested during fall while 54 were harvested during spring for this reporting period (Table 3).

Transport Methods. The transportation methods varied across years, but during the last 2 regulatory years (RY12 and RY13) most successful hunters used boats, all-terrain vehicles, or highway vehicles to access areas where they harvested a bear (Table 4). All access is related to

landownership, topography, trail development, waterways, etc. The biggest influence on transportation is allowing harvest over bait. Most of the bears were harvested over bait starting in spring 2014 (the first time brown bear harvest at bait sites was allowed). The effort it takes to maintain a bait site generally dictates where the sites will be placed which is influenced by transportation allowed.

#### **NONREGULATORY MANAGEMENT PROBLEMS/NEEDS**

In 1998, Kenai Peninsula brown bears were listed as a population of special concern under Alaska's endangered species program. The listing was based on the potential for decline in the future because of human encroachment into brown bear habitat. As of 15 August 2011, ADF&G no longer maintains a Species of Special Concern list.

The *Kenai Peninsula Brown Bear Conservation Strategy* (Alaska Department of Fish and Game 2000) and *A Conservation Assessment of the Kenai Peninsula Brown Bear* (Interagency Brown Bear Study Team 2001) are documents frequently used as references for developing management strategies.

During CY13 there were 25 reported, nonhunting, human-caused brown bear mortalities, consisting of 11 males, 12 females, and 2 of unknown sex (cub-of-the-year of a DLP sow not recovered). Thirteen of these animals were subadults. Nineteen were killed in defense of life or property; 1 was an illegal take; 3 were found dead, but determined to have died by human causes; 1 was an agency kill; and 1 was killed by an automobile.

During CY14 there were 4 reported, nonhunting, human-caused brown bear mortalities, consisting of 2 males, and 2 females. Two of these animals were subadults. Two were killed in defense of life or property, and 2 were killed by automobiles.

Reducing negative bear-human interactions and associated human-caused mortalities for brown bears continues to be a high priority for area staff. Also, the department's priority is to continue to fund studies to obtain data to assess the overall health of the Kenai Peninsula brown bear population.

#### **CONCLUSIONS AND RECOMMENDATIONS**

The long-term health of brown bears on the Kenai Peninsula depends on maintaining quality bear habitat and minimizing the mortality of adult female bears. Commercial, recreational, and residential developments will continue to reduce the quantity and quality of brown bear habitat, and increase the exposure of bears to human-generated attractants (garbage, livestock/pet feed, chicken pens, etc.), which put bears and people in close proximity and usually lead to negative bear-human interactions and DLPs.

We need to continue to monitor hunting and incidental bear mortality by season, location, and cause to identify significant management issues that may affect long-term survival. Potential issues have been identified, such as bear-human conflicts; bear-livestock interactions; competition between bears and sport fishermen; big game seasons that overlap with brown bear seasons; private, municipal, and borough garbage management issues; and other human-generated attractants. Solving many of these management concerns will require innovative approaches.

Goals for the Kenai Peninsula brown bears include:

- Maintain a healthy brown bear population.
- Minimize negative brown bear-human interactions.
- Do not exceed a predetermined number of human-caused brown bear mortalities annually (1 January–31 December). The cap on human-caused mortalities will be adjusted on an annual basis as needed to meet the first 2 objectives.

The “cap on human-caused mortalities” will be determined after consulting with the Alaska Board of Game. Metrics will include adult female survival, mean litter size, cub survival to weaning, cause and number of human-caused mortalities, and negative bear-human interactions. The population demographic data will be attained from monitoring radiocollared adult females. Mortality data will be recorded in our brown bear sealing database, and assessing the number of negative bear-human interactions will be done on a subjective basis due to the varying degree of interactions and the interpretation of what constitutes a negative interaction.

Nonhunting, human-caused brown bear mortalities peaked in 2008, but have declined dramatically in recent years when we increased harvest due to liberalized hunting opportunities. The department does not believe we can sustain current harvest over the long term so we anticipate adjusting the annual harvest caps until we reach a point we believe is sustainable. One of the primary reasons for the liberalized bag limits was to reduce the brown bear population on the Kenai Peninsula and we believe we were successful. All sources of bear mortality will continue to be monitored to assess impacts on the brown bear population, based mainly on demographic data collected by monitoring collared adult female bears. It is essential that we continue our effort to minimize nonhunting, human-caused brown bear mortalities.

The department continues to provide educational materials to the public in an effort to reduce negative bear-human interactions through the Kenai Bear Education Committee. In addition, department employees are working with local communities to improve waste management practices to make populated areas less attractive to brown bears. Local ordinances or regulations are needed. However, without a commitment by local and state enforcement agencies, new regulations stand little chance for success.

