



Monitoring a Red-tailed Hawk Breeding Territory in the Creston Valley, British Columbia, 1998 to 2011

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Abstract

A Red-tailed Hawk (*Buteo jamaicensis*) breeding territory was monitored for nest occupancy and success between 1998 and 2011 in the Creston valley, British Columbia. During the 14-year period, three different nests were constructed and alternately used

by Red-tailed Hawks in nine of those years. Canada Goose (*Branta canadensis*) and Great Horned Owl (*Bubo virginianus*) also nested in the hawk territory. The territory was abandoned by Red-tailed Hawks in 2009, probably from concurrent nesting by Canada Goose.



Figure 1. Red-tailed Hawk is a common resident and breeder throughout the Creston valley, BC. *Photo by Linda M. Van Damme, Creston, BC.*

Introduction

Red-tailed Hawk (*Buteo jamaicensis*; Figure 1) is the most widely distributed and commonly observed diurnal bird of prey in British Columbia and in the Creston valley is present year-round (Campbell et al. 1990, Van Damme 2009). It is monogamous throughout the year and during the breeding season is highly territorial with nesting boundaries well-defined by physical features such as forest edges, waterways, and roads (Fitch et al. 1946, Preston and Beane 1993). Janes (1984) stated that territories are “remarkably stable year-to-year”. As part of a larger program on the feeding ecology and populations of hawks and owls in the Creston valley, British Columbia (Van Damme 2005, 2008a, Campbell et al. 2010, 2011), I monitored the annual nesting activity, occupancy, and productivity of Red-tailed Hawks which used nests within a well-defined territory over 14 years between 1998 and

2011. It is not known how many individual hawks utilized this territory.

The nesting habitat (Figure 2) is composed of mature riparian black cottonwoods (*Populus balsamifera*) with an understory of red-osier dogwood (*Cornus stolonifera*) and black hawthorn (*Crataegus douglasii*). The breeding territory occupies a strip approximately 600 m by 50 m (1,968 ft x 165 ft) bordering the Kootenay River on the east and adjoins a farm field and dyke on the west. Three nests were built by Red-tailed Hawks in this territory, all in mature black cottonwood trees. A single nest (“A”) was available from 1998 to 2004. In 2004, a second nest (“B”) was built 90 m (300 ft) south of nest “A”, and in 2005 a third nest (“C”) was built 300 m (984 ft) southeast of nest “B.” The distance between nest “A” and nest “C” was 387 m (1,269 ft).



Figure 2. Riparian black cottonwoods adjoining wetlands and agricultural lands provide critical habitat for many nesting species of birds and mammals in the Creston valley, BC. Photo by Linda M. Van Damme, Creston, BC.

Annual Nest Checks (1998 - 2011)

A brief overview of monitoring activities, including occupancy by species, nest site activity, brood size, and success is summarized below by year in chronological order.

1998

On 19 April, a Red-tailed Hawk was discovered sitting in a large, bulky stick nest within a stand of mature black cottonwood trees. This nest, "A", was built in the crotch of a 24 m (80ft) live cottonwood tree with diameter at breast height (dbh) of 76 cm (30 in) and about 17 m (55 ft) from the ground. Unfortunately, by 10 May, the nest was mostly concealed by foliage. The site was visited again on 17 and 24 May and although the adults were present I could not determine whether the nesting attempt was successful. Other Red-tailed Hawk nest sites I visited on the same days contained downy nestlings. The nest was checked again on 19 July at which time the adults were gone. I suspected that young fledged from the nest.

1999

On 2 and 18 April, a Red-tailed Hawk was sitting low in nest "A", its head barely visible. A branch or two must have broken off during the winter as the nest was more visible once the tree leafed out. On 1 and 7 May, an adult remained in the nest with only its head visible. By 14 May, an adult was sitting high in the nest, a behaviour which suggests brooding of small nestlings (Preston and Beane 1993). On 27 May, two downy, gray chicks (Figure 3) were moving about in the nest. The site was visited again on 13 July at which time there was no sign of the adult or fledged young. Again, it was suspected that young had fledged successfully.

