



Early Status and Life History of Northern Spotted Owl (*Strix occidentalis caurina*) in British Columbia, 1903 – 1965, Including First Breeding Records for North America

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Abstract

The earliest documented occurrence and breeding of Northern Spotted Owl (*Strix occidentalis caurina*) in British Columbia was uncovered in the unpublished 1903 and 1904 field notes of the late Delbert Grovnor Boyd Ryder at Mount Lehman. His observations predate the previous first confirmed record, a specimen from Chilliwack, in 1909. Brooks (1900), however, mentioned without supporting detail the species was “a rare and local resident” in the lower Fraser River valley, referring to the late 1800s. Two nests located and examined by Delbert are the first breeding records for the subspecies in North America and his detailed field notes provide much of the earliest information on many aspects of the annual life history of this rare owl. Details for all historical records for British Columbia for the 63-year period 1903 through 1965 are examined and discussed.

INTRODUCTION

The Spotted Owl (*Strix occidentalis*) was first discovered in North America in 1858 near Fort Tejon, a former United States Army outpost, situated between the San Emigdio Mountains and Tehachapi Mountains in the Sierra Nevada Range in southern California (Xantus 1859). The site is about 56 km south of Bakersfield, CA. Fifteen years later, in 1872, the second record, also a specimen, was taken of a breeding bird near Tuscon, Arizona (Bendire

1892). Both records were identified as the California Spotted Owl (*S. o. occidentalis*). The discovery of this rare owl prompted a flurry of collecting of specimens and eggs in the early 1900s, especially in California, Arizona, and New Mexico (Forsman 1976). The coastal Northern Spotted Owl (*Strix o. caurina*; Figure 1) and southern interior Mexican Spotted Owl (*S. o. lucida*; Figure 2) were named later completing the three subspecies recognized in North America (Gutiérrez et al. 1995; see Figure 3).

Northern Spotted Owl, the subspecies in British Columbia, ranges from the southwest mainland coast of the province south through structurally complex late successional and old-growth forests in coastal mountain ranges in western Washington and Oregon to northern California (American Ornithologists' Union 1998; Figure 3). It is one of the most studied and best known owls in the world primarily due to the owl's association with late seral stage and climax coniferous forests of high commercial value (Forsman et al. 1984, Gutiérrez et al. 1995). The widespread loss of forested habitat from logging and the imposing threat of competition with a rapidly expanding population of Barred Owl (*Strix varia*) prompted the United States Fish and Wildlife Service to officially list this resident subspecies as threatened under the Endangered Species Act in 1990 (United States Fish and Wildlife Service 1990a, 1990b). In Canada, protection for Northern Spotted Owl was officially recommended to the Committee on the Status of



Figure 1. The Spotted Owl was discovered and named over a century and a half ago. Today, it is one of the most-studied owl species in the world, primarily due to conflicts between its habitat requirements of older-aged coniferous forests and the timber industry. The subspecies in this photograph is a Northern Spotted Owl. The plumage of the Northern Spotted Owl subspecies occurring in British Columbia, is darker brown and has smaller white spots than the other two subspecies (Oberholser 1915). It inhabits late mature and old-growth forests year-round from the southwest mainland of British Columbia south along the Pacific coast to northern California. *Photo by Jared Hobbs.*



Figure 2. The Mexican Spotted Owl is the smallest and lightest of the three subspecies. Its facial disk and upper breast contain more white and the white body spots are larger than in other subspecies. The Mexican subspecies occurs in the southwest United States south into Mexico. *Photo by Jared Hobbs.*

Wildlife in Canada in the mid-1980s (Campbell and Campbell 1984) and by 2000 the owl's status was confirmed as Endangered in an updated report by Kirk (1999).

The early history of Northern Spotted Owl in British Columbia, in fact, in coastal western North America, is based primarily on specimen records (Table 1). While preparing a biography of the late Glenn R. Ryder (Campbell and Henderson 2013) it was discovered that Glenn's father, Delbert Grovner Boyd Ryder, also a keen naturalist, had recorded life history information on a pair of Northern Spotted Owls nesting adjacent to his family's farm in the early 1900s. This article summarizes his unpublished and detailed observations in 1903 and 1904 and places them into perspective for the early history of the Northern Spotted Owl in the province and western United States.

SYSTEMATICS

Subspecies

Three subspecies of Spotted Owls are currently accepted by taxonomists in North America based on body characteristics (American Ornithologists' Union 1957, Gutiérrez et al. 1995). The Northern Spotted Owl, named by Merriam (1898), is the largest and darkest, the California Spotted Owl, named by Xantus (1859), is intermediate in size and lighter in body colour, and the Mexican Spotted Owl, named by Nelson (1903), is the smallest and lightest brown. The current ranges are shown in Figure 3. The historical range of the northern subspecies includes the southwest mainland coast of British Columbia from Birkenhead Lake and Anderson River south through the coastal mountains and eastern and western slopes of the Cascade Range in Washington and Oregon to northern California (Campbell et al. 1990b, Dunbar et al. 1991, Gutiérrez et al. 1995, Buchanan 2005, Forsman 2006). The other two subspecies, California Spotted Owl and Mexican Spotted Owl, occur inland and are more southerly distributed.



Figure 3. Current breeding distribution of the three subspecies of Spotted Owl in western North America (from Gutiérrez et al. 1995). Permission to reproduce the map was obtained from *Birds of North America Online* <http://bna.birds.cornell.edu/bna>, maintained by the Cornell Lab of Ornithology.

BRIEF HISTORY OF DISCOVERY

The Spotted Owl (Figure 4) was first discovered in North America in 1858 near Fort Tejon, a former United States Army outpost, situated between the San Emigdio Mountains and Tehachapi Mountains in the Sierra Nevada Mountains in southern California (Xantus 1859). The site is about 56 km south of Bakersfield, CA. Fifteen years later, in 1872, the second record, also a specimen, was taken of a breeding bird near Tuscon, Arizona (Bendire 1892). The discovery of this rare owl prompted a flurry of collecting of specimens and eggs in the early 1900s, especially in California, Arizona, and New Mexico (Forsman 1976). Northern Spotted Owl had not yet been identified.



Figure 4. The Spotted Owl was one of the later species of birds in North America to be discovered and named. Its habit of living year-round in the shadowy, dark interior of older coniferous forests, often in canyons and on mountainsides, made finding the bird challenging. *Photo by Jared Hobbs.*

The early history of the Northern Spotted Owl in the Pacific Northwest, encompassing British Columbia, Washington, and Oregon, is sketchy and not well documented. The earliest record for Washington is supplied by Rhoads (1893) who collected birds in Washington and British Columbia in 1892. He stated:

“*Syrnium occidentale* SPOTTED OWL.-Two Owls (one of which is in the collection), taken by Edwards Bros. twelve miles east of Tacoma, [Washington] on the western foothills of the Cascades, prove to be almost identical with Xantus’s type of *Syrnium occidentale* taken at Fort Tejon, California. In colour the Washington specimen agrees with the type in being darker and larger than Arizona specimens. The Spotted Owl has heretofore been considered representative of the Lower Sonoran Fauna [Merriam life zone for the low hot desert region of southern California, Nevada, Utah, Arizona, and New Mexico]; that it should thus suddenly appear on the Boreal [northern] horizon is somewhat startling.”

Five years later Merriam (1898) named the northwestern Spotted Owl subspecies “*Syrnium occidentale caurinum*” on the basis of an adult female collected by E.A. Preble at Mount Vernon on 22 June 1897. Jewett et al. (1953) provided additional early information on the Northern Spotted Owl in Washington State, including the state’s first breeding record in Mount Rainier National Park on 28 July 1919.

The earliest record for Oregon appears to be in an unpublished report by the United States Fish and Wildlife Service by V. Bailey (Forsman 1976). Bailey recorded a Spotted Owl near Gold Beach, Curry County, on the Oregon coast, in 1909.

In the late 1800s, Brooks (1900) considered the Spotted Owl “a rare and local resident” to “the lower Fraser Valley” in southwestern British Columbia in the late 1800s. Since the subspecies was considered non-migratory it was now assumed to be resident along the entire Pacific Northwest coast.

HISTORY IN BRITISH COLUMBIA, 1903 – 1965

Much of the information on the discovery and early life history of Northern Spotted Owl in British Columbia has remained undisclosed in field notes, unpublished reports, museum specimens, correspondence, and obscure publications. While three provincial bird books (e.g., Brooks and Swarth 1925, Munro and Cowan 1947, Campbell et al 1990a,b,c,d) attempted to summarize records and provide an informed overview for the subspecies, the time necessary to search and verify every source was simply unrealistic. Consequently, not all information had been brought together in a single source that accurately defined knowledge of the species in the province. Some of the early information was conjecture yet it seemed important to record. There was very little life history information available and even the early provincial distribution for occurrence and breeding was not carefully scrutinized. Frequently, because the subspecies was considered resident and non-migratory, breeding ranges were delineated from incomplete and unsubstantiated information such as Forsman (1976) and Howie (1980) (Figure 5). Through 1965, there are only four confirmed breeding records for the province from three separate locations.

This historical update brings together published and unpublished material, much of which was not available to earlier authors, for the period 1903 to 1965. The latter date was selected because by the late 1960s birders were beginning to explore such areas as Manning Park and the Skagit Valley for a “lifer” (J.E.V. Goodwill and W.H. Hesse pers. comm.) and the increasing interest in the Skagit River hydroelectric project that would impact Ross Lake in British Columbia (Kunzler 2005). The project was completed in 1953 and soon after environmental impact reports, and owl surveys, were underway (Bendell 1973).

