Black Bear Den Sites in Cottonwoods in Southeastern British Columbia

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The Black Bear (*Ursus americanus*) is a common inhabitant of British Columbia and is well known for its hibernation behaviour during the winter months when food is scarce (Cowan and Guiguet 1965, Eder and Pattie 2001). In autumn, bears seek shelter in the form of denning sites such as hollow logs, root wads, under stumps, rock crevices, hollows at the base of a tree, tree cavities above ground (Davis 1996) and occasionally haybales (Lorne Ostendorf pers. comm.). Dens play an important role in assisting the bears to reduce energy loss during winter hibernation when their body temperature drops and the metabolic rate is lowered (Lentz et al. 1983). To get ready for hibernation bears feed voraciously, accumulating body fat which may increase their body weight up to 30-40% (Banfield 1975; Pelton 1993).

In this paper, we describe three den sites discovered above ground in cavities of black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) trees at three separate locations in the East and West Kootenay region of British Columbia.

On 8 December 1995, John Gwilliam and Ross Clarke discovered a Black Bear denning in a live black cottonwood tree along Highway 3, nine kilometres south of Salmo, British Columbia (Figure 1). On this initial observation the bear was seen defecating then retreating into the hollow in an almost slow motion fashion. The black cottonwood tree was 20-25 m (65-70 ft) in height with a diameter at breast height of 85 cm (34 in). The natural hollow where the bear was denning was 5.5 m (17.9 ft) from the ground. Over the period of the Black Bear's hibernation, its

Figure 1. Black Bear den site in a black cottonwood tree (far right) within 30 m of Highway 3, south of Salmo, BC. 26 January 1996 (Linda M. Van Damme). BC Photo 3487.

black fur was always visible at the cavity entrance (Figure 2). The den site was only 25-30 m from the main highway.

The hibernating bear was observed by Linda Van Damme on 28 January, 12 February, 16 March, 23 March, and 5 April 1996 as the fur was always visible at the cavity entrance. Late afternoon on 5 April, Kevin and Gail McAskill were driving by the den site when they sighted the Black Bear sitting up in the tree cavity, looking out. The Black Bear was still present in the cottonwood tree at noon on 9 April but was not visible at 0830 hrs. on 10 April and it was assumed the bear had departed from its winter denning site (L. Van Damme pers. obs.)

The den site was checked in subsequent winters but it was not re-used and eventually the tree broke off at the top of the hollow making it unsuitable for denning.

On 6 November 2004, while exploring the western end of the Kimberley Nature Park, in Kimberley, BC, Kent Goodwin noticed something dark moving in a cavity in a black cottonwood tree. Further investigation over the next week, including an expedition with a digital camera mounted on a long pole, confirmed the presence of a denning Black Bear (Figure 3).

The tree, located in a narrow riparian area on an otherwise dry, south-facing slope, had a diameter at breast height of 96 cm (37.8 in). The hole, a natural cavity, was only 20 cm wide and 50 cm high (7.9 x

Figure 2. Hibernating Black Bear is barely visible in the bottom of this black cottonwood tree cavity south of Salmo, BC. 26 January 1996 (Linda M. Van Damme). BC Photo 3488.

19.7 in) and was located 5m (16.4 ft) from the ground (Figure 4). On the ground below the hole were scattered chips and shavings which we presume were from the bear's attempts to do minor renovations. The bottom of the hole was some distance below the opening as only the top of the bear's back could be seen and that, only from the top of a large stump, 15 m (49.1 ft) away. The bear stayed in the cavity all winter, shifting its position from time to time. It was last sighted on 27 March 2005 and was gone from the den on 3 April 2005. Sometime early in the summer of 2005, the top of the tree broke off in a windstorm about a metre above the cavity leaving it open to the elements and likely unusable as a future den.

On 23 March 2006, Linda Van Damme and

Figure 3: Kimberley Nature Park volunteer beside black cottonwood tree with bear den cavity, Kimberley, BC, 11 November 2004 (Kent Goodwin). BC Photo 3489.

Figure 4: Black Bear curled up in a black cottonwood tree cavity, Kimberley, BC. 11 November 2004 (Kent Goodwin). BC Photo 3490.

Marcia Long were searching for potential and active Great Horned Owl (*Bubo virginianus*) nest sites along Duck Creek channel in the Creston valley. A large hollow in a live black cottonwood tree on the east side of Duck Creek caught their attention (Figure 5). When the entrance to the hollow was viewed with binoculars they were quite startled to see the head of a brown phase Black Bear moving about inside the tree. The hollow was deep enough for the bear to completely disappear down into the tree. Fascinated with this discovery, visits were made daily to check if the bear continued to occupy this den site. In mid-afternoon on 24 March, the bear seemed to be enjoying the warmth of the spring sun as it was observed sleeping at the entrance of the hollow (Figure 6). The Black Bear was last seen in the cottonwood tree on 1 April 2006. This old-growth black cottonwood towers at 37 m (121 ft)

Figure 5. Old growth riparian black cottonwood used as denning tree. Creston valley, BC. 12 January 2007 (Linda M. Van Damme). BC Photo 3492.

Figure 6. Black Bear sleeping at cavity entrance of denning tree. Creston valley, BC. 24 March 2006 (Linda M. Van Damme). BC Photo 3493.

with a diameter at breast height of 231cm (91 in). The hollow where the bear was observed is located in the lower one-third of the tree at 12 m (40 ft) from the ground.

Many other mammals in British Columbia utilize natural tree cavities for denning some of which include Fisher (*Martes pennanti*), American Marten (*Martes americana*), Northern Flying Squirrel (*Glaucomys sabrinus*), Red Squirrel (*Tamiasciurus hudsonicus*), Big Brown Bat (*Eptesicus fuscus*), and Silver-haired Bat (*Lasionycteris noctivagans*) (Vonhof and Gwilliam 2000; Jamieson et al. 2001).

Hardwoods, such as black cottonwood, trembling aspen (*Populus tremuloides*) and paper birch (*Betula papyrifera*), are used by a wide array of wildlife species. Since deciduous trees are more susceptible to heartwood rot at a younger age than conifers, they provide cavities, and den sites, earlier in their growth. Decay and fungi infection create conditions for the development of natural tree hollows and woodpecker created cavities.

Identifying remaining stands of black cottonwood in floodplain riparian areas in the Columbia Basin should be considered a priority for Columbia Basin Fish and Wildlife Compensation conservation activities (Jamieson et al. 2001).

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About the Authors

John is a wildlife biologist, recently retired from the Fish and Wildlife Compensation Program, Columbia Basin in Nelson. His research centered around ungulates, reptiles, amphibians and wildlife species which utilize cavities in trees *i.e.,* bats. He is an avid hiker and outdoorsman.

Kent is a Director of the Kimberley Nature Park Society, a non-profit organization charged with stewarding the 800 ha Kimberley Nature Park. www.rockies.net/kimberley/naturepark

Marcia has a keen interest in the outdoors and enjoys nature photography.

Editor's Note

On 20 July 2007, at 0730 hrs, Linda M. Van Damme observed a Black Bear climbing, then disappearing, into the hollow of a tall black cottonwood tree at Six Mile Slough, BC (Figure 7).

Figure 7. Black Bear climbing black cottonwood to access a hollow. 20 July 2007. Six Mile Slough, Creston, BC. (Linda M. Van Damme). BC Photo 3560.