2000

Adult Red-tailed Hawks were absent from this territory when an initial visit was made on 16 March and remained absent for the entire breeding season. On 1 April, an adult Canada Goose (*Branta*



Figure 3. One of two Red-tailed Hawk chicks in 1999 indicates nesting is well-advanced. *Photo by Linda M. Van Damme, Creston, BC.*

canadensis) was observed lying prostrate in nest “A” suggesting that incubation had started. The nest remained occupied on 8 and 18 April, with the adult lying low, but by 10 May the nest was empty and no geese were seen.

2001

Red-tailed Hawks were again absent from this territory during the entire breeding season. However, it was exciting on 26 April to find a Great Horned Owl (*Bubo virginianus*) occupying nest “A”. The adult was sitting high in the nest brooding one downy chick, visible as it moved about under the adult’s breast. It was a warm day at 18.9° C and the adult was observed “gular-fluttering”. On 6 May, two downy chicks were standing in the nest (Figure 4) with the adult roosting nearby. My last visit on 11 May, found the adult standing in the nest with one chick nearby and the second crouching in the nest. Wing and tail feathers were developing on the chicks.



Figure 4. In 2001, a pair of Great Horned Owls claimed the Red-tailed Hawk nest and reared two chicks. Photo by Linda M. Van Damme, Creston, BC.

2002

There was no activity at nest “A” when visited on 6 March but by 1 April a Red-tailed Hawk was sitting low in the nest with only its head showing. The mate was perched in a nearby cottonwood tree. On 30 April, an adult was sitting in the nest with only head and tail showing (Figure 5), suggestive of incubation and

the mate was perched nearby. On 26 May, an adult was perched near the nest but there was no sign of young. I was unable to make further visits until early July and found the territory vacant.



Figure 5. Red-tailed Hawk nests can be difficult to monitor early in the season as the adult is barely visible when incubating. Photo by Linda M. Van Damme, Creston, BC.

2003

On 27 March, an adult Red-tailed Hawk was standing in nest “A” and on 24 April both adults were perched near the nest. It was not until 30 April that an adult was observed sitting low in the nest suggesting incubation. On 22 May, an adult was perched on the nest rim then stepped back into the nest, and sat low. On 28 May and 1 June, the adult was again observed standing on the nest rim, but no nestlings were visible. On 18 June, an adult was observed sitting low in the nest with only its head showing, behaviour that is more evident during incubation. Follow-up visits on 23 and 28 June found the nest unoccupied and no adults on territory (Figure 6), so it was presumed the hawks did not rear young this season.

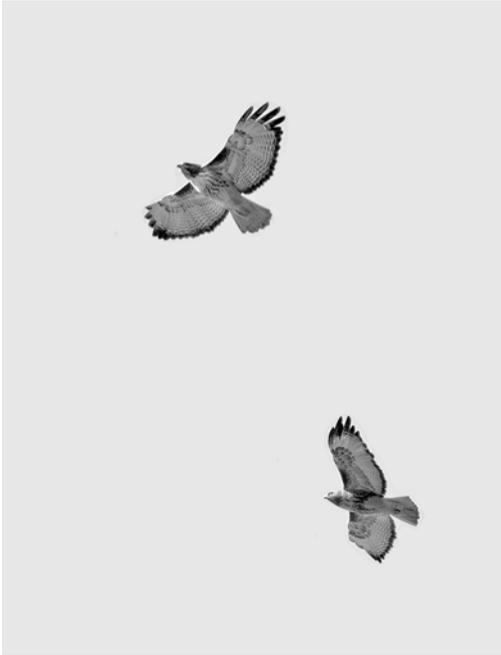


Figure 6. Red-tailed Hawks maintain a pair bond year-round and are frequently observed soaring together. *Photo by Linda M. Van Damme, Creston, BC.*

