

*Mackenzie Nature
Observatory*

2002

*Annual Birding
Report*

***Mackenzie Nature Observatory
P.O. Box 1598
Mackenzie, BC
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Vice President - Rob Weaver
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***Registered Charity Business Number 88801 9296 RR0001
Incorporated Society Number: S-36498***

Purposes of Society:

- ***To research, conserve, restore and assist in the management of the natural resources found in the Mackenzie, BC area.***
- ***To promote the understanding and enjoyment of nature by providing opportunities for public participation and education in habitat enhancement, restoration and monitoring projects that will provide additional public knowledge regarding nature.***
- ***To encourage and engage in the protection and restoration of threatened and endangered species with special attention to the preservation of essential habitats.***

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1st Winter Wren banded at Mugaha

Acknowledgments

*Thanks to all who helped to prepare this report – Jukka Jantunen, Vi Lambie,
David Lambie, John D. Lambie, John A. Lambie, Martina Frey,
and Cheryl Omand*

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Migration Monitoring in Mackenzie

Location: Our banding station is located at Mugaha Marsh (Latitude 55° 23', Longitude 123° 12') which is 14 km northwest of Mackenzie. We are on the east side of the Parsnip Reach of Williston Reservoir and much of the area where we work is actually in the floodplain of the Reservoir when it is at full pond. Our transects are located at Mugaha Marsh, adjacent to the banding site, at Chichouyenily Creek approx. 2 miles west of Mackenzie and Gagnon Creek approx. 10 km south west of Mackenzie.

Goal:

The goal is to monitor changes in the population of small landbirds that migrate through the Mackenzie area, by providing consistent and comparable annual indices of population size and structure, survival rates, species composition, and migration timing. We are particularly concerned about species not monitored effectively with other methods like the Breeding Bird survey and/or species that have shown declines in other regions.

Objectives:

The objectives are:

- (a) to count the individuals (observed and captured) of each species and subspecies, in or passing through, a specified area each day during migration;
- (b) to determine the age and sex composition of migrant populations;
- (c) to augment public interest and local knowledge of environmental concerns through involvement;
- (d) to compare key riparian sites for their potential to access long-term population trends of landbirds, particularly forest species;
- (e) to determine the importance of riparian habitat for migration of these species; and,
- (f) to determine if migration monitoring can be used to measure the productivity of forest birds.

This project was designed by Rhonda Millikin of the Canadian Wildlife Service (CWS) Delta, BC in 1994. After Rhonda left to attend the Royal Military College in Kingston we worked with Wendy Easton and Shawna Pelech from CWS.

Alan Simcoe who was a biologist with Fletcher Challenge Canada and a Director of the Mackenzie Fish & Game Association in 1994 was instrumental in getting local involvement. Some of our local

volunteers who have been involved since we started are Cheryl Freeman, Bob & Janet Groseth, John, Vi, John & David Lambie, Cheryl & Bob Omand, Vida Tattrie and Jim & Cynthia Tuck. It is wonderful how people have remained committed to the project and encouraged others to become involved..

Banding Permits

Federal 10365, 10709 & 10732
Provincial P012307 & D012256

Salvage Permits

Federal: BS SAL 59-02-0604
Provincial: C076621

CWS Contact for the Project:

Wendy Easton / Shawna Pelech
CWS - Delta, BC

Canadian Migration Monitoring Network:

In addition to being part of the CWS's Regional Migration Monitoring Program, we are one of the full member stations of the Canadian Migration Monitoring Network coordinated by Bird Studies Canada.

Species Coverage:

Appendix 1 lists the birds we have banded at Mugaha Marsh Banding Station.

Data Analysis:

The Canadian Wildlife Service is responsible for analyzing the data on a regional basis and Bird Studies Canada is responsible for doing it on a national basis.

Mackenzie Nature Observatory Bird Committee:

Vi, John & David Lambie, Ryan Bichon, Cheryl Freeman, Martina Frey, Cheryl Omand, Jim & Cynthia Tuck, and Bernie Hulstein

Bander -in-Charge: Jukka Jantunen

Long-term Volunteer: Amélie Rousseau

Volunteers(at banding station for setup, maintenance and helping during banding season):

Martina Frey, David Lambie, John D. Lambie, Vi Lambie, Todd Heakes, Linnea Cross-Tallman, Ulrike Sliversky, Crystale Harty, John A. Lambie, Melanie Lambie, Bob Groseth, Janet Groseth, Bernie Hulstein, Ryan Bichon, Cheryl Omand, Cheryl Freeman

Volunteers for Transects:

John & Vi Lambie, Martina Frey, David Lambie, Cheryl Omand, Rick Dreise, Ryan Bichon, Sharlene, Koren & Hailee Pitkethly, Rob & Betty-Jo Weaver, and John A.Lambie.

Sponsors:

BC Hydro Peace Williston Fish & Wildlife Compensation Program, Canadian Wildlife Service, TD Friends of the Environment Foundation, James L. Baillie Memorial Fund (Bird Studies Canada), Baillie Birdathon Participants and their Sponsors, Georgina Stevenson.

Banding season 2002 at Mugaha Marsh

by Jukka Jantunen

Weather

In general, the weather was very good for banding this year; it was nice most of the time and not too hot nor too cold, and it rained seldom and mostly in the afternoons or evenings and the only day we couldn't open at all was July 30th. On some days, mostly closer to the end of the season, the weather was fairly windy thus probably effecting to the catch a little.

The first week of banding was typical July weather – nice and warm (up to +26). During the last couple of days of July and the first week of August we got a taste of a cold arctic airflow with night temperatures near freezing and Morfee Mountain even receiving some snow on July 31st. The next couple of weeks were nice with day time highs up to +20 and nights generally warm as well, although, on the 16th the morning low was 0. The last week of August was hot with daytime highs up to +28. As expected, when September arrived, the temperatures turned somewhat colder. However, we were very lucky this year because the September weather was mostly very pleasant with fairly warm mornings in comparison with other years. Only once (Sep 6) did we have to struggle with opening frozen nets in the morning.

**Banding
(permit #10365& P012307)**

Season 2002 was a very unusual, and interesting, season in many respects. The water level was very high, forcing us to make several changes to the routine and, somewhat against my expectations, birds turned out to be plentiful. As a matter of fact, this was the best not-infested-by-Siskins –year in the station's history!

On our arrival, Friday the 20th of July, we were astonished to see how high the water level actually was. There was nothing but water and submerged bushes to see where the net-lanes had used to be! The next day, the set-up day, a lot of time was spent wondering where to put all the nets as most of the traditional net-lanes were under water. We were able to place four nets, #s 5,6,9, and 12, on their old places but we lost #12 to the rising water already after only five days of banding! After careful planning and lots of guesswork, we decided to place four nets in the far end and keep eight close to the station. The far nets were all placed on the eastside of the road beyond the old #17, and were so far away that we had to use a bicycle to check them. At first they were in two two-net rows reaching from the road to the edge of the water but soon net #22 from the first row had to be moved because of the rising water and it became net #28, placed even further down the road. Of the new close nets, two were placed up from net #9, on the top of the ridge, and the other two were set up right across the road from the banding lab parking lot, in the corner of the road, the forest, and the marsh. This is where #12 was moved to form a three-net "super trap." Later when the water started to come down, slowly in the beaver pond and fast in the marsh, we were able to add the good old nets #3 (Aug 27) and 4 (Sep 7). Of the new nets only #s 23 and 24, the ones up from net #9, were fairly unproductive while the others, all the far ones and the three net "super trap," were very good.

This year's first day of banding with 71 birds was fairly slow for an opening day and, as usual, during the next two weeks we caught mostly local birds in diminishing numbers as the birds learned where the nets were. We did band good numbers of especially **American Redstarts** and **Northern Waterthrushes**, but also **Least Flycatchers**, **Swainson's Thrushes**, **American Robins**, and **Tennessee** and **Yellow Warblers**. We also caught over half of the seasons **Red-eyed Vireos** and most of the **Song Sparrows** within the first two weeks. Apparently a local pair of



the first Common Grackle banded at Mugaha

Sharp-shinned Hawks was caught as well – the female first on Aug 1 and then the male on Aug 4.

By far the most interesting birds banded during that period were the station's first **Common Grackle** on Aug 2 and a bird that showed a full range of field marks typical for juvenile **Red-naped Sapsucker**, also a first for the station, on Jul 28. It will, of course, be another matter what it will look like when it grows up!

The things finally picked up after the first week of August. The ten-day period from Aug 8 to Aug 17 was especially busy with a number of warblers having their peak at that time. Some of the peak days and numbers included 26 **American Redstarts** and 7 **MacGillivray's Warblers** on the 10th; 30 **American Redstarts**, 11 **Magnolia**, and 14 **Yellow Warblers** on the 12th; 12 **Wilson's** and 9 **Magnolia Warblers** on the 17th; and 21 **Northern Waterthrushes** on four different days! This was also the best time for all the regular four species of flycatchers (**Alder**, **Least**, **Hammond's**, **Dusky**) and the season first **Yellow-bellied Flycatcher** was banded on the 18th. Other interesting birds in this period were this year's only **Swamp Sparrows**, one on the 8th and the other on

the 14th, a hatch-year **Western Wood-Pewee** on the 10th, two **Solitary Vireos** on the 12th, and the season first **Fox Sparrow** on the 16th.



a hatch year Western Wood-Pewee



a hatch year female Merlin

The fifth week (Aug 19-25) of the season was fairly slow by numbers but we did catch a number of interesting birds. Aug 22 was a super neat day. First we had a rare threesome of *Zonotrichia* sparrows in our hands when the birds beside the **White-crowned Sparrows** turned out to be a **White-throated Sparrow** and the stations third ever **Golden-crowned Sparrow!** A little later we caught a rarely banded adult **Ovenbird** and the next net-round brought us the seasons only **Western Flycatcher!** A juvenile **Cedar Waxwing** on the 20th completed the family set as we had earlier banded both the mom and the dad.

The sixth week (Aug 26 – Sep 1) was a busy one and the one during which the species changed from the early fall ones to the late fall ones. Suddenly it wasn't redstarts, waterthrushes, and flycatchers but things like kinglets, yellow-rumps, and juncos. Sep 1, the season's busiest day, serves as a good example. That day we banded 162 birds, including 32 **Ruby-crowned Kinglets**, 25 **Yellow-rumped**, 23 **Orange-crowned**, 10 **Blackpoll**, and 4 **Townsend's Warblers**, 14 **Common Yellowthroats**, and 8 **Dark-eyed Juncos**. The most interesting birds of the week were the season first **Grey-cheeked Thrush** on the 29th and a late **Western Tanager** on the 30th.

The next two weeks were full of reasonably busy days. **Ruby-crowned Kinglet** was the most common

bird on most days but especially during three days from the 10th to the 12th when 41, 43, 31 "rickies" were banded. Other species that had their peak at that time were **Orange-crowned Warbler** and **Common Yellowthroat**. The period started well with the stations first **Winter Wren** banded on the 1st and continued with the season's best bird, for me anyway, on the 7th when a hatch-year **Townsend's Solitaire** was found in the net #26! Other nice birds at that time included 2 **Sharp-shinned Hawks**, 2 **Common Snipes**, 2 **Grey-cheeked Thrushes**, finally the some (15) **Hermit Thrushes**, 3 **American Tree Sparrows**, and 6 **Fox Sparrows**. Also, on the evening of the 14th, we started owling and soon found that there was no end for the **Northern Saw-whet Owls** – in four evenings we ended up with 29 banded!

What had looked like a sure over 3000 bird season became to a sudden halt in the last week of banding when the birds just stopped coming! Most days went by sipping coffee and rolling thumbs, but luckily we did have a few bright moments. A very late **Yellow-bellied Flycatcher** and 2 **Brown Creepers** on the 18th surely count as such, and an absolutely awesome hatch-year female **Merlin** on the next day was something very special! And, so came the last day – 30 birds to go 3000. And, so came the last round – two more birds to go. And, yes! We got three!!