The Wildlife Conservation Community Program (WCCP) effort was initiated by ADF&G to reduce defense of life or property killing of brown bears. The basis of the program is to minimize bear attractants (mainly garbage) by promoting the use of bear resistant trash containers. During 2006 the City of Kenai was the first municipality to be recognized as a Wildlife Conservation Community. Nonprofit organizations (like Kenai Peninsula Chapter of Safari Club International) applied for federal grants, and the money has been used to reduce the cost of bear-resistant trash receptacles for residents living in target areas. We hope that reducing (or eliminating) access to readily available garbage will decrease bear activity in human populated areas and reduce DLP killings. We hope the program will make our neighborhoods safer, increase property values, and allow for more responsible management and use of our wildlife resources. Other communities that implemented some type of program to reduce human generated brown bear attractants include Homer, Cooper Landing, Hope, Moose Pass, and Seward.

During recent years, efforts have been directed towards liberalizing harvest opportunities for Kenai brown bears. Allowing additional harvests, while continuing efforts to minimize human-generated brown bear attractants, should result in fewer negative human-bear interactions in the future. We will continue to monitor brown bear hunts and population status, and will make necessary adjustments to our management strategy.

For the next reporting period we will adopt 2 additional management objectives. The first is to achieve an adult female survival rate of at least 0.93 to 0.95 based on the latest 3-year period. And the second is to achieve a lambda calculation of 0.91 to 1.01 based on the latest 3-year period.

Research on black and brown bears indicate that adult female survival is most critical to population trajectories, and that a lambda that brackets one with reasonable confidence levels will be achieved when adult female survival is 0.93 to 0.95. Given the Kenai brown bear demographic values to date for cub production and survival, stochastic modeling often shows a lambda close to one with adult female survival of 0.93 to 0.95. A lambda of 0.91 to 1.01 would be indicative of a stable population that had adult female survival of 0.93 to 0.95 (S. Farley, Wildlife Physiologist, ADF&G, Anchorage, personal communication). Adjustment to these objectives may be needed in the future if circumstances dictate a desire to increase or decrease brown bear numbers on the Kenai Peninsula. Currently, we are managing for a stable population.

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Table 1. Units 7 and 15 brown bear harvest, Southcentral Alaska, regulatory years<sup>a</sup> 2009–2013.

Regulatory year	Hunting			Nonhunting <sup>b</sup>				All human caused mortality			
	Male	Female	Total	Male	Female	Unknown	Total	Male	Female	Unknown	Total
2009	5	0	5	5	19	2	26	10	19	2	31
2010	1	4	5	11	6	3	20	12	10	3	25
2011	2	3	5	9	15	1	25	11	18	1	30
2012 <sup>c</sup>	13	18	31	8	4	3	15	21	22	3	46
2013	62	34	96	8	11	1	20	70	45	1	116

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

<sup>b</sup> Includes defense of life or property, road-kill, illegal, and research-related mortalities.

<sup>c</sup> Hunting includes 1 bear taken under a federal subsistence permit.

Table 2. Units 7 and 15 brown bear hunter residency, Southcentral Alaska, regulatory years<sup>a</sup> 2009–2013.

Regulatory year	Successful						Unsuccessful					Total hunters
	Resident	Local <sup>b</sup> resident	Nonlocal resident	Nonresident	Total	Percent success	Resident	Local <sup>b</sup> resident	Nonlocal resident	Nonresident	Total	
2009	5	5	0	0	5	23	17	11	6	0	17	22
2010	5	3	2	0	5	28	12	4	8	1	13	18
2011	5			0	5	22	18			0	18	23
2012	29	22	7	2	31	16	157	93	64	1	158	189
2013	89	51	38	7	96	31	215	87	128	2	217	313

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

<sup>b</sup> Local resident resides in Units 7 or 15.

Table 3. Units 7 and 15 brown bear fall and spring harvest chronology, Southcentral Alaska, regulatory years<sup>a</sup> 2009–2013.

Regulatory year	Season		Total harvest
	Fall	Spring	
2009	2	3	5
2010	3	2	5
2011	2	3	5
2012	29	2	31
2013	44	52	96

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

Table 4. Units 7 and 15 successful brown bear harvest by transportation method, Southcentral Alaska, regulatory years<sup>a</sup> 2009–2013.

Regulatory year	Harvest by transport method								<i>n</i>
	Airplane	Horse	Boat	3- or 4-wheel ATV/ORV <sup>b</sup>	Highway vehicle	Snowmachine	Other/ Unknown	Foot	
2009	0	0	1	1	2	1	0	0	5
2010	0	0	1	0	4	0	0	0	5
2011	0	0	0	2	1	0	1	1	5
2012	0	3	9	3	12	0	0	4	31
2013	3	1	19	28	35	0	1	9	96

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

<sup>b</sup> ATV = all-terrain vehicles, ORV = off-road vehicles.