2004

On 20 February, nest “A” was found vacant but on 28 February, a Great Horned Owl was sitting in the nest with only its head and back showing. On 7 March, the owl was hunkered down as it had been raining all day (5.8 mm in 24 hrs) and its head feathers were wet. On 20 March, the adult was still sitting in the nest. By 2 April, the owl was sitting higher, suggesting young were present. On 19 April, one downy chick was moving about while being brooded under the adult’s breast feathers. It was a windy, wet day with 2.2 mm of rain and temperatures ranging from 3.1 to 13.8° C (mean 8.5° C). On 29 April, the single chick was developing wing and tail feathers and was being groomed by the parent. By 15 May, the body and wing feathers of the owl chick were more developed but the head remained downy. On 20 May, the last visit, the chick was perched beside the adult on a large branch below the nest.

Although Red-tailed Hawks were not observed on follow-up visits to monitor the nesting Great Horned Owls, they did construct a new nest, referred to as “B” (Figure 7). The stick nest was situated in the crotch at the bifurcation of two dead and two live branches in a 21 m (70 ft) live cottonwood tree with a dbh of 56 cm (22 in), about 17 m (55 ft) from the ground. The nest was not occupied this season.

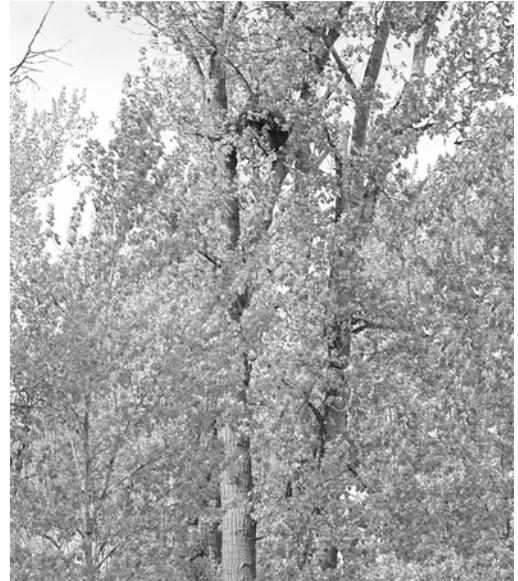


Figure 7. Although large stick nests built by Red-tailed Hawks (top centre) are highly visible during late autumn through early spring, it is difficult to monitor many nests like this one built in 2004 due to foliage. Most nests require the aid of a spotting scope for viewing due to distance and the height of nests. *Photo by Linda M. Van Damme, Creston, BC.*

2005

An adult Red-tailed Hawk was observed standing in nest “B” on 12 March when its mate arrived with a strip of bark in its talons. Both nests “A” and “B” were unoccupied on 12 March. On 21 March, one adult was again observed with a strip of bark for lining nest “B” and landed in the nest. The mate was perched nearby. However, it turned out this site was not used for nesting in 2005.

On 25 March, I discovered a third nest, “C” farther along the bank of the Kootenay River, south-east of “A” and “B” nests. An agitated Red-tailed Hawk flew from the nest, loudly vocalizing. All future viewing took place on the opposite shore of the river with the aid of a spotting scope. The adult was sitting low in the nest until 15 April. On 25 April, an adult was restless in the nest, suggesting small active nestlings were present. By 3 May, one downy gray chick poked its head up from the nest bowl but it was too wobbly to stand. The adult was not at the nest. On 20 May, two chicks were visible with downy heads and wing feathers developing. On 23 June, the nest was unoccupied and it was assumed the two young had fledged. This nest was 18 m (60 ft) high in the crotch of a mature cottonwood tree 29 m (95 ft) tall with a dbh of 89 cm (35 in).