All in all the season was excellent in terms of numbers of birds banded and the season total 3002 is the second highest in the stations history. Only 1998 with it's 1300+ Pine Siskins has produced a higher season total. During the season we banded over a hundred birds on four dates: 107 on Aug 10, 162 on Sep 1, 104 on Sep 10, and 111 on Sep 11. In the other end, our three poorest days were 5 on Sep 20, 11 on Aug 2, and 12 on Sep 16. It was an especially good year for many warblers and thrushes but a poor one for flycatchers and sparrows.

During standard banding (SB) ten species were banded in record numbers and two species tied the previous record. These were (previous record in brackets) **Red-eyed Vireo** 11 (8), **Ruby-crowned Kinglet** 432 (406), **Hermit Thrush** 23 (15), **Swainson's Thrush** 123 (87), **Tennessee Warbler** 40 (26), **Orange-crowned Warbler** 175 (149), **Magnolia Warbler** 106 (67), **Blackpoll Warbler** 46 (37), **Northern Waterthrush** 404 (379), and **MacGillivray's Warbler** 33 (31). **Yellow-bellied Sapsucker** (5) and **White-crowned Sparrow** (52) tied the old records. Also, non-standard owling was very productive and a record high 29 **Northern Saw-whet Owls** (17) were banded.



Swainson's Thrush

On the down side, nine regular species, compared to years 1997-2001 which had comparable banding season, were banded in record low numbers and an additional three species tied the previous record low.

The record low species were (old low in the brackets) **Alder Flycatcher** 52 (74), **Least Flycatcher** 68 (73), **Townsend's Warbler** 11 (12), **Savannah Sparrow** 11 (23), **Lincoln's Sparrow** 11 (20), and **Pine Siskin** 2 (54). Surprisingly, not a single **Downy Woodpecker** (1), **Northern Flicker** (1), or **Varied Thrush** (1) were banded and so their new record low is now sadly a rounded 0! The species that tied the old record low were **Yellow-bellied Flycatcher** (3), **Dusky Flycatcher** (17), and **Ovenbird** (3).

While it is very difficult, if not impossible, to know the reasons behind the high or low numbers, some guesses can be made. Northern Waterthrushes have always been more numerous in years when the water level has been high and this year was no exception. Apparently the high water level makes the marsh a particularly attractive feeding area for them. Some of the other warblers are reportedly expanding their breeding range and the high numbers of Tennessee, Magnolia, and Blackpoll Warbler, as well as Red-eyed Vireo, may reflect this phenomenon. As for the Northern Saw-whet Owl, the high small rodent population in the area is undoubtedly partly responsible for their good numbers. The poor numbers of practically all flycatchers is puzzling but the low occurrence of some sparrows can probably be explained by the lack of suitable habitat at net lanes caused by the high water level.

Field observations

This year the high water level brought some interesting twists to observations at the banding station. **Pied-billed Grebes** were calling in the bushes, **Hooded Mergansers** were seen fishing at the old net-lanes, and **Soras** were climbing on branches of mostly submerged young trees. The first couple of weeks went by watching the happy family events of local breeders. There were a number of female **Mallards** and **Ring-necked Ducks** with broods, several baby **Pied-billed Grebes**, the **Ospreys** finally managed to raise two young, and the **Common Loons**, for the first time when I've been here, had one young. In late July – early August we had close to ten **Hummingbirds** visiting our feeders – 3 **Calliope** and 6 or so **Rufous**. Jul 29, otherwise a very slow day, was saved when we spotted two **Vaux's Swifts**, first for Mackenzie, flying over the beaver pond!

August started slowly but there were a few shorebirds flying around the marsh almost every day, including a **Wilson's Phalarope** on the 3rd. Aug 5 was a rainy day and the shorebird migration was fairly

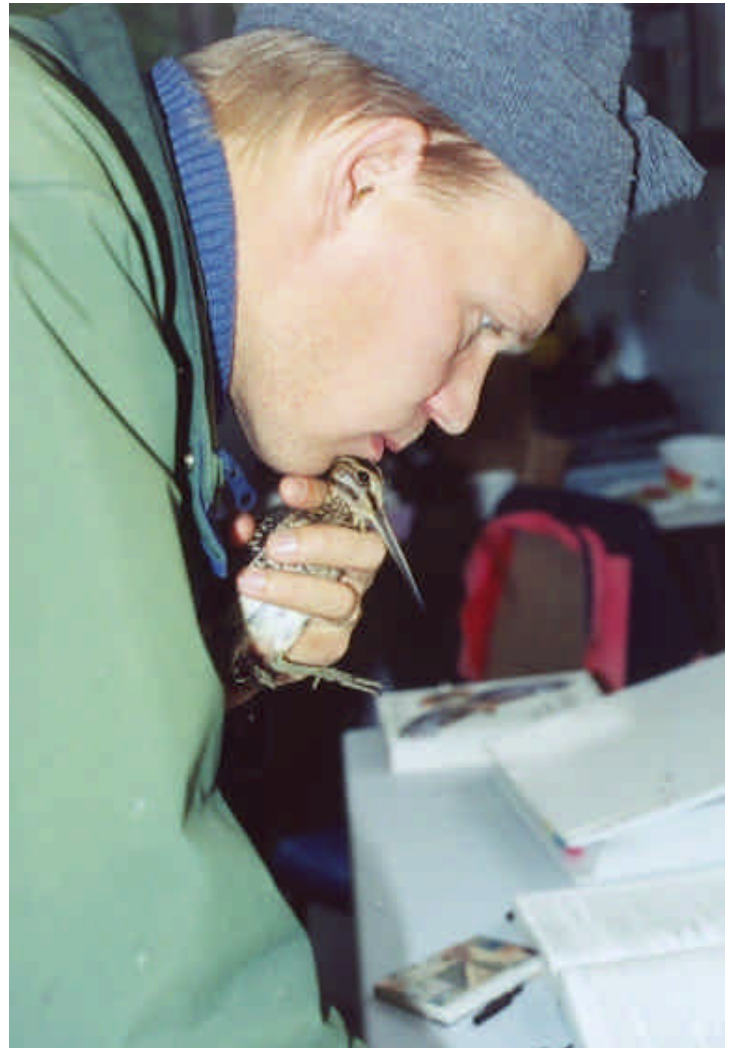
strong with, among others, 14 **Semipalmated Plovers**, over 40 **Lesser Yellowlegs**, 5 **Solitary**, and 20 **Pectoral Sandpipers**. Also that day, the regular **Red-throated Loon** was seen again flying over and calling, just like in the previous years; the first flocks of ducks, mostly **Northern Shovelers** and **Pintails** were seen heading south; and a huge flock of mostly **Bank Swallows** showed up and stayed for a few days. On Aug 12, the first of this season's five or so **Olive-sided Flycatchers** was seen.

Mid-month was fairly interesting time with a number of nice records. The best one was a fly-by **Hudsonian Godwit**, a first for Mackenzie, on the 19th. Other good sightings included an adult **Ring-billed Gull** on the 13th, a fly-by **Upland Sandpiper** on the 17th, and small numbers of both **Crossbills**. The rest of the month was fairly uneventful but it was interesting to watch the flock of **Canada Geese** in the marsh getting bigger and bigger every day. A **Steller's Jay** on the 23rd was the only record at the station this fall.

Early September was really nice from the birding point of view. There were lots of bigger birds moving through, especially ducks and geese. On the 2nd over 700 **Greater White-fronted Geese** were seen, some of them from the station some from elsewhere during afternoon birding trip. There was a fly-by **Baird's Sandpiper** on the 3rd, and the marsh had, among numerous common ducks, 6 **Gadwall** and 4 **Canvasbacks** on the 4th. Also on the 4th, 28 **Pectoral Sandpipers**, 20 **Long-billed Dowitchers**, and 25 **American Pipits** were seen flying over the station. Around the same time several **American Coots** appeared in the marsh and their numbers peaked at 18 on the 17th. On the 8th, a juvenile **Ring-billed Gull** showed up and it stayed at least till the end of the banding season. On the 9th there were a few raptors moving through including at least 4 **Northern Harriers**, a **Sharp-shinned Hawk**, and a very nice juvenile **Swainson's Hawk**. Another **Swainson's** was seen on the 19th.

From the 10th till after the mid-month it was tens of **Ruby-crowned Kinglets** every day and often there were good numbers of **Golden-crowned Kinglets** as well. The traffic in the sky was dominated by **Yellow-rumped Warbler** with at least 80 on the 15th. Some of the better obs around the mid-month included a **Killdeer**, a **Boreal Chickadee**, and a **Townsend's Solitaire** on the 12th, and a **Red-breasted Sapsucker** on the 15th. There was also lots of raptor activity at that time with at least 6 **American Kestrels** and a **Merlin** fighting over the dragonflies on the 15th, and

the next night 3 different **Great horned Owls** were calling around the station. Just before the season ended, on the 20th, there was again a fair bit of northern bird movement with over 200 **American Wigeons**, over 90 **Northern Pintails**, 25 **Northern Shovelers**, 4 **Northern Harriers**, and a juvenile **Northern Goshawk**. On the last day, the 22nd, a male **Black-backed Woodpecker** flew by the station.



Jukka Jantunen, our bander - photo by Martina Frey

Sewage Lagoons (permit # 10732 & P012307)

This fall season at the sewage lagoons was twofold. At first there was some construction work going on and the water level in the first two ponds was very low. That made the place ideal for shorebirding and

good numbers of Soras were seen as well. After the first week of August the work was finished and water was brought up. The mudflats disappeared and so did the birds – just before I was able to start banding there.

During the July and early August visits it was interesting to watch the local ducklings growing up. There were a number of broods of **Barrow's Goldeneyes**, **Mallards**, **Blue-winged Teals**, and interestingly lots and lots of **Ruddy Ducks**. On several days one could easily count over 40 Ruddy Duck ducklings! A female **Gadwall** with 9 young on Aug 8 was the first breeding record for Mackenzie area. Other local nesting birds included a pair of **Red-tailed Hawks** with two young, many pairs of **American Coots** with a total of over 30 young, and **Soras** whose tiny black young could be seen running at the edge of the cattails when the water was low. The highest **Sora** count was 49, the young included, on Aug 2!

As stated earlier, the shorebirding was extraordinary good this year. The highest day counts for each species were: **Black-bellied Plover** 2, **Semipalmated Plover** 20, **Greater Yellowlegs** 3, **Lesser Yellowlegs** 80, **Solitary Sandpiper** 8, **Spotted Sandpiper** 3, **Pectoral Sandpiper** 40, **Semipalmated Sandpiper** 40, **Least Sandpiper** 60, **Stilt Sandpiper** 6, **Long-billed Dowitcher** 70, **Short-billed Dowitcher** 3, **Wilson's Snipe** 10, **Wilson's Phalarope** 3, and **Red-necked Phalarope** 19. A juvenile **Western Sandpiper** was there from Aug 31 to Sep 3.

In August the lagoons were filled with ducks and some days it was possible to see almost all the duck species, including some of the rarer ones like **Gadwall**, **Canvasback**, and **Redhead** (all these were there regularly). On a couple of days there were even a female **Surf Scoter** and two female **Long-tailed Ducks**. Early in the season there were frequently over 20 **Bonaparte's Gulls** and later a few **Mew** and **Herring Gulls** were seen as well. By far the rarest bird of the season was a hatch-year **Eared Grebe** that stayed at the lagoons from Aug 23 at least till Sep 1.