Whenever possible, original field notes (Figure 6) are reproduced as well as excerpts from select publications to clarify a particular record. Many of the locations are not precise because many early collectors did not disclose specific sites for fear that others might collect in the same area.

The surrounding area for each recorded location, however, is described.

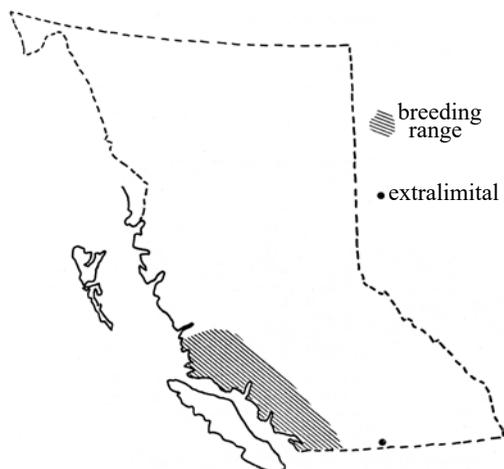


Figure 5. Laing (1942) speculated that from calls of an unidentified owl heard at Fawn Bluff (Bute Inlet) and Lizard (Lois) Lake that the Northern Spotted Owl "...occurs up the mainland coast as far as Bella Coola." Consequently, without further verification, subsequent range maps for the subspecies included the entire southwest mainland coast from Manning Park on the international boundary north to Bentinick Arm at Bella Coola. *Reproduced from Howie (1980).*

Northern Spotted Owl was not included in the list of British Columbia birds by Fannin (1891, 1898) although Brooks (1900) published the following summary for the owl for the late 1890s:

"**Syrnium occidentale.** WESTERN BARRED OWL – Apparently confined to the lower Fraser [River] Valley, where it is a rare and local resident."

The scientific name for Spotted Owl was correct at the time but the common name was obviously an oversight as Barred Owl was not recorded in the Lower Mainland until 1966 (Campbell et al. 1990b).

In his updated annotated list of birds in the province Kermode (1904) included Northern Spotted Owl and wrote:

"Rare resident at Chilliwack [Chilliwack] and Mount Lehman (Brooks [1900]). The late John

Notes rewritten by Glenn R Ryder Naturalist. Notes of Delbert Boyd Ryder

Date Saturday April 30th 1904 Mt Lehman B.C. Page (1)

I woke up early again to Listen to the Owls Calling back and forth.

Spotted Owls (2) the pair Calling before Dawn the female was heard first off as she was likely hungry then I heard the male her mate Called back and this went on for a few moments or so Then the woodlands were again Silent. I wonder if all three eggs have hatched yet? I heard someone saying Breakfast is ready, so I quickly got myself dressed then go down stairs to eat. After Breakfast we headed out to the Barn and Called the milk Cows here to the Barn they all came running. I wash them and my father James starts the milking by hand, also my older Brother Angus starts Milking also I do the Separating with the old De Level Separator, and after the milking is all finished I take the Cream to the farm house I check the kitchen stove wood box It needs more wood so I go out to the woodshed and pack in wood.

Well to-day is the big day, I will make the climb up the Branched dead older Cedar tree that has the Nest of the Spotted owl in it some 50 to 60 feet up and down inside the Hollow open top. My father is coming down also in case I should need help I take my Note Book and field glasses and ropes in the small pack plus the rope Loops they come in handy also. We hike out to the old growth woodlands and walk about below the trees at nest tree

Spotted Owl (1) male is seen roosting near to the Nest tree, he is silent.

I Delbert Boyd Ryder start to climb as the dead Cedar has its Branches all the way to the Top. I used the Bigger rope loops around the trees trunk when I got well up and put the main rope through the loop and moved it up every 5 or 6 feet It is my safety line in case a Branch Breaks.

Figure 6. Delbert Ryder's field notes, often written in faint pencil and in pocket-size notebooks or on scraps of paper, were transcribed by his son Glenn onto larger sheets of foolscap starting in early 2000. The scanned product is a portion of Delbert's original notes written on April 30, 1904 before he and his father James headed out to check the contents of the Spotted Owl nest that had been located.

Fannin had this bird on his first list of B.C. birds, having taken it at Burrard Inlet some years ago, but in his lists of 1891 and 1898 he dropped it."

Supporting sources of documentation for all known records, whether accepted or not, are listed below from north to south and west to east. Numbers correspond to locations shown in Table 1 and Figure 5.

Table 1. Historical records of Northern Spotted Owl (*Strix occidentalis caurina*) for British Columbia, 1903-1965.

Map ¹	Location ²	Date	Record Type ³	Source
1	Fawn Bluff	August 6-9, 1936	calling	Laing (1936b, 1942)
2	Lizard (Lois) Lake	July 16, 1936	calling	Laing (1936a, 1942)
3	Alta Lake Alpha Lake	Summer, 1943	calling	Racey (1944)
		July 17, 1946	heard calling	Racey (1948)
4	Upper Squamish River	May 29, 1963	nest & young	BCNRS ⁴
5	Cheakamus River	December 12, 1943	specimen	Racey (1944)
6	West Vancouver West Vancouver	July, 1925	specimen	Cumming (1932)
		November, 1946	specimen	K. Racey notes
7	Vancouver	September, 1947	photograph ⁵	Campbell et al. (1990b)
8	Mount Lehman Mount Lehman Mount Lehman	Pre 1909 (1908?)	breeding? ⁶	Brooks (1917)
		1903	nest & young	BCNRS
		1904	nest & young	BCNRS
9	Huntingdon	May 31, 1927	specimen	Laing (1942)
10	Chilliwack	January 26, 1909	specimen	Brooks (1917)
11	Vedder Crossing	October, 1939	specimen	Munro and Cowan (1947)
12	Spuzzum	August 7, 1940	specimen	Campbell et al. (1990b)
13	Little Mountain Hope Hope Hope Hope	November 25, 1919	specimen	Campbell et al. (1990b)
		November 5, 1929	specimen	Campbell et al. (1990b)
		February 13, 1933	specimen	Campbell et al. (1990b)
		June 20, 1940	specimen	Campbell et al. (1990b)
		October, 1947	found dead	Campbell et al. (1990b)
14	Snass Creek	November 9, 1947	specimen	Campbell et al. (1990b)
15	Klesilkwa Creek [River] McNaught Creek Skagit River (Valley)	June 24, 1916	specimen	Munro (1918), Tavener (1927)
		January 20, 1922	specimen	Tavener (1927)
		December 4, 1933	specimen	Campbell et al. (1990b)
16	Pinewoods Allison Pass Lightning Lake	September 2, 1949	heard calling	Edwards (1949)
		July 28, 1962	fledged young	Smith (1963); BCNRS
		July 16, 1967	1 adult roosting	K.R. Beckett (pers. comm.)

¹Numbers correspond to general locations on map (Figure 7) and each location in text.

²Early locations were usually recorded to the nearest official place and may be some distance away.

³ Supporting details for eight categories of records are discussed in the text for each location, including additional information on collected specimens.

⁴Refers to British Columbia Nest Record Scheme. This program, established in 1955 (Myres et al. 1957) and still operating today (Campbell et al. 2013) is the longest-running volunteer endeavour in the province.

⁵See Campbell and Stirling (1971).

⁶Breeding suspected but not confirmed.



Figure 7. Distribution of Northern Spotted Owl in British Columbia, 1903 – 1965, in three general categories: specimen, sight, and sound. Localities, from north to south and west to east, are: 1. Fawn Bluff (Bute Inlet). 2. Lizard Lake (Lois Lake). 3. Alta/Alpha Lake (Whistler). 4. Upper Squamish River. 5. Cheakamus River. 6. West Vancouver. 7. Vancouver. 8. Mount Lehman. 9. Huntingdon. 10. Chilliwack. 11. Vedder Crossing. 12. Spuzzum. 13. Little Mountain/Hope. 14. Snass Creek. 15. Klesilkwa Creek [River]/McNaught Creek/ Skagit River (Valley). 16. Manning Park (Pinewoods, Allison Pass, Lightning Lake).

(1) **FAWN BLUFF (BUTE INLET)** – Located on the southeast end of Bute Inlet about 80 km north northwest of Powell River (10U 354465E 5594012N). In his field diary Laing (1936b) wrote:

Spotted Owl

For some days, Aug. 6th to 9th [1936] there was heard from the hills above Kenzie Lake [not an official name] at dusk, a hooting that suggested Spotted Owl. This by an exhaustive or subtraction type of reasoning or inference. There could be no other owl here unknown by voice to the writer. The call could be imitated perfectly, but the hooter never came down the hill in the dusk.

(2) **LIZARD LAKE (LOIS LAKE)** – 8 miles [12.9 km] north of Stillwater; elevation 649 feet [198 m]. In his field diary Laing (1936a) wrote:

Spotted Owl

Suspected but not proven. At Lizard Lake [name rescinded] July 16th [1936] when at dusk the

writer sent out the call of the horned owl. There came from across the water a dismal wailing that suggested spotted owl – or something unknown.