The initial Red-tailed Hawk nest “A” had a pair of Canada Geese in attendance on 21 March. One adult was sitting low in the nest on 7 and 15 April. On 3 May, downy goose feathers lining the nest were spilling over the edge with the adult sitting low. I do not have a date when the goose vacated the nest but it had been observed in the nest for at least 27 days. The incubation period for Canada Goose averages about 28 days (Dow 1943, Hanson and Browning 1959) so the pair may have nested successfully.

2006

A Red-tailed Hawk was first observed standing in nest “B” on 1 March. On 19 March, an adult was observed sitting low in the nest, probably incubating. Observations through to 9 May confirmed the nest remained active with one adult sitting as though incubating or later brooding small nestlings. On 5 June, two nestlings, fully feathered with a patch of down on the nape of the neck, were standing on the rim of the nest, stretching their wings and appeared close to fledging. On 8 June, an adult was calling but no young were visible at the nest, however, viewing time was limited due to a down pouring of rain.

On 21 March, a Great Horned Owl was observed via a spotting scope sitting in nest “C”. It was apparent that young were present on 18 April as the adult was sitting high and off centre in the nest. Its mate was roosting in a cottonwood tree on the opposite



Figure 8. A pair of Red-tailed Hawks successfully fledged two young in one of the two active nests in 2006. *Photo by Linda M. Van Damme, Creston, BC.*



Figure 9. In 2006, the second Red-tailed Hawk nest was occupied by a Great Horned Owl whose young did not survive. *Photo by Linda M. Van Damme, Creston, BC.*

shore of the Kootenay River. On 23 April, one downy chick was observed moving in the nest as the adult positioned itself to shade its offspring from the sun; daytime temperature was 17° C. On 30 April, the adult was absent and one large, downy bodied immobile chick was observed in the nest. On 5 May, it was apparent the owl chick was dead and the adults were no longer in the vicinity of the nest.

2007

A Red-tailed Hawk was first observed standing in nest “B” on 13 March. On 18 March, green conifer boughs had been added to the stick nest. There was no activity on 30 March but by 8 April, an adult was sitting low in the nest, suggesting incubation. On 18 May, an adult was agitated but I could not see evidence of young when viewing the nest through a spotting scope. On 5 June, two fully feathered young were standing in the nest and appeared close to fledging. On 15 June, an adult was calling on territory but I could not locate the young hawks and presumed they had left the nest.

Nest “A” was gone and nest “C” was starting to fall apart.

2008

An adult Red-tailed Hawk was first observed standing in nest “B” on 7 March. However, it was not until 28 March that an adult was observed sitting low in the nest. Irregular visits up to 1 May confirmed the nest was still active as the adult remained sitting. On 3 and 7 June, both adults were present in the cottonwood trees close to the nest and calling loudly when I arrived. I viewed the nest with a spotting scope but was unable to see evidence of young. However, on 9 June, I could see movement of one feathered nestling. By 21 June, the site was vacant.

2009

No Red-tailed Hawks were observed at this site this season.

There was no activity at nest “B” from 11 March to 11 April. On 12 April, however, a Canada Goose was sitting in the nest and continued to occupy it

until 10 May.

Nest “C” continues to deteriorate.

2010

No Red-tailed Hawks were observed in the breeding territory this season.

On 15 March, a Canada Goose (Figure 10) occupied nest “C” and on 19 April, a Canada Goose occupied nest “B”.



Figure 10. Canada Goose commonly uses nests of Red-tailed Hawk and Osprey in the Creston valley, BC. Photo by Linda M. Van Damme.

2011

No Red-tailed Hawks were observed at the site this season.

On 21 March, a Canada Goose occupied nest “B”; there was no activity at nest “C” which continued to deteriorate.

Table 1. Species nest activity and occupancy in a Red-tailed Hawk breeding territory in the Creston valley, British Columbia, 1998-2011.