I did some banding at the lagoons between Aug 15 and Sep 3. I was hoping to find out if the shorebirds stayed in the area and if so, were they finding enough food to gain weight. In all, I banded 71 birds of which 65 were shorebirds. The totals are:

Sora 1
Lesser yellowlegs 37

Pectoral Sandpiper 10
Western Sandpiper 1
Least Sandpiper 11
Stilt Sandpiper 6
Common Yellowthroat 2
Song Sparrow 1
Rusty Blackbird 2



Sora - photo by Martina Frey

It seems like the lagoons are an excellent place for the shorebirds to stop on their migration as every single one of the 13 recaptures gained weight. Most of them gained 1-2g per day but some gained even 3g per day. One Lesser Yellowlegs weighted 71g on the day of banding and a week later it was astonishingly 21g heavier i.e. weighing 92g!

An Update on the Past Year

- by Vi Lambie, with help from David & John Lambie and Martina Frey

Looking back, events that contributed to our high water levels may have started last fall. After things had frozen we had a late rain that brought the water levels up higher in the marsh in early November. For those of you familiar with the site netlanes 1 and 2 were flooded and there was water up to the edges of 3 and 4.

In early November before the pond at Mugaha froze over we saw 10 Hooded Mergansers (8 males) and a Pacific Loon on the pond. We have seen the Pacific Loons on Williston, but this was the first we had seen at the Marsh.

On December 11/01 Jim Tuck phoned us to report a Cattle Egret that was found dead at the Tsay Key Village. This is one of the most northern records for this species.

Winter was relatively mild, but spring seemed to take forever to arrive. Some late spring storms made foraging for birds difficult and we saw an influx of birds at feeders in town. During late winter someone scattered several bags of sunflower seeds at the marsh. We saw so many birds (Siskins, Juncos, Sparrows, Rosy Finches, Blackbirds, and even Tanagers) feeding on those seeds that it makes one wonder if this is something we should be doing every year. The seeds gave the birds a food source when the weather was so miserable and undoubtedly it helped many of them survive. We never saw any sunflower plants so the birds and rodents did a good job of cleaning up the seed.

We started our transects the last week of April, but at times it was so cold and unpleasant out that it was difficult to get the enthusiasm to go out. The weekend of May 4th we saw Audubon's Warblers feeding on the ice at the edge of the water - they had ice on their feet and on their tail feathers. Amazingly some of them must have survived as we saw some the following day as well. From the beginning the first part of the Mugaha transect was flooded and as more water came in with the spring runoff even more of it flooded. We continued to do what we could and monitored the flooded area, by going around the edge of it. Some of the vegetation along the Mugaha transect has died, partly due to insects that got into the willows and partly due to rot in the roots of some of the bushes.

The Gagnon transect has changed considerably over the years. Many of the alders growing near the first part of the transect were ringed and have died. This transect is in the Mackenzie Secondary School's woodlot and the ringing of the alders was done to eliminate some of the deciduous undergrowth. Near the end of the transect some of the debris shifted its location when this part flooded last fall - that end of the transect is in the floodplain of Lake Williston.

The Chichouenyli transect has a section of willow

from 200 to 300 that has become old and in some cases is falling down and is not as active with birds as it was in earlier years. The willows under the powerline as we walk in continue to provide some of the best birding at this site and these birds are recorded on the checklist for this location.

We found the pussywillows and flowering shrubs like the twinberry to be late coming out this year.

A special thanks to all the volunteers who helped with the transects this spring. Rhonda Millikin (CWS) has agreed to analyze the data from our transects. We may be continuing with more of the same or perhaps there will be some other aspect CWS would like our volunteers to focus their efforts on.

Ryan Bichon drew up a management plan for the vegetation at the Mugaha Marsh after our discussions with Wendy Easton (CWS) last fall. He put a lot of work into the plan and it was approved by the Ministry of Forests, but with the high water this spring the work could not go ahead.

When Abitibi Consolidated had their public review of their 5 year forest development plan in the mall we were surprised to see they had proposed a cutblock that would have come very close to our banding station. Their predecessor, Finlay Forest Industries, had been one of our main sponsors at the beginning of the project. After letters from the Canadian Wildlife Service, the District of Mackenzie and Mackenzie Nature Observatory (there may have been others) they redesigned the block and there is now a larger leave strip of forest between the marsh and the proposed cutblock. Thanks Abitibi! We aren't sure when it will be logged, but they have said they will try to do the hauling when we aren't working at the station.

This spring we had a few sightings of our less common species - these included Wood Ducks observed by David Lambie and Martina Frey at McLeod Lake on April 28th, Yellow-headed Blackbird at Mugaha on May 16 (John & Vi Lambie), a Blue Jay at Dorschuks the week of May 15th, and a Rose-breasted Grosbeak at Jim Tuck's on Finlay Forks on May 22nd.

On May 26th, Martina, David, John and I did our Baillie Birdathon. It was a late spring so we did not expect to get as many birds as last year and were pleased with the 81 species we did get. I had started an hour earlier than the others with a walk down Morfee Lake road. Lots of birds were singing and I

picked up several species, but only one, the Winter Wren, was not seen at other locations during the day. The most exciting find was a Brewer's Sparrow at Mugaha Marsh. It was feeding along the road and did not seem disturbed by our presence. It was an ideal photo opportunity if we had only thought of it, but we were intent on getting to the next location in hopes of finding more species.



*Eastern Phoebe - a new record for Mackenzie
- photo by Martina Frey*

On June 7th when we were out at the Marsh we saw a pair of Eastern Phoebes trying to build a nest on the electrical cable on the side of our electrical building. The material kept falling off so John screwed a small wooden shelf below the cable and he was hardly away from there when they resumed building the nest. We watched them from a distance over a period of several days as they constructed the nest. The last time we saw either of them was on July 9th and they were sitting on a clutch of four eggs. When we went out to start setting up for the banding season on July 18th there was no sign of the Phoebes, the nest still contained the 4 eggs and they were cold. This had been our first record of an Eastern Phoebe in Mackenzie and the first nest record as well, sadly it did not have a happy ending. Perhaps the adults became hawk food - we did capture an adult female, an adult male and two hatch year Sharp-shinned Hawks this banding season.

In July a Bander's Workshop was held in Revelstoke for the BC stations. The Workshop was attended by individuals from Revelstoke, Iona Island, Rocky Point and Mackenzie. Mackenzie Nature Observatory members who attended the workshop were Jukka Jantunen, Sandra Kinsey, Laird Law, Martina Frey,

David, John and Vi Lambie. Our Thanks to Wendy Easton (CWS) for coordinating the workshop and helping with travel and accommodation costs. Ken Burton of the North American Banding Council was our trainer for the workshop. Thanks to Janice Jarvis, Patti and Mas Matsushita from Revelstoke for taking us out to their MAPS (Monitoring Avian Production and Survivorship) station at the Skunk Cabbage site in Mount Revelstoke National Park for a morning of banding. It was great to see a Veery in hand - I had always wondered how much they were like our thrushes. Libor Mitchaluk demonstrated how to band hummingbirds. It would be great to learn more about how it is done as we captured several in our nets this fall. The next day it was raining so we spent our time working on specimens (road and window kills). Some of them proved to be a real challenge as they were species we don't see in Mackenzie. I particularly liked the opportunity to see a Cassin's Finch - we get Purple Finches and I always wondered how similar they were. A walk in the evening rewarded us with the sighting of a beautiful Lazuli Bunting.

BC Hydro had to do some repairs at the spillway and as a result they kept the flows to a minimum this spring - this meant that the level of Lake Williston came up much quicker and by banding season water was backing up into the marsh. We asked Wendy Easton (CWS) whether we should band or not and she gave us the go ahead to set up new netlanes in similar habitat or in areas where we had the potential to capture the same movement of migrants. Jukka has described in his report the locations we chose. I will only add a note regarding why the water levels changed on the pond side later than on the marsh side - the culvert in the road is partially blocked and the water ended up seeping through the road for several days before it equalized. Netlane 9 was used by moving it a few feet higher and by wearing rubber boots when we checked it. Jukka, David, John and Bob did a great job of setting up the new netlanes and they proved to be very good.

When the water levels in the marsh dropped we opened netlane 3, but did not close any of the others - we recorded the hours each net was open so if there is a problem with having the additional net, one of the nets can be deleted. We tried to open net 4 for a few days, but the soil was too water logged and the conduit we use for the net pole was soon sinking several feet into the mud..

The flooding of the marsh undoubtedly will change the habitat at some of our original netlanes. Most

alders have been killed by the high water and several of the aspen were falling down. Some willows seemed to be dying while others were doing real good in the wet conditions. Most cottonwoods seemed okay, but a few blew over. The spirea at netlane 11 looked healthy, but I guess a lot will depend on what happens next year. A representative of BC Hydro said we may be looking at high water again next year. If all netlanes are assessable we need to decide which ones to use. To help make a decision we have compiled a chart that shows the capture rate of each net, plus the species captured using the data from 1998 until present. This proved to be too extensive to put in the report, but David has made up a chart showing the birds captured per net-hour for each of our netlanes we used during that period and the number of the top ten species captured in each of them. (Appendix 2). In 1997 our other high water year the net-hours were not kept for each individual net, but we had a combined total of 3980 net-hours for the season and we banded 2799 birds for a rate of .7 birds per net-hour. This capture rate is slightly higher than we had this year (.65 birds per net-hour in 2002).

We did encounter a few other problems with our nets this season. A few of the trammels broke, a moose went through net 23 and in the process destroyed both that net and net 24, and grouse went through nets 9 and 5. We had a lynx walk down netlanes 19 and 20 when the nets were full of birds. I am glad I was there at the time and able to hurry the lynx along its way or some of our feathered friends may have become its lunch.

This season we continued to collect data on MacGillivray's Warblers and to take photos of them. This is to help Grahame Booth and Doug Collister of Inglewood Bird Observatory in Calgary with their MacGillivray/Mourning Warbler project.

As part of our contract with CWS we are to compile monthly summaries showing the number of hatch year and after hatch year birds captured. We have done a complete chart for the whole season listing the number of each species banded by age class (hatch year, after hatch year and unknown), the number of returns (birds banded a previous season) and the number of recaptures by age for each day. This is too much to include in the report and we have summarized the numbers for each month and they are shown in Appendix 3. The numbers in brackets indicates subsequent recaptures of birds - the first number minus the number in brackets will give you the actual number of individuals.

We have also updated the table Wendy had made for our 2001 report showing the proportion of hatch year birds (HY), after hatch year (AHY), and individuals of unknown age banded at Mugaha Martsh from 1996 to 2000 for some of our more common species to include the totals for 2001 and 2002 (Appendix 4). Amazingly we did not capture one adult Common Yellowthroat in 2002.



a hatch year Common Yellowthroat

Several of the Common Yellowthroats we captured early in the season had growths on their feet and in some cases on their bills. We caught one later in the season with quite a growth on its bill. We wonder what has caused these problems and if any other stations have experienced this as well.

John Scott has been studying ticks and asked us once again to collect any specimens we found on birds. We only found one on a Common Yellowthroat on Sept 5 and Amélie removed it and we sent it away to John. It was an Ixodes species.

Jukka continued to teach us more about moult limits, feather wear and shape and how they can be used to age birds. In addition to what Jukka has been showing us Brenda Dale from CWS in Edmonton sent us an electronic copy of the moult limits she & Charles Francis had put together. We were able to get some good photos of moult limits in American Robin, Hermit Thrush, and Northern Saw-whet Owl

wings. We also have some good photos of tail shape by age.

On August first Cheryl Omand and Anita Staniscia, who are Activity coordinators for Mackenzie Recreation Centre (Cheryl is also a Director of MNO), brought a group of children out to the banding station. The children were accompanied by their parents and although we did not have a really busy day we had a good variety of birds for them to see. We caught a robin, which was really great, as that was a species they all knew.

Theresa Burg and Roger Bull from Queen's University in Kingston, Ontario, visited our banding station as part of their research project to compare species on the mainland with the ones on the Queen Charlotte Islands. They were collecting blood samples from certain species we capture. We also spent an afternoon with them on Morfee Mountain doing some mistnetting. They didn't capture any of the species they needed that afternoon, but were successful the next morning.