Laing (1942) later summarized birds he observed and collected at Fawn Bluff and Lizard Lake in a paper covering the “Northwest Mainland Coast of British Columbia” published in in the *Condor* in which he stated:

“*Strix occidentalis caurina*. Northern Spotted Owl. The writer’s contact with this owl in the coastal strip have been most unsatisfactory, although it is his firm conviction that the bird occurs up the mainland coast as far as Bella Coola...To date the species has not been observed on Vancouver Island. At Horseshoe Lake in the Stillwater region on the mainland, the weird calls of this owl were heard several times in July 1936. In the same summer at Fawn Bluff, Bute Inlet, another called every evening from the mountain side above Kenzie Lake [not an official name], but it could not be decoyed out of the

jungles.”

The precise location for records (1) and (2) of owls heard calling is unknown and is not described in Laing’s field notes. Kenzie Lake is not gazetted by British Columbia Geographical Names and Lizard Lake (49° 51’ 00” N, 124° 14’ 00” W) has been rescinded and renamed Lois Lake (49° 05’ 57” N, 124° 14’ 12” W). Lizard Lake was a local name likely attributed to the presence of Northern Alligator Lizard (*Elgaria coerulea*) inhabiting rocky bluffs and clear-cuts around the lake (Figure 8).



Figure 8. Early collectors did not have access to detailed maps to identify features of a landscape such as a small lake, stream, or headland. Often unknown sites were named for an animal seen such as a Northern Alligator Lizard (*Elgaria coerulea*), which occurs in suitable habitats surrounding Lois Lake on the Sunshine Coast. *Photo by Jared Hobbs.*

Since there was no written description of the calls or other convincing evidence for the two records from Kenzie and Lizard Lake they were not published by Munro and Cowan (1947) nor Campbell et al. (1990b). Campbell and Campbell (1984), however, listed the possible locations to encourage confirmation in the future that would define the northern limit of Northern Spotted Owl in the province.

The complex vocal array for Northern Spotted Owl, consisting of 14 recognized calls, was not categorized until the mid-1970s (Forsman 1976) therefore detections by calls by early collectors and naturalists required descriptions or recordings, so verification could be confirmed later.

(3) ALTA/ALPHA LAKE – Alta Lake, 2.2-km long, is now a recreational community located 1.6 km west of Whistler. It lies at 642 m elevation. Alpha Lake is located about 1.3 km southwest of Alta Lake. Kenneth Racey had a cabin on Alta Lake and visited it mostly during the summer, even though access from Vancouver was quite difficult.

Northern Spotted Owl was not included in Racey’s preliminary list of birds of Alta Lake for the early 1920s (Racey 1926) but two decades later (Racey 1944, 1948) he published two records of calls he considered to be Northern Spotted Owl.

“For some years past, the call of an unidentified owl has been heard during the summer months, in the general vicinity of Alta Lake, British Columbia...”

“... on July 17, 1946, one of these birds was heard calling in the late evening from the woods south of Alta Lake.”

(4) UPPER SQUAMISH RIVER (64.4 km upstream from mouth of Squamish River, 24 km west of Alta Lake). Information on BC Nest Record Scheme (BCNRS) card from Allan Best stated:

“May 29, 1963 – Young taken from felled [western] red cedar snag, about 4-5 weeks old, and taken to Stanley Park Zoo. It was a huge snag; the nest cavity was very high up. It was a miracle the young were unharmed although one nestling had a broken leg. Identity verified by Miklos D.F. Udvardy (professor at UBC).”

This is the fourth confirmed (third locality) breeding record for British Columbia since 1903.

(5) CHEAKAMUS RIVER – The Cheakamus River, a tributary of the Squamish River, besides

Highway 99 southwest of Whistler before entering Daisy Lake. Racey (1944) wrote:

“...it was not until the 12th of December, 1943, that a bird [Northern Spotted Owl] was secured and definitely identified, when an adult female spotted owl was caught in a trap set for weasel [*Mustela* spp.] near Cheakamus River. Fortunately the trapper saved the specimen, and forwarded it to the writer, in whose collection it is now Number 2939. On dissection, the stomach was found to contain the remains of a Grey Jay, *Perisoreus obscurus griseus*. The ovarian mass measured 8 x 18 mm, and three ova 2 mm, which would indicate that this owl would have nested during the month of February.”

The specimen (UBCBBM 5617) was donated to the Cowan Vertebrate Museum at UBC (now the Cowan Tetrapod Collection in the Beaty Biodiversity Museum) (Table 1). The Grey Jay was a new prey item for Northern Spotted Owl (see Forsman 1976, Smith 1963). The reproductive condition of the female collected suggested that it “would have nested during the month of February” (Racey 1944). The earliest date (calculated) for clutch initiation in British Columbia is March 15 and 18 (this paper). Forsman (1976) gives a range of March 9 to April 19 with a mean date of March 29 for Oregon.

(6) WEST VANCOUVER – West Vancouver is located north of Vancouver across Burrard Inlet. The district municipality is set against a backdrop of tall heavily forested mountains, the North Shore Mountains, foothills of the Pacific Ranges in the much larger Coast Mountain ranges. Hollyburn Mountain, at 1,325 m and Mount Strachan at 1,454 m are the tallest mountains.

There are two specimen records both without precise locations. Cumming (1932) wrote, in his summary of birds in the Vancouver district:

“Rare resident in heavy timbered areas. Specimen taken in West Vancouver in July, 1925.”

The other record (Table 1) was an entry in the field notes of Kenneth Racey. He mentioned a Spotted Owl was collected in West Vancouver

in November, 1946. One of these skins may be in the collections at the Field Museum of Natural History in Chicago. A specimen (FMNH 100306) has been accessioned with the location “Eagle Harbour, British Columbia”, which is in the district municipality of West Vancouver; no other details were provided. The other specimen may have been collected on the North Shore mountains north of West Vancouver.

(7) VANCOUVER – In 1947, the city of Vancouver was hardly a major metropolitan city. The skyline dominated by skyscrapers today consisted of only a few tall buildings, such as the Hotel Vancouver at 111 m. The population was just over 300,000 people and the economy was focused heavily on logging and fishing (Luxton 2007).

The late Frank L. Beebe (pers. comm.), zookeeper at Stanley Park Zoo for seven years after World War II, provided details for this unusual record. In September 1947, a Northern Spotted Owl was found sitting on the road at the busy corner of Granville Street and Hastings Street West with a Rock Dove [Pigeon] (*Columba livia*) in its talons (Figure 9). It had “apparently been taken on top of the old Post Office building” (Guignet 1960). The bird was given to the zoo for care, later photographed (BC Photo 259 – see Campbell and Stirling 1971) and released in nearby Stanley Park, a natural forested 405-ha (1,000-ac) urban park.



Figure 9. The Spotted Owl brought to zookeeper Frank Beebe in 1947, picked up alive in the centre of Vancouver, BC, was the first urban record for the species as well as a new prey item – a Rock Pigeon. Photo by R. Wayne Campbell.

(8) MOUNT LEHMAN (general description)

– A small rural farming community, established in 1864, located in the central Fraser River valley of southwestern mainland British Columbia (49° 07' 00" N, 122° 23' 00" W). It became part of the District of Matsqui in 1892 and later was incorporated into the city of Abbotsford in 1995. The community got its name from being situated on an upraised plateau (101 m) between the flat plains of Matsqui Prairie to the east and Glen Valley to the west (Anonymous 1892). In 1864, massive old-growth forests of Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*) and western hemlock (*Tsuga heterophylla*) dominated the landscape of the plateau (Toth 2007). It was situated on an upraised plateau (hence "Mount") that consisted of a heavily wooded area of gigantic western redcedar and Douglas-fir trees lying between the flat plains of Matsqui Prairie to the east and Glen Valley to the west (Anonymous 1892).

The livelihood of Mount Lehman settlers during the late 1880s and early 1900s was farming and logging. In 1910, the new British Columbia Electric Railway, that connected Chilliwack to Vancouver, passed through Mount Lehman changing the community forever (Southern Railway of British Columbia 2013). Forests, including stands of old-growth, were cleared to provide infrastructure for an increasing human population and land was being converted for farming of vegetables and dairy products. By the 1930s Mount Lehman was thriving and consisted of eight service buildings and a train station.

Mount Lehman (pre-1909) – The earliest published reference to Northern Spotted Owl in the province is from Mount Lehman in *Birds of the Chilliwack District, B.C.* (Brooks 1917). The article was written mainly to correct discrepancies in ranges of birds for the Chilliwack that were listed erroneously by the American Ornithologists' Union (1910) as being located in southeastern rather than southwestern British Columbia.

"Strix occidentalis caurina. Northern Spotted Owl. — Very rare. I purchased a very poor mounted specimen from Mr. Wm. Hall who got it

at Mount Lehman, some fifteen miles down the Fraser River from Sumas, where a pair had reared a brood of young. During the eleven years I resided at Chilliwack and Sumas I worked very hard for this bird, visiting all likely localities and offering rewards for any owls brought me with dark brown eyes, but could get no trace of it."

The year and precise date for the mounted specimen purchased by Brooks from Mount Lehman is uncertain. If it was obtained prior to 1903 (see Mount Lehman 1903 below) it would become the first occurrence and breeding record for British Columbia. Laing (1979, p. 78) published artwork by Allan Brooks that shows a side profile of the head and one foot of a Spotted Owl dated *circa* 1908 that probably represents what Brooks salvaged from the mounted specimen (Figure 10).