SPECIES									
Red-tailed Hawk			Great Horned Owl			Canada Goose			
Year	Nest A	Nest B	Nest C	Nest A	Nest B	Nest C	Nest A	Nest B	Nest C
1998	N ¹	-	-	-	-	-	-	-	-
1999	N(2Y) ²	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	N	-	-
2001	-	-	-	N(1Y)	-	-	-	-	-
2002	N	-	-	-	-	-	-	-	-
2003	N	-	-	-	-	-	-	-	-
2004	-	N	-	N(1Y)	-	-	-	-	-
2005	-	-	N(2Y)	-	-	-	N	-	-
2006	-	N(2Y)	-	-	-	N(1Y)	-	-	-
2007	-	N(2Y)	-	-	-	-	-	-	-
2008	-	N(1Y)	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	N	-
2010	-	-	-	-	-	-	-	N	N
2011	-	-	-	-	-	-	-	N	-

¹N – nest active but contents not determined.

²N(2Y) – number of nestlings (Y) observed.

Summary and Discussion

Three different nests were built by Red-tailed Hawks in a well-defined territory and one of those nests was occupied by a pair of hawks in nine of the 14 years (Table 1). The hawks were absent from the territory in 2000, 2001, 2009, 2010 and 2011 and built new nests in 2004 and 2005 without occupying them. Nest-refurbishing was also documented in 2005. Preston and Bean (1993) report that it is not uncommon for Red-tailed Hawks to build alternate nests within their territory and a nest may be used for one or two years by the same pair, vacated for one or more years, and used again "by the same or different individuals (Janes 1984)". Sometimes two or more nests are built or refurbished without being

used in a particular year.

The defined territory was used annually by one of three species of birds (Table 1). At least nine Red-tailed Hawk and three Great Horned Owl young fledged during the 14-year monitoring period. It is well documented that Great Horned Owl most commonly use tree nests of other species, especially Red-tailed Hawk (Houston et al. 1998).

Canada Goose used each of the three hawk nests in five different years and in 2010 used two of the three hawk nests (Table 1). This behaviour in British Columbia appears to be a recent occurrence as Campbell et al. (1990) did not report Canada Goose usurping nests of Red-tailed Hawk in their analysis of 3,545 goose nests reported through 1989.

More recently, Mowbray et al. (2002) mention that Canada Goose may nest in trees but did not list specific details. In the Creston valley, Canada Goose commonly utilizes hollows in the broken tops of black cottonwood trees for nesting (pers. obs.).

Conservation Concerns

Urban and agricultural developments in the Creston valley are constantly threatening stands of mature black cottonwood trees, which are important sites for many nesting birds, including cavity nesting and colonial species. Some of these include Wood Duck (*Aix sponsa*), Bald Eagle (*Haliaeetus leucocephalus*; Machmer 2006, Van Damme 2007a, 2008b), Great Blue Heron (*Ardea Herodias*; Machmer and Steeger 2003, Machmer 2006, Van Damme 2007a), Osprey

(*Pandion haliaetus*; Van Damme 2008b), Double-crested Cormorant (*Phalacrocorax auritus*; Van Damme 2007a; Figure 11), Western Screech-Owl (*Megascops kennicottii*; Beaucher and Dulisse 2004), Northern Saw-whet Owl (*Aegolius acadicus*; Van Damme 2007b), Vaux Swift (*Chaetura vauxi*), and Pileated Woodpecker (*Dryocopus pileatus*). There is an urgent need to develop public awareness, and written policy, for conservation of black cottonwoods, on both private and public lands throughout the valley. †

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Figure 11. In British Columbia, Double-crested Cormorants typically build their nests on the ground on small islands. In the Creston valley, however, the threatened species builds its nests in branches of riparian black cottonwood trees, further emphasizing the importance of protecting extant stands of mature cottonwoods. Photo by Linda M. Van Damme.

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About the Author

Linda continues to monitor the breeding activity for birds of prey in the Creston valley and contributes annually to the British Columbia Nest Record Scheme.