On August 20th the Forestry Field Camp students and Roy Rae from UNBC paid a visit to our banding station. It is wonderful to see the interest they showed in the birds. They certainly asked lots of

difficult questions! They were a wonderful group and we enjoyed their visit.

As the season drew to a close we had many record breakers for their overall high totals as Jukka mentions in his report. What he did not mention is that the Pine Siskin is no longer the # 1 species we have banded. Using the data from 1995 to 2002 we have done up a chart that shows the new top species for our station (on next page). Previously we had the top five species banded, but we have gone to 7 with this chart as the bottom three are separated by so few birds.

Returns are the really special part of banding (They are birds banded the previous years that are recaptured this year.)

It was exciting to see one of the bands with a 3111 prefix as this told us it would be an old bird - it was a Northern Waterthrush that was banded in 1997 as a hatch year bird. Interestingly 1997 was our last high water level at the marsh and this year when we had high water levels again is the first time we have recaptured this bird since it was banded.

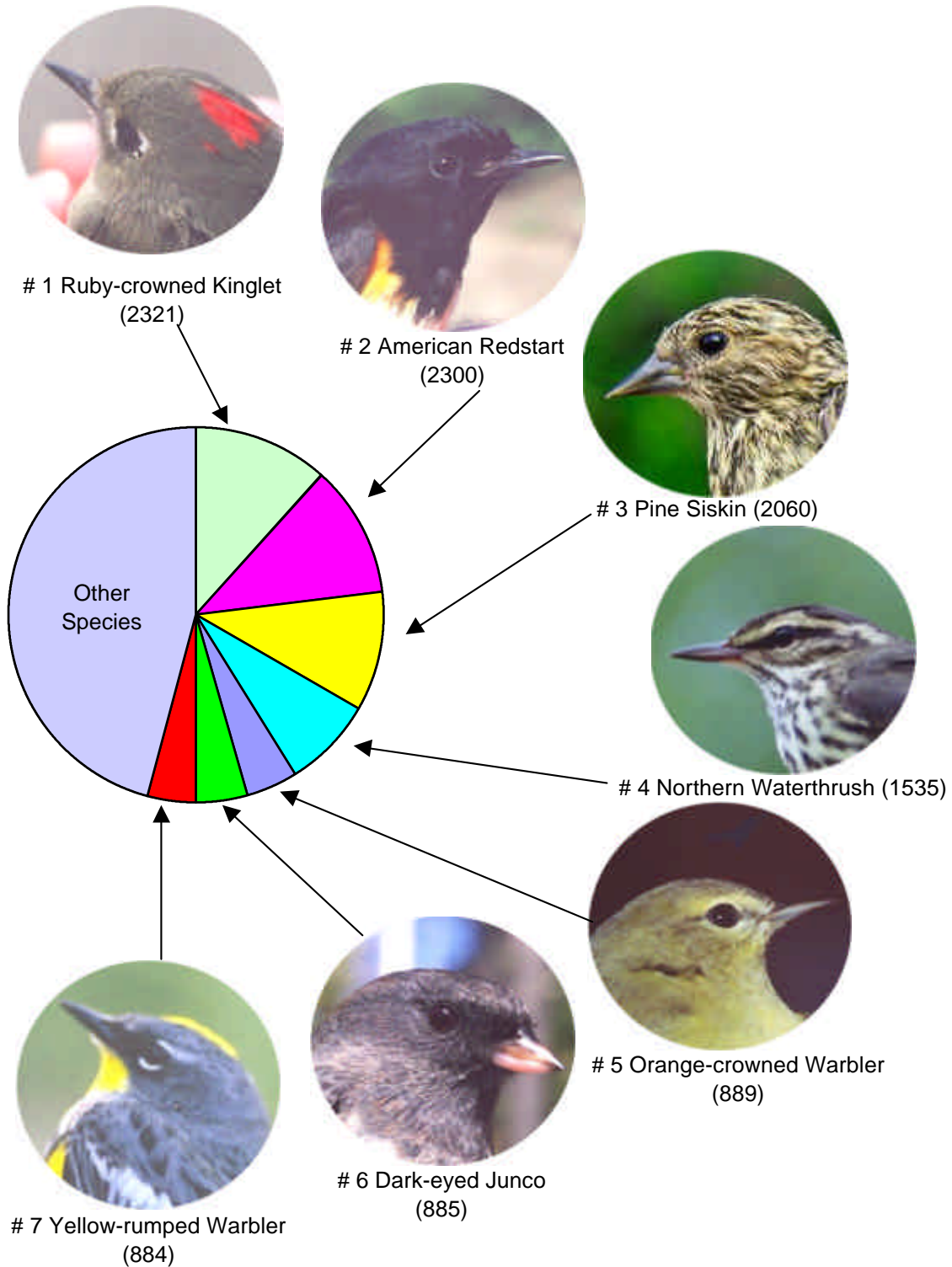
We had no recaptures from 1998.

A female Least Flycatcher that was banded on 24 July 1999 after being caught in net 5 was recaptured in net 6 on 25 July this year. Nets 5 & 6 are the two nets up



the Northern Waterthrush that had been banded in 1997 – photo by David Lambie

Top Seven Species Banded at Mugaha During Fall Banding 1995-2002



in the bush above the banding lab. A Warbling Vireo from 1999 was also recaptured.

One Downy Woodpecker, one Alder Flycatcher, one Red-eyed Vireo, one Swainson's Thrush, three American Redstarts, one Northern Waterthrush, two Oregon Juncos and one unidentified Junco from 2000 were recaptured.

Two Alder Flycatchers, one Least Flycatcher, three Swainson's Thrushes, one Hermit Thrush, one Orange-crowned Warbler, one Yellow Warbler, nine American Redstarts, one Oregon Junco and one Unidentified Dark-eyed Junco (a prob. Cismontanus) from 2001 were recaptured.

A summary of the dates we have captured each of these returns and the bander who processed the bird is given in Appendix 5.

Each year our bander records several measures of effort in the daily log - We have summarized these in Appendix 6.



A Northern Saw-whet Owl - photo by John Lambie

A special treat for us all were the beautiful little Northern Saw whet Owls we caught toward the end

of the season. A special thanks to Jukka and Amélie for putting in the extra hours to allow us to capture a few owls. The small rodent populations seemed to be up more this year and this seemed to be reflected by the number of owls we captured.

A very special thanks to all our volunteers, your help is truly appreciated and without you this project could not continue. We encourage you to bring out your friends and get them involved. Volunteers put in 80 field hours doing transects and a total of 1040 volunteer hours and 74 volunteer days assisting at the banding station. This does not include the time volunteers spend mending nets, washing bird bags (we have a policy of one bird one bag so that means lots of bags), working on the vegetation management plan, writing grant applications, working on the year end report, etc.

We depend heavily upon donations and grants to fund our project and we thank all those who have supported us again this year. Each year we pay a bander and give our long term volunteer a modest food allowance, we have to cover insurance of our equipment and building, travel trailer and other assets, the costs of maintaining the site, purchasing the supplies and any new equipment needed for the station. This year we had the additional cost of insuring the Ministry of Water, Land and Air Protection's trailer as part of our new agreement with them for the use of their trailer for accommodations at the station.

BC Hydro Peace/Williston Fish & Wildlife Compensation Program continues to be our main sponsor with their contribution of \$7000. We are grateful that we are able to utilize these funds for any part of the project where it is needed. We were pleased that Fraser Corbould was able to meet with us when we were discussing the vegetation management and that Mari Wood was able to visit the station when it was operating this fall. Fraser and Mari are biologists with the Peace/Williston Compensation Program. A special thanks to Uli Bergman from BC Hydro for sending us updates on the water levels on Williston Reservoir (Appendix 6 shows the changes in water levels during our banding season)

We operate under Wendy Easton's (Canadian Wildlife Service in Delta) banding permit. We have a contract with CWS for \$3500 and we have received \$3000 to date. We will receive the last \$500 when we submit this report and the data. They receive the original paper copies of the data, plus computerized

copies. We also submit the banding data from our project directly to the banding office. In addition to this funding CWS provided a training clinic for us this summer at Revelstoke as mentioned above.

TD Friends of the Environment Foundation, Prince George Chapter, gave us a grant of \$3250. This provided funds for equipment and supplies and for mounting some bird specimens for display purposes. The new scope and tripod we purchased were a welcome addition to the equipment we have for the station. We have had a Merlin (a window kill) and a Northern Flicker (a road kill) mounted, but we need to get a display case for them. If there are sufficient funds we may be able to get another specimen mounted.

The James L. Baillie Memorial Fund (Bird Studies Canada) gave us a grant for \$2000. We have received \$1600, and will receive the final payment of \$400 when we submit this report and an electronic copy of our data.

Georgina Stevenson gave us a cash donation of \$100 to support our birding program. We have not received our share of the funds raised by participants in the Baillie Birdathon this year and we do not know whom all took part, but we want to say thank you to them for helping us raise funds.

Loons, Osprey & Nestboxes

This year the resident pair of Common Loons at Mugaha Marsh raised a chick - in September we often watched it going across the water beating its wings strengthening them for learning to fly. The loons at Dina Lake also raised a chick, but no young were observed on Heather or Gantahaz Lakes.

The resident pair of Osprey once ,more had to use their nest in the lower trees on the point rather than the nesting platform that was put up for them. The Canada Geese occupied the nesting platform again this year - it would be nice to know if their goslings survive the fall down off this platform, but we are never out there when they leave the nest. As for the Osprey they raised two young and both fledged.

On the topic of nests we have several nestboxes for Tree Swallows at the Marsh and there is always a demand for more. We put one up by the banding lab this spring and within minutes of it being up it was claimed. We have not checked the boxes this year as

we normally do them in the winter when it is frozen as many are over water. Last year all the boxes at Mugaha appeared to have been successful nests when we cleaned them out.

Banding in Mackenzie (permit 10709 & D012256) by Vi Lambie

Spring of 2002 proved to be cool and windy with some late winter storms. This inclement weather brought some rare visitors to our backyard. Each year we see the occasional Gray-crowned Rosy Finch, but the weekend of May 4th brought hundreds to feeders in town. We put out additional seed, but at times it was so windy the birds had difficulty feeding. The Rosy Finches have beautiful light gray coloring to their underwings and they just seemed to float down like leaves falling in the autumn. How we wanted to band some of these beautiful birds, but the first couple of days it was too cold and miserable to put out the ground trap. I will not band if the weather is too miserable or if the birds we capture appear in poor condition. It was nicer on the 7th so we set the trap up for 2 1/2 hrs and caught 52 Rosy Finches and 7 White-crowned Sparrows.



White-crowned Sparrow - photo by John Lambie

In spite of the poor weather this spring we did band quite a few birds using only one small ground trap to capture them. There weren't as many White-crowned Sparrows moving through this year, but we did have good numbers of them. In spite of this I did not get one recapture of the White-crowned Sparrows that I had banded in 2001.

We banded 24 Common Redpolls, 87 White-crowned Sparrows, 87 Purple Finches, 11 Evening Grosbeaks, 54 Gray-crowned Rosy Finches, 5 Oregon Juncos and 96 Pine Siskins. We could have banded many more Siskins, but as 0 bands were in short supply we wanted to keep some 0's for other species.

The birds banded and the hours the trap was open are given in Appendix 8, on average we banded 5.3 birds for every hour the trap was open this spring. Had we banded all the Siskins we let go this would have been even higher.