Figure 10. The exact year Allan Brooks purchased the full mount of the Spotted Owl from William Hall is unknown but it may have been in 1908. Permission to reproduce Allan's artwork was received from E.J. Brooks. The drawings also appeared in Laing (1979).

Laing (1979) provides some of the early history of Allan Brooks. He arrived in the Chilliwack region with his naturalist father, William Edwin Brooks, in May, 1887 to “farm in the west.” After four years Allan’s father sold the farm and in 1891 he returned to Ontario. Allan remained in Chilliwack, “on his own” collecting birds, hunting, and painting but by the end of 1891 he returned to Ontario. After four years, in the autumn of 1894, Allan returned to Chilliwack to take up “zoological collecting as a profession.” He faithfully kept nature records. In early autumn 1897 he went to the Okanagan valley but returned to the Sumas/Chilliwack area, and other places, periodically to collect birds and mammals until 1905 when he finally settled in the Okanagan (E.J. Brooks pers. comm.). There is no mention of obtaining the Mount Lehman Spotted Owl in the numerous letters Laing (1979) published for the period 1887 through 1909 or in Allan’s field notes for the same period, although he did include the notation “Mount Lehman, breeding” in his book (Brooks and Swarth 1925). Without more information (and Brooks was a stickler for detail) he knew the record would not be accepted. Laing (1979) published a noteworthy entry from Allan’s 1909 diary while he was at his old home at Chilliwack:

“He shot a [Northern] Spotted Owl, the first record for the Province (Figure 11). This called for a heavy paragraph on colour details: iris, bill, talons, soles of feet, etc. ‘This is the first one I have seen in the flesh in 22 years collecting. There was a [Northern] flying squirrel in the stomach.’”

Mount Lehman (1903) – In the early 1980s, the late Glenn Ryder mentioned to the author that his father, Delbert Grovner Boyd Ryder, had found a pair of Spotted Owls nesting in Mount Lehman in the early 1900s. At the time Delbert’s field notes were in storage and could not be easily located. Consequently, the information was not available for inclusion in *The Birds of British Columbia* (Campbell et al. 1990b). In 2012, Glenn uncovered some of his father’s notes and began transferring them from field booklets to a larger format for future reference and storage (see Campbell and Henderson 2013).



Figure 11. Allan Brooks made detailed notes on the body colours of birds that might fade after being collected as well as sketches of patterns and shapes that could be of use later when the species was drawn. His paintings were published widely and served as the source of identification for naturalists in the early 1900s. At the time, the specimen was the first documented record for British Columbia. Permission to reproduce Allan’s artwork was received from E.J. Brooks. The drawings also appeared in Laing (1979).

Delbert and his family moved from Mission to Mount Lehman, a distance of 6.4 km west southwest, in early spring of 1903 to farm the fertile land of the central Fraser River valley. Like many farmers, they were keenly aware of incidents on their property. The day following settling on their new homestead Delbert and his father James Alexander Ryder heard unfamiliar owl calls throughout the night emanating from an old-growth forest abutting their farm. The owls could easily be heard calling from the farm house. Barred Owls had not yet invaded coastal British Columbia (Munro and Cowan 1947, Campbell et al. 1990b) and the Ryder’s were familiar

with the calls of other regular woodland species like Great Horned Owl (*Bubo virginianus*; Figure 12), Western Screech-Owl (*Megascops kennicottii*), and Northern Saw-whet Owl (*Aegolius acadicus*). They surmised it was the rare Northern Spotted Owl they were hearing. Later Delbert was encouraged and supported by his father to study the owls and within a day of arriving on their new homestead they began documenting the owl's activities and continued throughout the year. Most of the written record involving actual forest searches was done on weekends (after church on Sundays) and when daily farming activities were completed. When the Ryder family arrived on March 8, 1903, it is likely that the Spotted Owls were already nesting (see Forsman 1976, p. 61).



Figure 12. Before moving to Mount Lehman from Mission, James and Delbert Ryder were familiar with the calls of all local owls and where they nested. The nestling Great Horned Owls in this photo may have helped locate the Northern Spotted Owl nest found later in a broken snag. Photo by R. Wayne Campbell.

The Ryder family had a small but impressive library of bird books that they brought with them from Mission. Delbert was fascinated with the lives of birds and he read books constantly. He quickly learned the various plumages of birds, their habits and calls, where and when they nested, and their distribution in North America. Some of his books included Cassin (1862), Elliot (1869), Coues (1890), Bendire (1892), Chapman (1896), Merriam (1898), Blanchan and Burroughs (1898), and Reed (1904). Many of the standard references did not include the Pacific Northwest region of North America in their discussion of species' ranges. This was further motivation for Delbert to study the Spotted Owls.

The following noteworthy information, published for the first time, is the complete text taken verbatim from Delbert's transferred field notes, of the occurrence, behaviour, food habits, and breeding for Northern Spotted Owl observed near his family's farm in Mount Lehman in 1903.

March 8 – *During the night I heard some calls coming from the Big old growth woodlands... sounded like that of an owl or two...what we have is likely a pair of Spotted Owls that are likely nesters...*

March 10-18 – *(2) owls calling to each other all night...They called until dawn then were silent.*

March 14 – *(2) found in trees...one high up in a Cedar [western redcedar] next to its trunk and the second was seen at top of a Dead old Cedar with branches all the way up to Its missing Top that had broken off some time ago.*

March 15 – *Seen one Owl high up in a [the] Cedar tree sleeping and the second Owl likely the female was at the top of the Broken off Dead Cedar tree...*

March 21 – *(2) calling went on until It started to get light out then all was silent in the woodlands... this is the day we would check the old tree snag... We [with father] got some rope plus some rope Loops and headed for the Big woodlands...so I tied the rope around my waist with the Loops (2)...as I*

reach the top (60+feet) the female owl flies out fast and was gone into another tree nearby she called to the male who showed up...I took my small flashlight and Pointed It down into the cavity to see (2) white eggs. Wow I thought Its her nest... the eggs were 2 1/2 to 3 feet deep in the Cavity hole and nothing more except wood chips and what looked like Materials of an old Squirrels Nest that the eggs are Laying on...We leave the forest so the owls can back to their life style again...These woodlands where the Spotted Owls are nesting had Patches of Snow in Areas yet.

March 22 – the male is seen near the Nest snag but up high in a Cedar tree sleeping with the remains of a squirrel [Northern Flying Squirrel, *Glaucomys sabrinus*; Figure 13] in Its Talons.



Figure 13. Delbert was the first to record Northern Flying Squirrel as prey for the Northern Spotted Owl. Later, many researchers documented the nocturnal mammal as a primary food item in the owl's diet. Photo by R. Wayne Campbell.

March 23 to April 24 – Calling back and forth at night; during day male sleeping well up [70+ feet] in a Cedar tree while female on her (2) eggs...on 28th male had the remains of a flying squirrel in Its Beak and the female owl was up at the edge of the Hollow top just ready to receive the food. She got the Squirrel then vanished down inside the Hollow snag top...On April 18, when the mate got to the nest with some food items the Two owls set up a calling session of different types of Calls and other sounds. Then all was silent. There must be something going on...I do not know about at this time.

April 25 – Well today was the Big day...the climb to the Nest...at the 60 foot or so level I Tap on the tree at Its hollow and up fast came the female Spotted Owl who flew to a nearby Cedar tree fluffing her feathers up to make her look Bigger to this intruder me. She called to her mate and the male owl came and landed on a branch near to her...I got out my flashlight and the pointed It down into the Darkness of the hollow Cedar... I could clearly see (2) Downy white owlets in the litter at the Bottom. I could see Bird feathers and remains of Flying Squirrels...This was the most thrilling and exciting Day I have had ever.

April 26 to May 22 – ...pair calling back and forth during night with different calls when greeting at the nest, high in pitch...during day male at Its high roost spot in old growth Red Cedar tree some 70+ feet up and under some other Boughs sleeping... On May 17 (2) Adults are located sleeping high up in old Red Cedars... No young are found.

May 23 – (2) Adults are found up high in an old growth Red Cedar tree near to each other. I located (1) young owl in a hemlock tree.

May 24 – ...not a sound from these Spotted Owls during the night... I found the (2) Adults up high in Red Cedars old trees both sleeping now and I found (1) young roosting by It's self some (30) feet up in a w. hemlock tree.

May 30 to June 14 – I found the Two adults up high in different Cedar trees sleeping now...located

(1) young up in a Douglas fir tree some 50 ft up on horizontal branch...found the second young on a horizontal Branch of an old growth Douglas fir with its missing top...sleeping also.

June 15 to August 1 – ...the adults are located high up in the Cedars usually sleeping apart from each other. Only once was a young found, on June 20, sleeping 30 feet up on a dead Douglas-fir branch.

August 2 to December 31 – ...one or two owls, likely adults, were located sleeping in old-growth trees (Figure 14).

Mount Lehman (1904) – This was Delbert's first full year of observation and he recorded at least one Northern Spotted Owl in every month during daytime searches in the nearby old-growth forest or at night when they called. The task was demanding because Delbert recorded everything he saw. On March 20 he wrote "I have a hard time keeping up with the Owls and other Bird life plus the Mammals." Noteworthy extracts from his notes

for Northern Spotted Owls follow.

