

## ADF&G Bear Collar Research Results

Anthony Crupi and his staff, with the Alaska Department of Fish and Game, began a study in 2008 to examine brown bear habitat use patterns along the lower Chilkoot River. We captured 3 female brown bears and affixed GPS equipped radio collars to collect locations at 30 minute intervals. We monitored activity from 2008–2014 and collected over 51,000 animal locations. Brown bears selected habitats that provided cover and seasonal food resources, 42 locations occurred in a closed forest, 14 in a graminoid habitat (i.e., grasses, sedges, rushes), and 12 in water where bears fish for salmon. Conservation of riparian stream habitats has been shown to be important to bears which depend upon salmon to store energy resources needed to meet the demands of hibernation and cub production. We found that the majority bear activity during late summer (68) and autumn (60) occurred within 500 meters of the lower Chilkoot River. When including Chilkoot Lake, Ferebee River, and their tributaries, more than 80 of all bear locations were within 500 meters of anadromous waters; a clear indication of the importance of salmon. In contrast, more than 90 of spring and early summer bear activity occurred away from the lower Chilkoot River. During spring and early summer, bears concentrated their foraging activities in open habitats (i.e, graminoid, beach, open forest, and shrub habitats) that produce abundant herbaceous vegetation, roots, and berries which are consumed by bears to meet energetic requirements.

We compared nocturnal and diurnal foraging patterns of various cohorts to help inform management planning efforts along the lower Chilkoot River. Subadult females, bear 233, at 2–3 years old, and bear 235, at 4 years old, accessed the river during the daytime and mostly avoided the river after dark, presumably to minimize antagonistic interactions with more dominant bears. Adult single females tended to avoid human activity, as 235 in 2009, 2012, and 2014, and 443 in 2012 and 2013, primarily foraged at night along the west bank of the river, on the east river bank below Chilkoot Lake, and at the mouth of the river in the estuary. At times they were active in the daytime, and their activity was distributed on both sides of the river, but most often they used daybed resting sites in the forest. These same female bears utilized the river differently in the years they reared cubs. When these bears raised cubs they foraged in many of these same locations, however, they shifted their activity to a more diurnal pattern and retreated to the cover of the forest at night. Daytime activity of these family groups was fairly pronounced along all stretches of the river.

Brown bear home range size was evaluated to assess resource needs. We found that bear 235 had the largest home range at 100 kilometers, followed by bear 233 with a 91 kilometer home range, compared to bear 443 who maintained a relatively small home range of 37 kilometers (see photo below). The size of these female home ranges was considerably smaller than recent estimates in nearby study areas in Yakutat and Berner's Bay, though sample size was also smaller. Adult female home range size was dependent upon reproductive status. Bear 235's home range size was only 14 kilometers when she reared 2 cubs their first year, a result of reduced cub mobility. After emerging from her winter den with small cubs, she spent 6 weeks at high elevation near her den site, before descending to the estuary to feed on vegetation, likely awaiting the conclusion breeding season.

The information provided by these collared bears has been extremely valuable to our understanding of brown bear resource selection in the Chilkoot River watershed and these data will help inform management decisions into the future.