Purple Finch - photo by John Lambie

In addition to the birds that we banded we captured a couple birds we banded in 2001. Two of the 20 Purple Finches banded in the spring of 2001 were caught in the ground trap and another was caught in my greenhouse. The one in my greenhouse was a special treat as it was the bird I hesitated to band last season as it only had one good leg and foot the other leg was

just a stump. In 2001 it was a beautiful ASY male with red plumage. This year the back of its head was red while the top of its head and breast were orange-yellow with only a few red feathers. Unfortunately I did not get a photo of it. We did have other Purple Finches that had yellow and orange feathers, but this one was the most striking in appearance. I have read that their diet influences the color of their feathers. One more of the Purple Finches I banded in 2001 returned to Mackenzie - a female bird flew into a window at 5 Tutu around July 13th and unfortunately she did not survive. I would like to thank Lars Hulstein for reporting this recovery.

This fall we decided to take a day and try some mistnetting on Morfee Mountain. Opting not to cut vegetation to put up the nets we used a corridor where there were natural openings between the huckleberry bushes. We chose the locations in the evening and unfortunately the next morning when the sun came up the nets were pretty visible. The vegetation was really wet and it was cold, but we gave it a try and caught 8 birds in the two nets we had up. (2 White-crowned Sparrows, 1 Golden-crowned sparrow, 1 Hermit Thrush, 1 Red-breasted Nuthatch, 2 Yellow-rumped Warblers and one Golden-crowned Kinglet.) There were lots of birds around and with more nets our captures would have been much higher. We would like to spend more time on Morfee in hopes of finding a location where we can capture more of the Golden-crowned Sparrows and some of the American Pipits, Lapland Longspurs and Horned Larks that we have seen up there.

This fall we did not band many birds in the backyard as most of our spare time was spent at Mugaha. In total we banded 25 Dark-eyed Juncos, 4 Pine Siskins, 1 Red-breasted Nuthatch, 11 Evening Grosbeaks, 8 Gambel's White-crowned Sparrows, and 7 Steller's Jays. We also recaptured two Steller's Jays that we had banded in 2001 and one Oregon Junco that we had banded in the spring.

Christmas Bird Count

by David Lambie

Christmas Bird Count what is it and how did it evolve.

Participants around North America go out on a count day in a given period, Dec. 14 to Jan. 5 with a count week of three days before and after the actual count day, and count birds within a designated 15-mile circle. The results of their efforts are compiled into the

longest running database in ornithology, representing over one hundred years of unbroken data on trends of early-winter bird populations.

Over a century ago it all began as a protest to the excessive slaughter of birds started by Frank Chapman along with 27 other conservationists. The National Audubon Society's Christmas Bird Count (CBC) has become the world's largest all-volunteer bird survey to date. For further information of the History of the CBC please visit <http://www.audubon.org/bird/cbc/ho.html>.

2001 Christmas Bird Count report

Mackenzie has been doing this count for 8 consecutive years now and one was done in 1982. Our Christmas Bird Count (CBC) was held on the 30th of December 2001 with the temperature of -0.4°F (-18°C) and being a mainly clear day, despite the cold, 28 volunteers came out to participate in the count. 2001 Christmas Bird Count volunteers were Martina Frey; David Lambie; John & Vi Lambie; John & Mel Lambie; Dieter & Judy Dittrich; Cheryl & Bob Omand; Sharleen & Koren Pitkethly; Vida Tattrie & Rae Yeo; Jim & Cynthia Tuck; Gordon, Kathy, James & Maggie Haley; Ryan, Trish, Dana & Evan Bichon; Cheryl Freeman; Elizabeth Munro and Wendy Heater; and Rob Weaver.

As all of Mackenzie streets fall easily within the 7 mile radius, Canada Post Office being the centre point, and were all covered. It has been a wonderful feeling to see that more and more people have bird feeders and as on days such as this year's count it makes it a lot easier for the birds to get through the winter.

2001 Christmas Bird Count was fairly good compared to other years, 1994-2000. 2001 count had a good results with 1501 individuals and 23 species - both above the 8 year average; 1456 individuals & 20 species. However, one should look at Appendix 9 as the average is down due to a few low years; but statistics shows all-in-all 2001 CBC was a fairly good count.

The **highlight** of this count was the chickadees, 3 Mountain Chickadees and 1 Boreal Chickadee. For me, hearing and seeing a Boreal Chickadee was a privilege. We, Martina and myself, could hear a chickadee that sounding somewhat like a Black-capped Chickadee. We searched everywhere and looking at every chickadee nearby then at last, after approximately 20 minutes of looking there was a Boreal Chickadee only 3 feet away from us perched in a tree.

Most of all and what pulls this count together are the volunteers. Each year more people are willing to go out no matter what the weather conditions are like. I would like to thank Cheryl Omand for helping me to get things ready for the count and for having all the volunteers over for brunch in the evening and to go over the results.

Average Stats	82, 94 - 00	82, 94 - 01	94 - 00	94 - 01
Individuals Overall	1325.5	1345	1456.6	1462.1
Species Overall	19.3	19.7	20.0	20.4
Temp. (°F) Overall	13.6°F	12.0°F	9.8°F	8.5°F
Temp. (°C) Overall	-10.2°C	-11.1°C	-12.3°C	-13.0°C

Appendix 1

Birds Banded at Mugaha Marsh

Species	Standard Banding									Non-Standard Banding						
	1995 11 Aug. - 24 Sept	1996 5 Aug. - 28 Sept.	1997 26 July - 26 Sept.	1998 21 July - 20 Sept.	1999 19 July - 19 Sept.	2000 23 July - 24 Sept.	2001 22 July - 23 Sept.	2002 21 July- 22 Sept	Totals 1995- 2002	1994 (sample) 25 - 26 Aug., 11 - 12 Sept.	(5 nets) 1998 16 May - 23 May	1998 21 July - 20 Sept.	1999 19 July - 19 Sept.	2000 23 July - 24 Sept.	2001 22 July - 23 Sept.	2002 21 July - 22 Sept
Northern Harrier		1						1								
Sharp-shinned Hawk		7	1	1	2	2	1	4	18	1						
Cooper's Hawk				1				1	1							
American Kestrel		1						1	2		5					
Merlin					1			1	2							
Sora			1						1							
Killdeer											1					
Solitary Sandpiper		1							1							
Spotted Sandpiper																
Semipalmated Sandpiper													2			
Western Sandpiper		1	1						2							
Least Sandpiper											1		5			
Common Snipe		5	3					4	12		6		2			
Northern Saw-whet Owl	17	1							18		1	2	1		29	
Belted Kingfisher										2						
Yellow-bellied Sapsucker		2	1	5	2			5	15							
Red-naped Sapsucker								1	1							
Red-breasted Sapsucker		1	2	1	2	1	1		8	1						
RBSA/RNSA (immature)	1								1							
Hybrid Sapsucker			3	6		1			10							
Downy Woodpecker		1	1	2	6	18	19		47					1		
Hairy Woodpecker		1		2	1	2	1	2	9							
Three-toed Woodpecker																
Flicker Intergrade			1	1	3	1			6							
Red-shafted Flicker		1		1	2	1	1		6							
Yellow-shafted Flicker			3	1	1				5		1					
Olive-sided Flycatcher			2						2							
Western Wood Pewee	1	2	13	9	2	2		2	31							
Yellow-bellied Flycatcher	1	4	7	4	3	5	4	3	31							
Alder Flycatcher	23	87	138	93	77	99	75	52	644	2	1		1	1		
Least Flycatcher	13	28	102	97	118	77	74	68	577	5	5	2	1	2		
Hammond's Flycatcher	13	25	57	41	51	67	74	64	392	3		2	11	1		
Dusky Flycatcher	5	18	35	24	31	17	26	17	173	1	2	1	1	1		

Appendix 1

Birds Banded at Mugaha Marsh

Species	Standard Banding									Non-Standard Banding						
	1995 11 Aug. - 24 Sept	1996 5 Aug. - 28 Sept.	1997 26 July - 26 Sept.	1998 21 July - 20 Sept.	1999 19 July - 19 Sept.	2000 23 July - 24 Sept.	2001 22 July - 23 Sept.	2002 21 July- 22 Sept	Totals 1995- 2002	1994 (sample) 25 - 26 Aug., 11 - 12 Sept.	(5 nets) 1998 16 May - 23 May	1998 21 July - 20 Sept.	1999 19 July - 19 Sept.	2000 23 July - 24 Sept.	2001 22 July - 23 Sept.	2002 21 July - 22 Sept
Bohemian Waxwing					1			1								
Cedar Waxwing		6	19	3	9	3		4	44			1		2		
Tennessee Warbler	3	2	13	20	13	2	26	40	119		1		1	1		
Orange-crowned Warbler	67	88	73	149	111	121	105	175	889	9	5	1		11	1	
Yellow Warbler	17	110	156	144	92	64	75	127	785	1	6	1		2		
Magnolia Warbler	19	55	66	48	48	30	67	106	439	2	1			3		
Unknown Yellow-rumped Warbler	18	3	6	64	109	14	55	110	379			3		4		
Audubon's Warbler	42	29	32	51	53	20	28	33	288	12	13	3		1		1
Myrtle Warbler	13	36	30	52	19	4	31	32	217	3	4	7		2	1	
<i>Total Yellow-rumped Warblers</i>	<i>73</i>	<i>68</i>	<i>68</i>	<i>167</i>	<i>181</i>	<i>38</i>	<i>114</i>	<i>175</i>	<i>884</i>	<i>15</i>	<i>17</i>	<i>13</i>	<i>0</i>	<i>7</i>	<i>1</i>	<i>1</i>
Townsend's Warbler	17	3	13	14	12	20	42	11	132	5		1		2		
Blackpoll Warbler	7	16	21	35	16	22	37	46	200	2	1	5				
Black-and-White Warbler			1						1							
American Redstart	56	252	480	216	283	169	408	436	2300	4	6			10	29	
Ovenbird	7	2	3	4	4	6	6	3	35							
Northern Waterthrush	17	274	379	156	151	65	89	404	1535	1	13					
Morning Warbler							1		1							
MacGillivray's Warbler	1	20	27	31	31	17	27	33	187		1				1	
Common Yellowthroat	48	65	169	153	58	46	101	151	791	6	8			4		
Wilson's Warbler	58	78	88	107	58	168	89	86	732	5	28	1		18		
Western Tanager	4	6	11	26	10	6	1	12	76							
American Tree Sparrow	10	14	36	22	2	6	2	4	96							
Chipping Sparrow	2	11	7	16	18	49	19	10	132							
Clay-colored Sparrow		1	2	1					4							
Brewer's Sparrow			1	1	1				3							
Vesper Sparrow						1			1							
Savannah Sparrow	3	21	30	46	25	35	23	11	194	2	2	2		1		
Fox Sparrow	3	6	5	4	3	11	2	7	41	1						
Song Sparrow	18	13	25	17	16	28	28	17	162	2	3			4	2	
Lincoln's Sparrow	17	19	33	20	57	53	51	11	261	4	4			10		
Swamp Sparrow	3	2	3	11	2	5	3	2	31	2				1		
White-throated Sparrow	6	8	4	9	8	4	9	6	54					1		
Harris's Sparrow		1							1							

Appendix 2: 1998 - 2002 Net Capture Rate Totals plus Top 10 Species by Net page 1 of 2

1998-2002 Total Net Capture																	
	1999	1999	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
	Net 1	Net 2	Net 3				Net 4					Net 5					
<i>Total Net Hours</i>	23	23	374	362	337	362	147	374	362	337	362	73	374	351	336	361	365
Total Individuals	19	12	599	318	384	486	258	1389	521	406	328	18	59	26	44	26	17
<i>Total Individuals per Net Hour</i>	0.84	0.53	1.60	0.88	1.14	1.34	1.76	3.72	1.44	1.21	0.91	0.25	0.16	0.07	0.13	0.07	0.05