January 4 to February 25 – One or often two owls were found roosting or sleeping, usually some distance apart, in a Cedar or w. hemlock tree under overhanging Big Branches, 40 to 70 feet up. They were not seen near last year's Nest snag. A typical entry for this 53-day period would be (2) the pair still in the big old growth woodlands roosting high up in the Red Cedar but some ways apart and just sleeping.

February 26 to March 13 – ...the Spotted Owls were pretty active during the night and calling to each other...

February 28 – the pair was first seen near each other but well up in the Cedar trees and looking to be sleeping.

March 19 – ...we [Delbert and his father James Alexander] heard the Two Spotted Owls during the night...we walk over to the Dead Big old Broken topped Cedar tree to find the male roosting in the



Figure 14. During the post-breeding season, and especially in winter, the male Northern Spotted Owl is often the only bird regularly found roosting in the species' home range. *Photo by Jared Hobbs.*

next tree...this is the day to make the climb to the top... but first off we will scratch the trunk of this snag and watch the top. We did this nothing showed we next Banged on the trees trunk and out the female owl came and landed next to her mate. They both Called softly like that of the Band-tailed Pigeon but she did not reenter the hollow top of the snag. I started the Climb...the Branches were spaced just right...and looked down into the open top. It is Hollow for some (3) feet down inside and there I see (3) white eggs on wood chips etc. It is nice to have such owls Nesting here in our woodlands.

March 20 to April 22 – While the female was incubating the male roosted nearby in western redcedars and western hemlock trees (Figure 15). The pair called frequently throughout the evening as Delbert noted (2) heard calling just before Dawn. It was the female owl calling for the male to bring her food. On March 27 and April 9, Delbert noted the male was roosting near the nest area with a [Northern] Flying Squirrel in talons.



Figure 15. During incubation by the female, the male Northern Spotted Owl usually roosts nearby in a conifer tree. Photo by Ervio Sian.

April 23 – (1) the male is seen roosting near Cedar tree snag with the hole in top. Female is down inside the hollow snag some 50 to 60 feet up. To-day I am making a check on her and the eggs or young. My father James is at the tree base as I make the climb with my rope loops and safety rope. The snag has branches all the way to the top at open hollowing. The tree branches are also solid. At the top the female flies out and lands near to the male owl. They both called out then were silent and they just watched me. I took out my flashlight and pointed it down into the cavity hole some 3 feet or less down and there I see the (3) white downy young all look to be o-k. It has been some 36 days. I went back down the tree and my father James and myself walked over to check on the [a] Long-eared Owl but it has left its roost and was not around in other Cedar trees. Likely left area.

April 24 – (1) male is roosting near the nest.

April 30 – Well to-day is the big day. I will make the climb up to the nest. Male is seen roosting near to the Nest tree. He is silent. I arrived at the top Branches...and tied myself with the loops and rope...The male is watching me and He finely leaves his roost tree and makes a pass at me I felt the Air from his wings...at the moment the female owl shot upwards from down inside the Hollow...she called and the male came back a second time. This time they Both Came at me showing their Legs and Talons but just went past me (Figure 16).

I shine the flashlight down into the Bottom of the Deep Hollow Cavity...the owlets all three of them they are wonderful little snowy white Down Covered creatures. There is one that looks to be older than the other (2) Owlets. They have pinkish Coloured Bills and have Dark eyes. I did not see their feet at all as they stayed in Cavity Bottom. I see some Bird remains plus feathers...also the odd uneaten Mouse [Deer Mouse, *Peromyscus maniculatus*] etc. I first checked this Nest on Saturday March 19th...It has been One Month plus 13 days to see the results of this Nest.

May 1 to 28 – ...before It is light outside I Listen for the Spotted Owls Calling...the first Owl I



Figure 16. Humans inspecting nests may be attacked by both male and female Northern Spotted Owls, striking the intruder with extended talons. *Photo by Jared Hobbs.*

heard was the female as her voice is higher in pitch than the males. The male then Called back. These vocalizations were heard daily, usually in the period before dawn. When searching for the adults during the day Delbert most often found them roosting or sleeping high up in western redcedar trees.

May 15 – To-day I am making another climb up to the Spotted Owl nest...as I was doing this the Two owl made a pass at me I only felt the Air from the wings they went Back to their roost spots but kept a eye on me...I see only the (2) Owls now they had lost their snowy white plumage Down. The youngest owl had Vanished. It likely died and was eaten by the older young owls. So now we have (2) much Bigger owl young they look like they are old enough to leave the nest soon?

May 29 – ...This morning I hear only the Two young Owls food Begging Calls to their parents who remained silent and not seemingly to want to feed

them. I guess they know what they are doing. They want these young to venture out and learn to Hunt.

June 4 – Early this morning I again hear the (2) Owl young food Begging Calls and not a sound from the Adults again...They [young] are higher up in the same Cedar tree as the other day near the trunk...they still cannot fly.

*June 5 to 30 – During 11 trips to search for the family of owls Delbert found the adults roosting and sleeping in western redcedar trees and less frequently the young were roosting and sleeping in western hemlock trees lower in the forest canopy. Food begging calls were less intense. On June 18 Delbert noted that *The Two young Owls were some ways from the Nest. They must have tried flying as they could not have come this far in the trees as the area was too open* (Figure 17).*



Figure 17. Young Northern Spotted Owls usually leave the nest about five weeks old and both adults care for them for another 60-90 days. Young often roost with siblings not too distant from the adults (Forsman et al. 1984). *Photo by R. Wayne Campbell.*

July 1 to December 31 – The fledged young were last seen on September 9 and Delbert noted the following day that *The Two young are never seen again likely left area for the east woodlands.* During the latter half of the year one or two adults were regularly found roosting or sleeping high up (60 feet) in western redcedars under overhanging boughs for protection. They were usually found apart.

On April 12, 1910, Delbert and his family moved from Mount Lehman, by horse team and steamer *The Skeena* up the Fraser River, to 59 Mile House on the Cariboo Wagon Road. Notes were kept by Delbert between January 1905 and early April 1910, that may have included additional records of Northern Spotted Owl, but these have not yet been organized and transferred from his notebooks (G.R. Ryder pers. comm.).

(9) HUNTINGDON – A small community 7.2 km southeast of Abbotsford just north of the Canada-United States border. The area is an official border crossing between the United States

and Canada. Vedder Mountain, forested with an elevation of 870 m, lies 17 km to the east.

Laing (1942) wrote:

“...A male of a nesting pair was taken by the writer at Huntingdon, British Columbia, May 31, 1927; this is close to the United States border...”

The specimen, a skin of a male, is in the Canadian Museum of Nature (CMNAV 22470). There are no details confirming nesting (M. Gosselin pers. comm.). It is likely the bird was collected on nearby Vedder Mountain in the foothills of the Cascade Range to the east.

(10) CHILLIWACK – In the early 1900s, Chilliwack was a small agricultural town located about 100 km east of Vancouver in the upper Fraser River valley. It is surrounded by tall forested mountains and the Fraser and Vedder rivers. It lies at 17 m elevation.

Although he lived in the Okanagan valley, Allan Brooks occasionally returned to his “home” to collect specimens that were in demand by museums

and private collectors. On a return trip in winter 1909 he collected a Northern Spotted Owl and in a later article (Brooks 1917) wrote:

“***Strix occidentalis caurina***. NORTHERN SPOTTED OWL. – Returning for a brief visit in the winter of 1909, I was delighted to secure a fine specimen close to my old home [Chilliwack]. I had gone out on January 28 to try a little 22 pocket pistol on the jays and squirrels which were a pest, and after shooting a number of these I got first a [Northern] Goshawk, and a little later this beautiful owl.”

The specimen (MVZ 101802) ended up in the Museum of Vertebrate Zoology in Berkeley, CA. The date on the specimen label is January 26, 1909 not January 28, 1909 as printed in the article.

(11) VEDDER CROSSING – The southern boundary abuts the Chilliwack and Vedder Rivers. A road built in 1891 linked the small community to Vancouver and all traffic passed by Vedder Crossing until 1925 when a bridge was built across the recently constructed Vedder Canal. The area remained rural until the 1940s when a Canadian army training base was established by the federal government (Akrigg and Akrigg 1997).

A female in the Royal British Columbia Museum collection (RBCM 8841) was taken at Vedder Crossing in October, 1939 (Munro and Cowan 1947, Campbell et al. 1990b). It is likely the bird was actually collected on the adjacent Vedder Mountain, across the Chilliwack River. The mountain is heavily forested and reaches an elevation of 924 m.

(12) SPUZZUM – An unincorporated settlement located at the lowest reach of the Fraser Canyon about 50 km north of the community of Hope on the Trans-Canada Highway. It is nestled in a mountainous area that is forested, largely with conifers. Numerous logging roads provide access to the region.

A female was collected by Allan Brooks (Figure 18) on August 7, 1940 (Campbell et al. 1990b) and deposited in the Museum of Vertebrate Zoology in Berkeley, CA (MVZ 82187).



Figure 18. Allan Brooks on the shore of Okanagan Lake, BC, in knickerbockers, circa 1930. *Catalogue No. 1562* courtesy Greater Vernon Museum & Archives Collection. The Northern Spotted Owl collected near Spuzzum in 1940 is one of the last specimens Allan collected. He died on January 3, 1946 (Laing 1979). His contributions to British Columbia ornithology and stimulating early observation and identification of birds through his artwork are unparalleled.