Top Ten Species and their Net Capture																	
Species	Net 1	Net 2	Net 3				Net 4					Net 5					
Pine Siskin	2		201	28	29	15		917	181	76	27		27				
Ruby-crowned Kinglet			57	22	51	90	70	65	31	35	48	11	1		7		
American Redstart	2	2	37	45	33	84	11	41	27	18	18		2		2	8	
Northern Waterthrush	2	2	24	15	8	11	3	39	29	16	9		2	1		2	3
Yellow-rumped Warblers	0	0	22	15	5	33	51	30	64	8	39	2	2	1	0	0	1
Orange-crowned Warbler			24	17	34	17	30	19	13	15	20	1	1		1		
Dark-eyed Juncos	0	0	16	21	23	11	8	28	21	40	9	1	2	4	1	4	1
Common Yellowthroat			25	6	5	17	25	16	5	14	24	2					
Wilson's Warbler			19	12	30	27	7	20	4	21	17		1		9	1	
Yellow Warbler			22	10	6	10	4	25	16	15	8		1		1		

1998-2002 Total Net Capture																			
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002	1998	1999	2000	2001	1998	1999	2000	2001	2002
	Net 6					Net 9					Net 11				Net 12				
<i>Total Net Hours</i>	374	351	336	361	365	374	362	337	362	366	374	365	337	363	368	346	329	361	36
Total Individuals	71	65	63	57	39	307	312	322	269	302	498	368	307	457	198	115	185	130	23
<i>Total Individuals per Net Hour</i>	0.19	0.19	0.19	0.16	0.11	0.82	0.86	0.96	0.74	0.83	1.33	1.01	0.91	1.26	0.54	0.33	0.56	0.36	0.64

Top Ten Species and their Net Capture																			
Species	Net 6					Net 9					Net 11				Net 12				
Pine Siskin	14			1		19	44	96	5	1	116	26	9	6	8				
Ruby-crowned Kinglet		1	4			56	36	36	16	60	57	17	24	78	15	5	9	9	1
American Redstart	5	15	7	14	8	26	60	34	128	63	27	33	22	43	6	1	6	9	1
Northern Waterthrush	3	2	1	4	2	8	11	2	19	28	35	30	12	15	6	7	4	9	4
Yellow-rumped Warblers	1	0	4	1	1	3	9	5	5	12	15	21	3	14	4	5	0	0	0
Orange-crowned Warbler	1		4			4	16	7	4	14	26	17	16	33	9	5	6	3	
Dark-eyed Juncos	5	7	2	5	1	7	14	5	5	9	10	32	15	16	2	5	18	5	1
Common Yellowthroat					1	1	6	1		11	35	11	8	49	39	17	9	3	
Wilson's Warbler		3	4	1		12	7	33	3	8	14	6	29	23	11	8	23	2	
Yellow Warbler	2	1		1		12	2	5	7	5	30	26	15	22	13	4	6	13	5

Appendix 2: 1998 - 2002 Net Capture Rate Totals plus Top 10 Species by Net page 2 of 2

1998-2002 Total Net Capture																								
	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
	Net 13				Net 14				Net 15				Net 16				Net 17							
<i>Total Net Hours</i>	371	364	329	358	370	364	329	358	369	363	329	359	370	363	329	359	369	361	329	360				
<i>Total Individuals</i>	109	106	89	67	168	130	81	98	142	174	72	111	186	167	117	152	267	167	159	147				
<i>Total Individuals per Net Hour</i>	0.29	0.29	0.27	0.19	0.45	0.36	0.25	0.27	0.38	0.48	0.22	0.31	0.50	0.46	0.36	0.42	0.72	0.46	0.48	0.41				
Top Ten Species and their Net Capture																								
	Net 13				Net 14				Net 15				Net 16				Net 17							
Pine Siskin	1	1				1				8			2	3										
Ruby-crowned Kinglet	26	12	12	5	23	8	9	10	20	15	7	9	39	19	13	19	46	17	8	14				
American Redstart	8	10	5	8	12	15	10	20	7	24	4	15	14	19	15	32	28	28	11	26				
Northern Waterthrush	3	9	6	4	8	11	3		8	12	6	2	8	9	3	5	8	10	4	8				
Yellow-rumped Warblers	10	1	0	4	10	8	0	2	12	30	4	7	21	18	7	6	35	8	2	3				
Orange-crowned Warbler	7	7	3	1	13	7	7	6	8	6	7	4	9	9	6	11	27	12	13	6				
Dark-eyed Juncos	4	9	3	1	2	16	1	3	7	15	4	10	8	15	4	3	1	15	24	7				
Common Yellowthroat	8	1	4		7	3	2	2	3	3		2	8	2			11	3	3	4				
Wilson's Warbler	5	3	2	2	1	4	1	4	6	1	4	1	8	1	4	5	9	9	7	3				
Yellow Warbler	5	10	5	2	3	6	3	3	7	4	1	1	8	8	2	3	15	4	4	4				

1998-2002 Total Net Capture													
	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	1998 - 2000 Total		
<i>Net</i>	19	20	21	22	23	24	25	26	27	28	<i>Net</i>		
<i>Total Net Hours</i>	366	366	366	60	364	364	365	365	329	305	21738.7	Net Hours	
<i>Total Individuals</i>	307	543	254	42	68	79	201	345	198	302	14046	Individuals	
<i>Total Individuals per Net Hour</i>	0.84	1.48	0.69	0.70	0.19	0.22	0.55	0.95	0.60	0.99	0.65	Ind/Net Hr	
Top Ten Species and their Net Capture													
Species	Net	19	20	21	22	23	24	25	26	27	28	Individual	Code
Pine Siskin										1		1865	PISI
Ruby-crowned Kinglet	50	74	13	1	4	5	30	44	48	22		1534	RCKI
American Redstart	37	77	29	11	11	16	28	80	14	48		1500	AMRE
Northern Waterthrush	61	67	63	19	5	6	12	14	10	107		859	NOWA
Yellow-rumped Warblers	7	22	31	0	1	1	12	9	15	10		672	YRWA
Orange-crowned Warbler	23	44	15		2	1	8	15	15	7		656	OCWA
Dark-eyed Juncos	3	6	2	0	4	3	16	14	24	6		584	DEJU
Common Yellowthroat	36	40	7		2		5	8	1	12		507	COYE
Wilson's Warbler	9	19	6		2	1	5	22	5	2		506	WIWA
Yellow Warbler	17	37	28	4			5	5	9	8		498	YWAR

Appendix 3 Ages of Birds Captured at Mugaha Marsh Banding Station Fall 2002

SPECIES captured	July Total						August Total						Sept. Total						Fall 2002 Totals							
	BANDED			R	recaptures		BANDED			R	recaptures		BANDED			R	recaptures		BANDED			R	recaptures			
	HY	AHY	U		HY	AHY	HY	AHY	U		HY	AHY	HY	AHY	U		HY	AHY	U	HY	AHY		U	HY	AHY	
SSHA								2						2						2	2					
MERL														1						1						
COSN							2									2				2						
RNSA	1																			1						
YBSA		2					3					2(1)								3	2			2(1)		
DOWO										1													1			
HAWO		1					1						1							1	1				1	
WEWP		1					1													1	1					
YBFL							2							1						3						
ALFL		5		3			24	9		1(1)	3			14			2			38	14		4(1)	5		
LEFL	8	10		1		2	44	4		3(2)	6	3(2)		2						54	14		4(2)	6	5(2)	
HAFL	8						50		1			1		5						63		1		1		
DUFL		2					10	1						4						14	3					
WEFL							1													1						
SOVI							1	1						1						2	1					
WAVI		2				1	23	6		1	1	1(1)		4			1			27	8		1	2	2(1)	
REVI	1	5					4	1		1										5	6		1			
BCCH	5					1	7					1		9	1			6(3)		21	1			8(3)		
RBNU							1	1						7						8	1					
BRCR														2						2						
WIWR														1						1						
GCKI							6							40	3					46	3					
RCKI	13	5					66	1				5(1)		320	28			17(2)	5	399	34			22(3)	5	
TOSO														1						1						
GCTH							1							1	1					2	1					
SWTH	19	19		4(2)	2	4(1)	57	10		3(1)	9(3)	1		17	1					93	30		7(3)	11(3)	5(1)	
HETH														23			1	1			23			1	1	
AMRO	5	17					6	1				1		1						12	18				1	
CEDW							1	2				2(1)			1					1	3				2(1)	
TEWA	2	9				1	11	10				3		5	3					18	22				4	
OCWA	6	2		1			53	1		1(1)	5(2)			103	10		1(1)	7(1)	1	162	13		3(2)	12(3)	1	
YWAR	20	11		1	1	1	66	17		1(1)	4(1)	8(3)		13				1		99	28		2(1)	6(1)	10(3)	

Appendix 3 Ages of Birds Captured at Mugaha Marsh Banding Station Fall 2002

SPECIES captured	July Total						August Total						Sept. Total						Fall 2002 Totals					
	BANDED			R	recaptures		BANDED			R	recaptures		BANDED			R	recaptures		BANDED			R	recaptures	
	HY	AHY	U		HY	AHY	HY	AHY	U		HY	AHY	HY	AHY	U		HY	AHY	U	HY	AHY		U	HY
MAWA		3				1	85	4			4(2)	1	9	5				1	94	12			4(2)	3
UYRW	1	1					30	1					75	2			2		106	4			2	
AUWA		1					7	2			1		18	5			1		25	8			2	
MYWA							4	1					25	2					29	3				
TOWA							5						4	2					9	2				
BLPW	3	2					22	2	0			1	15	2			2(1)		40	6			2(1)	1
AMRE	34	60		6	2(1)	9(1)	270	44		4(1)	23(6)	49(25)	8	20		4(1)	1	31(21)	312	124		14(2)	26(7)	89(47)
OVEN	1						1	1											2	1				
NOWA	49	12				17(5)	294	29		2	21(3)	12(3)	19	1			4	1	362	42		2	42(8)	13(3)
MGWA							30				3		2	1			2(2)		32	1			5(2)	
COYE	1						57				17(3)		93				33(12)		151				50(15)	
WIWA							56	6					18	5	1		3(2)	3(2)	74	11	1		3(2)	3(2)
WETA	1	4					7												8	4				
ATSP													4				2(1)		4				2(1)	
CHSP	1						3	5					1						5	5				
SAVS							3						7	1					10	1				
FOSP							1						6						7					
SOSP	6	4				3(1)	5						1	1			1		12	5			1	3(1)
SWSP							2												2					
LISP	6	1					2	1					1						9	2				
WTSP	1					2(1)	3	1					1						5	1			2(1)	
GWCS							19						31	2					50	2				
GCSP							1												1					
ORJU				1			6	1		2			66	2			1		72	3		3	1	
UDEJ	4			1			8			1			11	1			1		23	1		2	1	
COGR								1												1				
BHCO	1																		1					
PISI								2												2				
Total Individ.	197	179		18(2)	25(7)	22(3)	1362	168	3	21(7)	106(22)	83(35)	992	100	3	6(2)	88(24)	43(23)	2551	447	4	45(11)	219(53)	148(61)

Note: () indicate the number of recaptures that are not first time recaptures this season.