(13) HOPE – A district municipality located at the eastern limit of the Lower Mainland at the confluence of the Fraser and Coquihalla rivers. It is surrounded by forested mountains on three sides and the flat land of the lower Fraser River on the west.

Thomas Thacker was a pioneer homesteader who spent his entire life living on Little [Thacker] Mountain just east of Hope. He married Beatrice in 1908 and together they recorded wildlife in the vicinity of Hope and its surroundings. They frequently travelled logging backroads to collect birds and mammals (Thacker 1995, Campbell 2014).

There are four specimens of Northern Spotted Owl in North American museums, and another record of a bird found dead in the vicinity of Hope; only one record gives a specific location (Table 1). These are:

November 25, 1919 – A male collected by James A. Munro at Little [Thacker] Mountain. The skin is deposited in the American Museum of Natural History (AMNH 754216) (Campbell et al. 1990b).

November 5, 1929 – Ronald M. Stewart collected a bird, unsexed, at Hope (MVZ 101801) (Campbell et al. 1990b).

February 13, 1933 – A male collected by T.L. Thacker at Hope (CMNAV 28964) (Campbell et al. 1990b, M. Gosselin pers. comm.).

June 20, 1940 – A male, collector unknown (UBCBBM CTC 005618) (Campbell et al. 1990b).

October, 1947 – In his field notes Kenneth Racey mentions finding a Northern Spotted Owl dead at Hope (Campbell et al. 1990b). It is not known whether the carcass was preserved as no specimen record was uncovered in major North American museums.

SNASS CREEK – Located about 38 km (23.6 mi) east of Hope along Highway 3 and north of Strawberry Flats. It is the start of the old Dewdney Trail, established in 1860, that begins on the west side of the Snass Creek. The area is mountainous and heavily forested with mixed conifers.

The location on the specimen label (ROM 81750) and published in Campbell et al. (1990b) is written as 24 km east of Hope. The female was collected by Arthur Peake on 9 November 1947. Ross D. James (pers. comm.), retired curator of ornithology at Royal Ontario Museum, gave a more precise location of Snass Creek (Figure 19).



Figure 19. The Northern Spotted Owl collected at Snass Creek, BC, on 9 November 1947 was the last of 12 specimens collected specifically for museum collections. *Photo by R. Wayne Campbell.*

(14) KLESILKWA CREEK [RIVER] – Klesilkwa Creek [River] is a stream located about 36 km southeast of Hope in the northwestern flank of the Cascade Ranges south of Hope. It is heavily forested with a mixture of conifer trees and is accessible along the Silver-Skagit Road.

Munro (1918) provided the following details for the record:

“Mr. T. L. Thacker of Hope, B.C., recently sent me the wings and head of a Northern Spotted Owl that had been shot near Klesilkwa Creek [River] in the Hope Mountains, on June 24, 1916. Mr. Thacker informs me that he has seen these ‘brown eyed owls’ several times, in heavily timbered country, on the pacific side of the Hope Mountains.”

Taverner (1927) later wrote:

“Occurrences of this species are rare enough almost anywhere to warrant record especially is this so in Canada where, in southern British Columbia, it reaches the northern limit of its range. We have two Canadian specimens in our collections. One is a mere box of feathers from a desiccated carcass found by T.L. Thacker, June 24, 1916, at Klesilkwa Creek [River].”

The feather remains found in the woods were deposited in the Canadian Museum of Nature (CMNAV 11594). The owl was a male with T.L. Thacker recorded as the collector (M. Gosselin pers. comm.).

McNAUGHT CREEK – This stream located about 42 km southeast of Hope on the west side of the lower Skagit River. The mouth of the creek is 7 km north of Ross Lake. The area is heavily forested with a mixture of mature conifer trees.

Thacker and Thacker (1923) extracted notes from their field diary for January 1922 and circulated them in *The Migrant*, the official publication of the British Columbia Ornithologists' Union that existed from 1922-1925 (see Campbell 2014). They wrote:

“*Strix caurina occidentalis* (Northern Spotted Owl). “A fine specimen obtained from Mr. C.J. Howlett, who took it from one of his traps in the Skagit Valley.”

Taverner (1927) later wrote:

“...the other a perfect specimen presented by the same gentleman [T.L. Thacker] and taken January 20, 1922, at Mc Naught Creek. Both these streams [including Klesilkwa Creek (River)] are minor tributaries of the Skagit River near the International boundary, longitude about 121° 15' W. At least one other specimen has been taken in this vicinity which seems to be the Canadian metropolis for the species.”

The location on the specimen label (CMNAV 18357) gives a more precise location of McNaught Creek, west of Skagit River. The sex was not determined and C.J. Howlett was recorded as the collector (M. Gosselin pers. comm.).

SKAGIT RIVER – The river, about 240 km long, flows through southwestern mainland British Columbia into northwestern Washington state. It abuts the western edge of Manning Park where it originates in Allison Pass and flows northwest before turning southward and into the northern end of Ross Lake.

The Skagit River area is characterized by steep, mountainous terrain with forests below 1,200 m predominantly Douglas-fir, western hemlock, and western redcedar. Much of the area has been clear-cut since the early 1900s (Forsman and Booth 1986).

The precise location of this record is unknown. It is listed as Skagit valley in Campbell et al. (1990b) and Skagit River on the museum label. The unsexed owl was collected on December 4, 1933 by C.J. Howlett. It is accessioned as a “mount” in the Canadian Museum of Nature (CMNAV 25713) (M. Gosselin pers. comm.).

(15) E.C. MANNING PARK – Established in 1941, the park has an area of 83,671 ha and is situated in the heart of the northern Cascades Ranges north of the 49th parallel. It is 26 km east of Hope. The park is a rugged mountainous area with the western portion having dense mature forests of Douglas-fir, western hemlock, and Western redcedar, potential habitat for Northern Spotted Owl. Early wildlife surveys in the park were carried out during the latter half of the 1940s and early 1950s (Figure 20).



Figure 20. Mature mixed coniferous forests in the western portion of E.C. Manning Park, BC, was the second location (third record) in the province where Northern Spotted Owl was confirmed breeding. A post-breeding adult was found roosting in coniferous woods at Lightning Lake on 16 July 1967. Photo by P. John Bandy, east end of Lightning Lake, BC, 8 August 1952.

Staff from the Provincial Museum, under the administration of director Dr. G. Clifford Carl,

surveyed parts of the park during four trips between 1945 and 1950 (Carl et al. 1952). Edwards (1949) was the first biologist to carry out a formal survey of the entire park. He spent 127 days, between May 10 and September 13, 1949, collecting and observing vertebrates and was the first to report the possibility that Spotted Owl occurred in the park. He wrote:

“This is a rare species, throughout its range, found in British Columbia only in a few localities. I failed to see it, but on the night of September 2nd, [1949] was awakened by a strange owl which I am convinced was this species. I was sleeping at 4000’ [m] on a clear night, when I was awakened at midnight by a series of cries, beginning with a loud, piercing “whoolup”, and followed by a rapid series of “who” notes, both from tone and timing like the distant barking of dog. This series was repeated five times then heard no more. The initial note was startling, and even momentarily frightening to one so recently in peaceful slumber. The literature on the notes of this owl is not plentiful, but all discussing it note that many a good tale of screaming cougars undoubtedly originates from the combination of a dark night and the calls of this owl.”

Spotted Owl was not reported during investigative trips to the park by provincial museum staff but Carl et al. (1952) mention:

“The spotted owl has been recorded three times in the Manning Park area. Twice by Mr. Arthur Peake, at Miles 15 and 23 on the highway, [Crowsnest Highway-Hope-Princeton section] and once at Pinewoods by Mr. York Edwards.

The bird is considered uncommon in British Columbia; the race occurring is *S. o. cauriana* (Merriam).”

Specific details for the records by Peake cannot be located. John Bandy (1952) carried out a reconnaissance of Manning Park from May 19 to September 5, 1952 but did not encounter Northern Spotted Owl.

The calls described by Edwards, however, with some interpretation, are similar to those reported by

Forsman (1976), Forsman et al. (1984), and Fitton (1991).

The third confirmed breeding record for the province was published by Smith (1963). He wrote:

“...but to the author’s [Christopher C. Smith] knowledge the following observations constitute the first breeding record for Spotted Owl in this province.

Evidence that the owls were nesting in the area was first obtained on May 16, 1962, when an adult owl flew toward the author and his wife and landed in a tree 20 feet from them. An adult owl gave further evidence on June 7 when it struck the author a glancing blow on the shoulder with its talons.

On July 28 Gordon Orians and Christopher Perrins accompanied the author in a search for the owl’s nest and for owl pellets. Two fledged young and one adult owl were seen. The young owls were able to fly but were a little awkward in regaining a perch. They had down on their heads and breasts at this time (Figure 21). On July 29 Perrins saw both adult birds.”



Figure 21. The fledged young observed near Alison Pass, the third confirmed breeding record for British Columbia, were about the size of the owlets in this photograph. The size difference is due to asynchronous hatching of at least three days. *Photo by Jared Hobbs.*

The location, in Manning Park, was 5.4 miles west of Allsion Pass on the Hope-Princeton Highway [Hwy 3] in an area of mature mixed coniferous forest on the north-facing slope of the Skagit River valley.

K. Raymond Beckett, a park naturalist at E.C. Manning Park, found an adult Spotted Owl roosting in a conifer on the east side of Lightning Lake on July 16, 1967 (R.W. Campbell pers. comm.). The lake is at 1,252 m elevation and habitat is mixed mature conifers (Figure 22).

CONTRIBUTIONS BY DELBERT RYDER TO EARLY LIFE HISTORY OF NORTHERN SPOTTED OWL

The observations by Delbert in 1903 and 1904 provide a baseline for with other references. It turns out that Delbert was the first person to gather life history information for the subspecies in North America. His accuracy was remarkable as many of his pioneer observations were later confirmed by scientific research.

Arthur Cleveland Bent, an American ornithologist, spent a good part of his life between

1910 and 1954 researching and writing his encyclopedic 19-volume work, *Life Histories of North American Birds*. An additional two volumes were completed after his death and were published by Dover Books (Taber 1955). Each volume was a comprehensive summary of published literature, his personal experiences, and contributions of hundreds of other professionals and friends. Each volume was a repository for knowledge for all aspects of the lives of birds in North America. Therefore, a single source could be trusted to contain published and unpublished information for a particular species.

Bent (1938) summarized material for the three subspecies of Spotted Owl from the mid-1850s through the early 1900s. For the Northern Spotted Owl he included topics of taxonomy, description, reminiscences of collecting a bird near Kirkland, Washington in 1911, as well as an article by Clay (1911) that recounted following “an odd, nerve-racking noise” to discover it was a Spotted Owl.

Some notable highlights from Delbert’s observations on Northern Spotted Owl (Figure 23) in Mount Lehman are summarized below with mention their early significance.



Figure 22. The Northern Spotted Owl noticed by Ray Beckett at Lightning Lake in 1967 was perched on a limb next to the trunk of a conifer tree at the edge of a forest. *Photo by R. Wayne Campbell.*



Figure 23. Decades before ornithologists started to research the Northern Spotted Owl, Delbert Ryder had recorded much of the early basic life history for the subspecies. *Photo by Ervio Sian.*

Distribution and Range: The Northern Spotted Owl was first recorded along the Pacific coast by Rhoads (1893) who reported two birds collected 12 miles (19 km) east of Tacoma, Washington in 1882. The second published record was also a specimen taken in Marin County, northern California, on 23 May 1896 (Grinnell 1909). The next record (a sighting) was from Delbert Ryder at Mount Lehman in 1903 and established the species' presence in British Columbia, the northern limit of its range in North America. The first published record for British Columbia, seven years later, was a specimen collected at Chilliwack on 26 January 1909 (Brooks 1909). The earliest record for Oregon was in 1914 (Jewett 1916) which now included all of the coastal provinces and states that the subspecies occurred in (Gutiérrez et al. 1995). Later, these locations served as focal points by researchers to better define the owl's total range along the Pacific coast (see Figure 7).

Breeding status in British Columbia: The Mount Lehman nests predate the first confirmed breeding in the province, in the Skagit River Valley, in 1962 by 59 years (Smith 1963; Figure 24). Laing (1942), however, reported "A male of a nesting pair was taken by the writer at Huntingdon, British Columbia, May 31, 1927", but without further details.

Annual occurrence: Because Delbert lived adjacent to an old-growth forest for nine years, he was able to ascertain that the Northern Spotted Owl was non-migratory and remained in an area year-round as a resident.

Habitat: Delbert was the first to specifically describe the owl's habitat (Figure 25) as "old-growth woodlands with tall western red cedars, Douglas-firs, and western hemlocks." The only other habitat description through the early 1900s was reported as "a dense forest of giant firs" (Bent 1938).

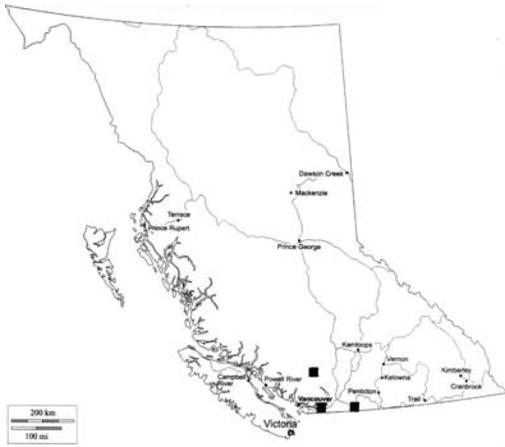


Figure 24. Prior to 1965 there were only four confirmed breeding records of Northern Spotted Owl for British Columbia, from three locations. These were from left to right, Upper Squamish River, Mount Lehman, and Allison Pass (Manning Park).



Figure 25. Today it is well known Northern Spotted Owl inhabits late mature to old-growth coniferous forests with remnant snags (bottom), especially with hollow tops, used for nesting. *Photo by R. Wayne Campbell, Indian River, BC, 3 October 1987.*

Vocalization phenology: There was no early descriptive information on vocalizations at different times of the year or vocal arrays (Bent 1938). These were first described in detail by Forsman (1976), mainly for the breeding period.

Delbert rarely heard owls calling between mid-October and mid-February and recorded the highest calling activity in late winter when pair formation commenced. Delbert arrived at Mount Lehman in 1903, too late to record the first date the owls called to each other and were seen as a pair. In 1904, these dates were 26 and 28 February, respectively, and in 1910 the pair was first heard on 18 February and seen together on 21 February. In Oregon, Forsman et al. (1984) found that “Pairs begin roosting together more frequently starting in February to early March and begin to call to each other at dusk before foraging and at dawn when returning to the roost.”

Nest tree and nest site: Bent (1938) wrote, “So far as I know the nest of this northern race has never been found.” The two nests located and checked several times by Delbert were the first documented for the subspecies. All were in the same living old-growth western redcedar tree with a broken top. The nest site was about 60 feet (18.3 m) from the ground and the cavity was three feet (1 m) from the broken top of the tree. The nest chamber was lined with wood chips and eggs were laid on an old squirrel nest.

Forsman (1976), in the first comprehensive research on the Northern Spotted Owl, classified 18 nests in Oregon. Thirteen were in tree cavities: 12 in Douglas-firs and one in white fir *Abies concolor*; two in clumps of deformed limbs caused by parasitic dwarf mistletoe (*Arceuthobium* spp.); and two on old platform nests of other bird species. Nest height ranged from 19.8-55.2 m (64.9-181 ft) and cavity depth from 0-122 cm (0-48 in).

Nest defence: The early nest defense behaviour of Spotted Owls has been reported by Dickey (1914), Ligon (1926), and Bent (1938) for California Spotted Owl and Mexican Spotted Owl. They wrote that adults were not aggressive, and somewhat docile, around their nests when directly disturbed.

Most of their behaviour included bill snapping and scolding but not attacking. Delbert found that when he was climbing trees to check nests the male Northern Spotted Owl often made “close passes” at him but never made contact (Figure 26). Sometimes this happened several time during a visit. Forsman (1976) stated that “Nearly every time I climbed a nest tree [of Northern Spotted Owl] I was attacked repeatedly...”



Figure 26. Unlike the more docile Mexican Spotted Owl, Northern Spotted Owl adults often threatened attack by flying close to intruders, not just humans. *Photo by Jared Hobbs.*

Clutch size: There was no early information on nests with eggs or clutch size. Forsman et al. (1984) reported clutches of two eggs for four nests examined and two additional clutches of one and two eggs from museum collections. Delbert not only examined the first nest with eggs for the subspecies but found a larger clutch size (three eggs in 1904) than previously reported. His four repeat visits to the nests also confirmed the clutch size.

Clutch initiation: Dates for the two Mount Lehman nests, calculated by backdating from the estimated age of recently hatched chicks (including

egg-laying and incubation period of 33 to 38 days – Forsman et al. 1984) suggest that the first egg was laid around 18 March in 1903 and on 15 March in 1904. These dates fall within the range of 9 March to 19 April reported by Forsman (1976) 73 years later for 15 nests calculated from the dates owlets fledged in Oregon. The mean date for clutch initiation was 29 March.

Nestling period: Forsman et al. (1984) give the nestling stage (hatching to leaving the nest) as generally between 34 and 36 days old. Delbert’s observations gave a period of 32 days in 1903 and 37 days in 1904. Young leave the nest over several days sometime between mid-May and the end of June (Gutiérrez et al. 1995; Figure 27). Delbert first noticed young out of the nest on 23 May in 1903 and on 31 May in 1904.



Figure 27. Delbert Ryder was the first to determine that young Northern Spotted Owls leave the nest when about five weeks old. *Photo by Jared Hobbs.*

Post-fledging association with parents: In 1903, two fledged young (from two eggs) were found roosting near the adults from 23 May to 14 June (22 days) and on 20 June only a single roosting young was located for a total of 28 days for the brood. It is not known whether the young survived, but it was suspected that it was taken by a Northern Goshawk (*Accipiter gentilis*). In 1904, one nestling was missing from a brood of three young on 15 May but the remaining two young fledged and were seen roosting near the parents from 4 June to 9 September, a total of 98 days. Gutiérrez et al. (1995) mentioned that post-fledged young are cared for by the adults, or roost in close association as a family, for 60-90 days through August. Forsman (1976) noted that broods may stay together until early October in Oregon.