Appendix 4. Proportion of hatch year birds (HY), after hatch year birds (AHY), and individuals of unknown age (UKN) banded at Mugaha Marsh, BC from 1996 -2002

	1996			1997			1998			1999			2000			2001			2002		
	HY	AHY	UKN	HY	AHY	UKN	HY	AHY	UKN	HY	AHY	UKN	HY	AHY	UKN	HY	AHY	UKN	HY	AHY	UKN
Alder Flycatcher	49	38	0	88	49	1	71	22	1	42	35	0	69	31	0	54	22	0	38	14	0
American Redstart	109	140	3	349	131	0	163	53	0	195	85	3	118	179	0	368	69	0	312	124	0
American Robin	3	3	0	10	6	1	17	14	0	13	5	0	12	4	0	1	0	0	12	18	0
American Tree Sparrow	13	1	0	31	4	1	21	1	0	2	0	0	4	2	0	2	0	0	4	0	0
Black-capped Chickadee	13	4	1	14	0	2	88	2	2	18	0	2	110	0	0	33	0	0	21	1	0
Blackpoll Warbler	14	2	0	16	5	0	36	4	0	14	2	0	10	12	0	30	7	0	40	6	0
Cedar Waxwing	4	2	0	7	12	0	0	0	3	3	7	0	0	3	0	0	2	0	1	3	0
Chipping Sparrow	10	1	0	5	2	0	13	3	0	14	4	0	43	6	0	17	2	0	5	5	0
Common Yellowthroat	60	5	0	155	13	1	130	23	0	51	7	0	46	4	0	92	9	0	151	0	0
Dark-eyed Junco	81	14	0	100	12	2	86	15	0	169	8	1	131	10	0	76	5	0	95	4	0
Dusky Flycatcher	9	9	0	28	7	0	17	8	0	25	7	0	13	5	0	19	7	0	14	3	0
Golden-crowned Kinglet	15	0	0	17	1	1	119	4	0	52	2	1	52	9	1	48	2	0	46	3	0
Hammond's Flycatcher	21	3	1	47	8	2	42	1	0	46	0	5	73	2	3	71	1	3	63	0	1
Hermit Thrush	7	1	0	7	1	0	15	0	0	14	1	0	12	0	0	13	1	0	23	0	0
Least Flycatcher	21	6	1	90	13	0	87	12	0	86	29	3	66	12	0	59	17	0	54	14	0
Lincoln's Sparrow	11	7	0	22	10	1	16	4	0	47	8	2	57	6	0	46	5	0	9	2	0
Magnolia Warbler	28	27	0	58	8	0	44	4	0	39	9	0	28	5	0	60	7	0	94	12	0
MacGillivray's Warbler	19	1	0	25	2	0	30	1	0	30	0	1	17	0	0	28	0	0	32	1	0
Northern Waterthrush	169	104	1	331	47	1	118	38	0	125	25	1	55	10	0	83	6	0	362	42	0
Orange-crowned Warbler	68	17	3	60	12	1	128	22	0	99	11	1	102	30	0	95	11	0	162	13	0
Pine Siskin	58	32	5	30	54	1	971	354	5	200	92	3	189	20	1	30	33	0	0	2	0
Red-breasted Nuthatch	8	0	0	8	1	0	11	1	0	20	0	0	7	0	0	19	0	0	8	1	0
Ruby-crowned Kinglet	269	47	1	143	53	5	360	50	2	160	20	7	198	31	2	273	26	0	399	34	0
Savannah Sparrow	16	5	0	25	5	0	41	7	0	19	5	1	30	6	0	19	4	0	10	1	0
Song Sparrow	12	0	1	23	2	0	12	3	2	12	4	0	28	4	0	28	2	0	12	5	0
Solitary Vireo	6	0	0	6	3	1	11	9	0	7	2	0	3	1	0	4	2	0	2	1	0
Swainson's Thrush	40	14	0	70	11	1	56	7	0	71	14	1	80	9	0	64	24	0	93	30	0
Tennessee Warbler	2	0	0	9	4	0	19	2	0	2	11	0	2	1	0	21	6	0	18	22	0
Townsend's Warbler	3	0	0	13	0	0	14	1	0	10	2	0	21	1	0	42	0	0	9	2	0
Warbling Vireo	42	8	1	52	7	2	61	17	0	53	23	1	39	10	0	20	6	0	27	8	0
White-crowned Sparrow	36	7	0	18	4	0	28	6	0	26	5	0	52	13	0	56	3	0	50	2	0
Western Tanager	3	3	0	5	6	0	19	7	0	5	5	0	3	3	0	0	1	0	8	4	0
Wilson's Warbler	49	29	0	75	13	0	91	17	0	48	9	1	138	48	0	70	19	0	74	11	1
Yellow-rumped Warbler	48	19	1	50	18	0	143	36	1	158	21	2	32	13	0	101	13	1	160	14	0
Yellow Warbler	84	26	0	123	33	0	124	20	1	76	16	0	48	18	0	56	19	0	99	28	0

Bander's name in brackets

From 1997

1. Northern Waterthrush, band number 3111 59430 Banded as a hatch year bird of unknown sex on 16 August 1997, recaptured on 22 August 2002 (Vi Lambie)

From 1999

2. Least Flycatcher, band number 2140 49756 Banded as an after hatch year female on 24 July 1999, recaptured 25 July 2002 (Amélie Rousseau, 12 August 2002 (Vi Lambie), and on 17 August 2002 (Amélie Rousseau)
3. Warbling Vireo, band number 2160 69235 Banded as an after hatch year female on 14 August 1999 (Vi Lambie), recaptured on 3 August 2002 (Amélie Rousseau)

From 2000

4. Downy Woodpecker, band number 1591 95190 Banded as a hatch year male 11 August 2000 (Amélie Rousseau), recaptured 26 August 2000 (Vi Lambie) and on 13 August 2002 (Vi Lambie)
5. Alder Flycatcher, band number 2160 69887 Banded as an after hatch year unknown on 23 July 2000 (Amélie Rousseau) recaptured 24 July 2002 (Jukka Jantunen)
6. Red-eyed Vireo, band number 1651 13286 Banded as an after hatch year female 3 August 2000 (Sandra Kinsey), recaptured 12 August 2002 (Amélie Rousseau)
7. Swainson's Thrush, band number 1591 95120 Banded as an after hatch year female 23 July 2000 (Sandra Kinsey), recaptured 22 July 2001 (Jukka Jantunen), 25 July 2001 (Jukka Jantunen) and 18 August 2002 (Jukka Jantunen)
8. American Redstart, band number 2130 33556 Banded as an after hatch year male 24 July 2000 (Amélie Rousseau), recaptured 13 August 2000 (David Lambie), 25 August 2000 (Amélie Rousseau), and 10 September 2002 (Amélie Rousseau)
9. American Redstart, band number 2130 33755 Banded as an after hatch year male 23 August 2000 (Jukka Jantunen), recaptured 22 August 2001 (Amélie Rousseau) and 25 July 2002 (Vi Lambie)
10. American Redstart, band number 2130 33976 Banded as an after hatch year male 6 September 2000 (Amélie Rousseau), recaptured 19 August 2001 (Martina Frey), 1 September 2002 (Martina Frey) and 7 September 2002 (Vi Lambie)
11. Northern Waterthrush, band number 1651 13148 Banded as an after hatch year bird of unknown sex 23 July 2000 (Sandra Kinsey), recaptured 25 July 2000 (Sandra Kinsey), 2 August 2000 (Jukka Jantunen), 7 August 2000 (Linnea Cross-Tallman), 16 August 2000 (Amélie Rousseau), 22 August 2001 (Jukka Jantunen), 25 August 2001 (Jukka Jantunen) and 20 August 2002 (Vi Lambie)
12. Oregon Junco, band number 1651 13214 Banded as a hatch year Unidentified Dark-eyed Junco of unknown sex 27 July 2000 (Amélie Rousseau), recaptured 4 Aug 2000 (Laird Law), 27 August 2000 (Vi Lambie), 29 July 2002 as an after hatch year female (David Lambie)
13. Oregon Junco, band number 1651 13252 Banded as a hatch year unknown sex unidentified Dark-eyed Junco 30 July 2000 (David Lambie), recaptured 3 August 2000, 14 August 2000 (Vi Lambie), 4 August 2002 (Martina Frey)
14. Unidentified Dark-eyed Junco (had some Oregon features), band number 1651 13279 Banded as a hatch year bird 3 August 2000 (Jukka Jantunen), recaptured 20 August 2002 (Vi Lambie)

From 2001

15. Alder Flycatcher, band number 2170 90013 Banded as after hatch year bird of unknown sex 24 July 2001 (Jukka Jantunen), recaptured 29 July 2002 (Linnea Cross Tallman), and 12 August 2002 (Amélie Rousseau)
16. Alder Flycatcher, band number 2170 90045 Banded as an after hatch year bird of unknown sex 27 July 2001, (Amélie Rousseau), recaptured 29 July 2001 (Susanne Maidment), 31 July 2001 (Susanne Maidment), 2 August 2001 (Jukka Jantunen), and 25 July 2002 (Vi Lambie)
17. Least Flycatcher, band number 2170 90051 Banded as an after hatch year bird of unknown sex 28 July 2001, recaptured 14 August 2002 (David Lambie)
18. Swainson's Thrush, band number 1591 95350 Banded as an after hatch year female 21 July 2001 (Jukka Jantunen), recaptured 21 July 2002 (Jukka Jantunen), 28 July 2002 (Jukka Jantunen), and 31 July 2002 (Vi Lambie)

19. Swainson's Thrush, band number 1591 95366 Banded as a hatch year unknown 22 July 2001 (Jukka Jantunen), recaptured as a second year female 29 July 2002 (Jukka Jantunen)
20. Swainson's Thrush, band number 1591 95421 Banded as a hatch year unknown 1 August 2001 (Jukka Jantunen), recaptured 6 August 2002 (Jukka Jantunen) and 8 August 2002 (Jukka Jantunen)
21. Hermit Thrush, band number 1591 95563 Banded as an after hatch year unknown 19 September 2001 (Jukka Jantunen), recaptured 16 September 2002 (Jukka Jantunen)
22. Orange-crowned Warbler, band number 2170 90635 Banded as a hatch year male 4 September 2001 (Jukka Jantunen), recaptured 21 July 2002 (Jukka Jantunen), 28 August 2002 (Jukka Jantunen), 10 September 2002 (Amélie Rousseau)
23. Yellow Warbler, band number 2170 90386 Banded as an after hatch year female 21 August 2001 (Amélie Rousseau), recaptured 31 July 2002 (Vi Lambie) and 30 August 2002 (David Lambie)
24. American Redstart, band number 2130 34269 Banded as an after hatch year female 22 July 2001 (Amélie Rousseau), recaptured 4 August 2002 (Amélie Rousseau)
25. American Redstart, band number 2130 34297 Banded as an after hatch year female 29 July 2001 (Amélie Rousseau), recaptured 31 July 2002 (Jukka Jantunen)
26. American Redstart, band number 2130 34325 Banded as an after hatch year female 1 August 2001 (Jim Tuck), recaptured 21 July 2002 (Jukka Jantunen)
27. American Redstart, band number 2130 34329 Banded as an after hatch year female 1 August 2001 (Jukka Jantunen), recaptured 7 August 2002 (Vi Lambie)
28. American Redstart, band number 2130 34358 Banded as an after second year male 4 August 2001, recaptured 29 July 2002 (Amélie Rousseau)
29. American Redstart, band number 2130 34362 Banded as an after hatch year female 4 August 2001 (Jukka Jantunen), recaptured 4 September 2002 (Vi Lambie)
30. American Redstart, band number 2130 34434 Banded as a hatch year male 9 August 2001 (Amélie Rousseau), recaptured 13 August 2002 (Jukka Jantunen)
31. American Redstart, band number 2130 34455 Banded as an after hatch year female 11 August 2001 (Jukka Jantunen), recaptured 28 July 2002 (Amélie Rousseau) and 8 August 2002 (Amélie Rousseau)
32. American Redstart, band number 2180 14120 Banded as an after hatch year male 21 August 2001 (Vi Lambie) recaptured 27 July 2002 (Jukka Jantunen)
33. Oregon Junco, band number 2170 90635 Banded as a hatch year unknown 24 August 2001 (Jukka Jantunen), recaptured 4 September 2001 (Jukka Jantunen), and 16 August 2002 as an after hatch year male (Vi Lambie)
34. Unidentified Dark-eyed Junco (possible cismontanus), band number 2170 90172 Banded as a hatch unknown 7 August 2001 (Jukka Jantunen), recaptured 27 July 2002 as an after hatch female (Martina Frey)