Prey: Delbert's list of prey species taken by Northern Spotted Owl was derived from direct observation, but no pellets were collected and analyzed. On three occasions he noticed an adult male roosting or sleeping with the remains of a Northern Flying Squirrel in its talons and once a male was watched flying to the nest site with a newly killed flying squirrel. He also noted unidentified bird feathers and a deer mouse (Figure 28) in the actual nest cavity. Bent (1938, pages 208-209) does not mention food items. During studies in 1970, 1972, and 1973 in the Oregon Coast Range, Forsman (1976) determined that 41.1% of prey biomass in the diet of Northern Spotted Owls was comprised of Northern Flying Squirrels.



Figure 28. Although a secondary prey source in the diet of Northern Spotted Owl, Delbert Ryder first recorded deer mouse as a food item. *Photo by R. Wayne Campbell.*

Natural Enemies and Mortality: Delbert never witnessed depredation on Northern Spotted Owls or found remains of adults or juveniles that suggested such mortality. Campbell et al. (1984), Gutiérrez et al. (1995), and Miller (1989) noted that the primary cause of mortality for juveniles was starvation and predation by Great Horned Owls and Northern Goshawks. The former species was not found nesting in the old-growth forest in Mount Lehman in 1903 and 1904 but a pair of Western [Northern] Goshawks nested both years (Figure 29).

In 1903 the female goshawk and five fledged young left the forest by 13 June but the male remained in the area until July 4. On one occasion (April 25) Delbert witnessed a male goshawk strike and kill a Sooty Blue Grouse [Sooty Grouse] and surmised this was its main source of food. On May 24 he noted “the goshawk is getting all of the Sooty Blue Grouse here” and on June 6 wrote “the grouse population has gone down because of these hawks – the Sooty Blue Grouse have been wiped out or pretty much so.”

Ruffed Grouse were also common nesters in the forest but there was no mention of them as prey. While galliformes are the dominant avian prey of Northern Goshawk they are opportunistic and kill a wide diversity of animals (Squires and Reynolds 1997). In 1903, a flock of between 200 and 300 Band-tailed Pigeons (*Patagioenas fasciata*) constantly flew over and “settled” [roosted?] in the forest throughout the spring and summer. The pigeons may have provided an alternate food source for the nesting goshawks by diverting their hunting activities away from the owls. Forsman (1976) suggests that “goshawks were capable of preying on spotted owls, but the secretive nature of the owls during the day allowed them to avoid detection.”

In 1904, an adult male goshawk arrived on territory on January 2 in the vicinity of the nest site used the previous year and on February 7 the female arrived. The pair remained together until April 17 when nesting was suspected. On June 4 Delbert could hear two fledged Spotted Owls begging for food from a nearby western hemlock branch without apparent interest by the goshawks. On June 30 three fledged goshawks were seen roosting with



Figure 29. Although Northern Goshawk is known to prey on juvenile Northern Spotted Owls, one pair nested in the old-growth forests at Mount Lehman near nesting owls without apparent incident in 1903 and 1904. *Photo by R. Wayne Campbell.*

both adults near their nest and on July 2 four fledged young were counted. By July 9 only an adult male was seen and remained in the forest until at least

September 11. No incidents between the owls and hawks were noticed in 1904.

Delbert did not record any direct or indirect mortality of adult or fledged young during his two years of observation although he strongly suspected that a 28-day old fledgling in 1903 had been taken by a Northern Goshawk. In 2004, Delbert noticed that a nestling had disappeared from a brood of three owlets between 30 April and 15 May and speculated that it was probably eaten by its two siblings. Fratricide and cannibalism is known to occur in Barn Owl (*Tyto alba*), Great Horned Owl, Long-eared Owl (*Asio otus*), and Short-eared Owl (*Asio flammeus*) (Ingram 1959) but it has not been recorded in Northern Spotted Owl (Gutiérrez et al. 1995). Another possibility is that, since the nestlings were in advanced stages of development, one may have fledged early: since it was not seen again it could have starved or been taken by a predator. Forsman et al. (1984) mention Northern Spotted Owl nestlings may leave the nest prematurely when 15-25 days old.

Early references to mortality of Northern Spotted Owls in British Columbia are scattered as incidental items in publications and field notes. Between 1903 and 1965 there have been 18 documented incidents of direct mortality of Northern Spotted Owl in the province in five categories (Table 2).

Table 2. Direct causes of mortality for Northern Spotted Owl in British Columbia, 1908 (?)¹ – 1963.

Mortality	Year(s)	Number (%)
Scientific collecting (museums) ²	1909-1947	12 (67)
Shot (taxidermy mount)	1908 (?), 1933	2 (11)
Found dead (cause unknown)	1916, 1947	2 (11)
Caught in trap line ³	1943	1 (5.5)
Logging (nestlings) ⁴	1963	1 (5.5)
Total		18 (100)

¹Exact date and year unknown.

²Includes standard museum study skins, not full display mounts.

³Trap lines set for mammals.

⁴One nestling died later in care.

Forsman (1976) mentions a single instance of direct predation of a fledgling Northern Spotted Owl by a Great Horned Owl and speculated that adults and juveniles could also be taken by Great Horned Owl as well as by Northern Goshawk that breeds in the same habitat. Gutiérrez et al. (1995) lists shooting (malicious killing by unknown persons in timber-dependent rural areas) and collisions with automobiles as direct causes of mortality. Indirect sources included loss of habitat from clear-cut logging and degradation of habitat due to even-aged tree management. In British Columbia, early uncontrolled collecting (Table 2) may have impacted a marginal population that was at the northern limit of its North American range and was already being impacted by clear-cut logging, urbanization, and recreational developments.

SUMMARY AND DISCUSSION

The early occurrence of the Northern Spotted Owl in British Columbia was uncertain until spring 1903 when a pair was found nesting by Delbert Ryder at Mount Lehman. Brooks (1917) collected the first specimen in 1909 in the vicinity of Chilliwack, firmly establishing the owl's presence in the province. Over the next 39 years at least another 12 birds were preserved as specimens and deposited in North American museums. Collectively these skins and mounts provided most of the information on the annual status and distribution of Northern Spotted Owl in the province (Table 1, Figure 3). There were an additional five unconfirmed reports of birds heard but not seen that were not included in Campbell et al. (1990b) and remain conjecture.

Prior to 1965, the end date for this historical paper, Northern Spotted Owl had been reliably documented at 18 general locations (Table 1). These ranged from the Upper Squamish River and Spuzzum (northern limits) south to West Vancouver and Vancouver and in the lower Fraser River valley (Lower Mainland) from Mount Lehman east to the western half of Manning Park. The species was also recorded in all months confirming its resident status as suggested by Brooks and Swarth (1925) and Munro and Cowan (1947). There are no records from Vancouver Island although Clark (1910, p. 59)

stated "this owl was not uncommon in the woods about Union Bay, Vancouver Island." Union Bay is located on eastern Vancouver Island about 15 km south Courtenay.

Breeding was not established in British Columbia (and North America) until 1903 although Brooks and Swarth (1925) mentioned that the subspecies, on hearsay, was "breeding near Mount Lehman." It is likely Brooks heard rumours from farmers about the nest Delbert found in 1903. Munro and Cowan (1947) were more cautious in their assessment of the status of Northern Spotted Owl and listed it as an "uncommon resident" in the province. In the 63 years of early history covered in this article only four nesting/breeding records are known from three locations.

Most of the early evidence for Northern Spotted Owl throughout its range in western North America was anecdotal and piecemeal and lacked life history information. In the early 1900s, farmers and naturalists Delbert and his father James followed the lives of a pair of Northern Spotted Owls residing in an old coniferous forest in Mount Lehman for two years. Delbert was the primary observer and spent as much time as he could away from farm duties to record the owl's activities. Delbert was self-taught, had a small reference library, and preferred time alone in the field rather than time broadcasting and sharing his discoveries. He was also concerned that once the site was known bird collectors would arrive and shoot the owls. All of Delbert's pioneering observations would be authenticated 74 years later by scientific research!

In a recent editorial, Campbell and Sealy (2012) emphasized the importance of keeping field notes and stated "The written word, after all, creates its own legacy and will be present for centuries." One hundred and twelve years after Delbert recorded his first observations of animal life on a pioneering homestead in Mount Lehman, his written record is providing essential evidence in understanding the early natural history of Spotted Owls and the history of ornithology in British Columbia. ♪

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I am grateful to the late Glenn R. Ryder who preserved his father's priceless field notes from the early 1900s and entrusted them to the author for safe-keeping and use (see Campbell and Henderson 2013).

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Figure 30. Michel Gosselin examining a tray of Banded Owl specimens in the Canadian Museum of Nature. Michel has worked at the National Museum of Canada/Canadian Museum of Nature for 38 years and is responsible for curating a collection of 125,000 bird specimens. During the 1980s, Michel was supportive of *The Birds of British Columbia* project and frequently provided additional details for specimens and copies of field notes of early collectors and ornithologists in the museum's holdings.

We often underappreciate the effort that photographers expend to obtain quality images that can be used in publications. The shadows of old-growth forests make finding and photographing Northern Spotted Owls especially challenging. I am grateful to Jared Hobbs who enthusiastically donated his superb photos for this article, many of which

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Wayne is lead author of the four-volume set *The Birds of British Columbia* (1990-2001). Since the late 1960s he has been regularly transferring breeding records from historical diaries and field notes and unpublished reports to the British Columbia Nest Record Scheme. From 1971 to present Wayne has managed the nest program, the longest-running volunteer program in the province, and helped compile and write 43 annual reports.