Appendix 6 Mugaha Marsh Banding Station - Measures of Effort Fall 2002

Date	Banded		Recaptured		# Nets open	# Total nethours	Census				# Observers				# Observed			
	# Indiv	Species	# Indiv	Species			# Indiv	Species	code 1	hrs	code 2	hrs	code 3	hrs	code 4	hrs	Indiv	Species
21-Jul-02	71	14	3	3	12	72	57	24	3	13	2	6	1	2			89	33
22-Jul-02	36	11	1	1	12	72	44	19	3	11 1/2	2	5 1/2					79	36
23-Jul-02	38	13	2	2	12	72	69	28	3	9 1/2	1	1 1/2					66	29
24-Jul-02	43	14	6	5	12	72	66	25	3	10	1	3					63	33
25-Jul-02	45	16	13	5	12	72	51	25	3	11	1	3					60	28
26-Jul-02	25	10	8	2	12	72	79	28	3	10 1/2	3	6 1/2					100	37
27-Jul-02	46	19	9	6	12	72	84	32	2	8	2	7					83	30
28-Jul-02	35	14	4	3	12	72	111	30	2	7	2	6 1/2	1	3			80	31
29-Jul-02	19	11	9	7	12	72	76	31	3	12	1	3	1	3			67	31
30-Jul-02					0	0	78	28	3	5	2	1					25	11
31-Jul-02	18	7	11	7	12	72	78	24	3	11 1/2							50	27
1-Aug-02	39	17	5	4	12	72	99	28	3	10	1	3					78	30
2-Aug-02	11	8	4	1	12	72	41	20	3	9	2	4 1/2					176	28
3-Aug-02	42	18	6	5	12	72	146	36	3	10 1/2	1	3					145	38
4-Aug-02	51	21	12	7	12	72	89	32	3	11	2	6	1	3			160	40
5-Aug-02	12	6	4	2	12	36	321	35	3	6 1/2	2	3 1/2					278	43
6-Aug-02	36	10	5	3	12	72	610	30	3	11	1	3					616	33
7-Aug-02	41	14	3	2	12	72	309	36	3	10 1/2	1	3					311	36
8-Aug-02	56	16	4	2	12	72	72	23	3	11	1	3					111	27
9-Aug-02	62	10	5	3	12	72	69	24	3	11	1	3					61	26
10-Aug-02	107	20	2	2	12	72			2	7	1	3	1	2			107	36
11-Aug-02	54	12	11	7	12	72	119	29	3	11	2	5 1/2	1	2			65	22
12-Aug-02	93	20	11	6	12	72	49	25	3	11	1	3					42	23
13-Aug-02	32	10	8	5	12	72	62	23	3	9	1	3			1	2 1/2	66	26
14-Aug-02	90	18	5	5	12	72	110	34	3	11	2	6			1	2	95	25
15-Aug-02	71	12	6	4	12	72	137	39	3	10	1	3					101	31
16-Aug-02	61	14	6	5	12	72	61	19	4	15	1	3			1	3	47	32
17-Aug-02	87	21	11	7	12	72			3	12			1	2 1/2			107	38
18-Aug-02	47	10	9	5	12	72	112	29	4	15	1	1	1	3			80	32
19-Aug-02	45	17	7	7	12	72	91	27	4	13	2	4					84	27
20-Aug-02	66	19	13	7	12	72	67	21	4	14	1	3			1	2 1/2	92	28
21-Aug-02	18	12	3	3	12	72	63	20	3	9	1	3					69	24
22-Aug-02	37	15	4	4	12	72	103	31	4	14					1	2 1/2	72	23

Appendix 6 Mugaha Marsh Banding Station - Measures of Effort Fall 2002

Date	Wind			Visability			Cloud			Temperature			Precipitation			
	dawn	census	dusk	dawn	census	dusk	dawn	census	dusk	dawn	census	dusk	dawn	census	dusk	
21-Jul-02						30km		10%	0%	9°C	10°C	16°C				
22-Jul-02				30 km			12%			9.5°C						
23-Jul-02				30 km			25%	20-30%		14°C	15°C					
24-Jul-02				30 km	30 km		10%	10%		11°C	13°C					
25-Jul-02		2 to 3	W/2	30 km		30 km	10%	variable	60%	13°C	15°C	16°C				
26-Jul-02		1	N/1	30 km	30 km	30 km	20%	10%	80%	10°C	9°C	14°C				
27-Jul-02			NW/4	30 km	30 km	30 km	10%	40%	50%	8°C	9°C	16°C				
28-Jul-02			NW/7	30 km	30 km		50%	90%		12°C	14°C					
			at 4 pm													
29-Jul-02			W/2	30km		30km	30%	30%	60%	5°C	5.5°C	11°C				
30-Jul-02	N/1	N/2	N/2	20 km	20km		100%	100%	100%	6°C	6°C	7°C	light rain	light rain		
31-Jul-02	N/1	N/1		20 km	25 km		100%	100%		7°C	7°C		light driz:	light drizzle		
1-Aug-02				30 km	30 km		10%	50%		3°C	5°C					
2-Aug-02	NE/4	NE/4	NE/2	30 km		30km	90%	100%	20%	7°C	7°C	8°C				
3-Aug-02	NE/1	N/1	N/1	30 km	30 km	30 km	0%	10%	20%	4°C	4.5°C	8°C				
4-Aug-02	NE/2	NE/2-3	E/3	30 km	30 km	30 km	40%	60%	100%	7°C	10°C	11°C				
5-Aug-02	E/2	E/2	3	10 km	10 km		100%	100%	70%	7°C	8.5°C	10°C	drizzle	light rain		
6-Aug-02	S/1	S/2		30 km	30 km		80%	50%		8°C	8.5°C					
7-Aug-02		SE/1	S/1	30 km	30 km	30 km	0%	0%	30%	8°C	9°C	15°C				
8-Aug-02	SE/1	E/2	W/2	30 km		30 km	70%	100%	100%	13.5°C	13.5°C					
9-Aug-02	W/4	W/1		30 km	30 km		70%	97%		15°C	15°C					
10-Aug-02			NW/1	30 km		30 km	20%		30%	5°C		12°C				
11-Aug-02	SW/2	SW/2	SW/1	5 km	10 km	30 km	60%	98%	30%	7°C	8°C	15°C				
12-Aug-02		1	NW/1	30 km	30 km	30 km	70%	85%	80%	7°C	9°C	20°C				
13-Aug-02	SW/2	SW/2-3	NW/2	30 km		30 km	80%	95%	50%	17°C	17°C	11°C			rained in evening	
14-Aug-02				30 km	30 km		0%	5%		7°C	8°C					
15-Aug-02			NW/1	30 km		30 km	0%		10%	5°C		6°C				
16-Aug-02	SE/1	SE/1-2		5 -10km	20-30km		10%	20%		0°C	3°C					
17-Aug-02				30 km		30 km	80%		10%	8°C		12°C				
18-Aug-02				30 km	30 km		10%	5%		8°C	8°C					
19-Aug-02				30 km		30 km	20%		80%	6°C		10°C				
20-Aug-02				5-10 km			50%	20%		8°C	7°C					
21-Aug-02	SSE/2	SE/2-3	S/2	30 km	30 km	30 km	0%	0%	50%	8°C	9°C	15°C	light rain at 15:00 hrs			
22-Aug-02	S/1			30 km	30 km		20%	10%		9°C	8°C					

Appendix 6 Mugaha Marsh Banding Station - Measures of Effort Fall 2002

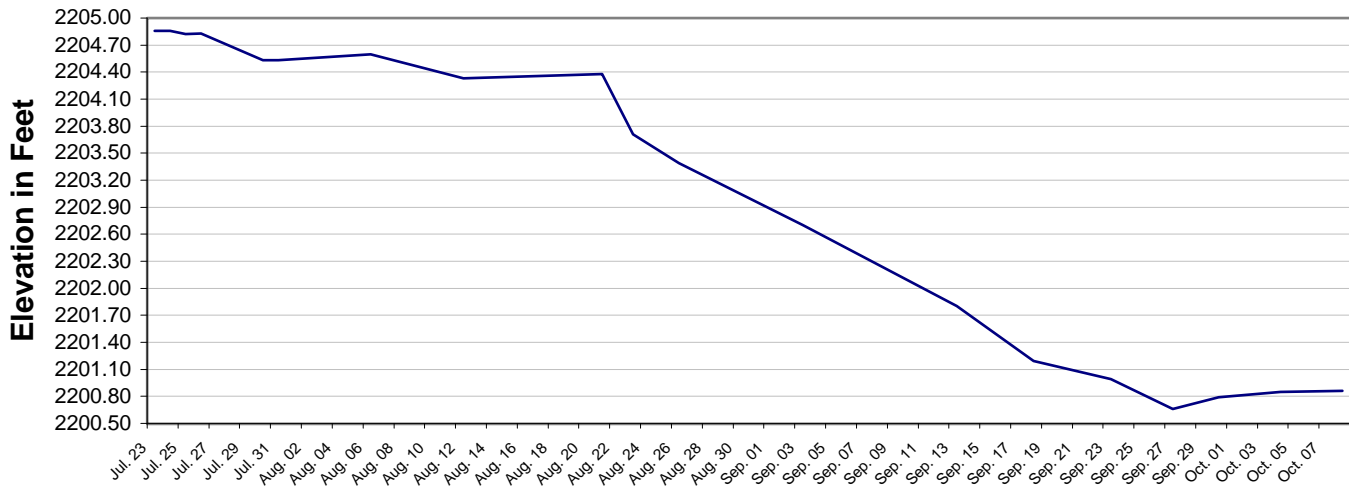
Date	Banded		Recaptured		# Nets open	# Total nethours	Census				# Observers				# Observed			
	# Individ	Species	# Individ	Species			# Individ	Species	code 1	hrs	code 2	hrs	code 3	hrs	code 4	hrs	Indiv	Species
23-Aug-02	35	11	5	3	12	72	75	19	4	13	1	3					62	15
24-Aug-02	42	14	6	4	12	72	163	30	3	11	1	2 1/2					117	23
25-Aug-02	38	13	3	1	12	70	102	31	3	10	1	3		1	3		120	29
26-Aug-02	33	11	9	4	12	72	188	37	3	10			1	2	1	2 1/2	70	21
27-Aug-02	39	11	8	4	13	72.5	110	29	3	11	1	3					73	23
28-Aug-02	37	13	8	5	13	78	107	24	6	18							192	25
29-Aug-02	90	18	19	10	13	78	134	25	5	15 1/2	1	2 1/2			1	2	133	33
30-Aug-02	49	16	6	4	13	78	149	32	5	13	2	5 1/2	1	1 1/2			89	23
31-Aug-02	10	6	1	1	13	13			4	8 1/2	1	1 1/2	1	1			73	19
1-Sep-02	162	20	9	6	13	78			3	1	1	3	1	3			144	28
2-Sep-02	43	14	12	8	13	39	116	24	3	7 1/2	2	3					30	14
3-Sep-02	82	15	17	9	13	78	126	20	3	11	1	3					487	32
census only 15 min on the 3rd																		
4-Sep-02	52	17	18	5	13	78	202	21	4	14							465	41
5-Sep-02	66	15	9	6	13	78	245	33	4	14			1	2 1/2			294	38
6-Sep-02	52	20	3	3	14	79	178	38	4	13			2	5 1/2			155	28
7-Sep-02	46	13	8	5	14	84	117	30	4	12	1	2	2	5			116	28
8-Sep-02	40	10	7	4	14	84	128	35	4	12 1/2			2	4 1/2			149	30
9-Sep-02	35	13	4	3	14	77	114	26	4	13							136	33
10-Sep-02	104	17	20	7	14	84	177	37	3	11			1	2 1/2			103	30
11-Sep-02	111	15	7	4	14	84	117	28	4	13 1/2	1	1 1/2					97	30
12-Sep-02	62	8	3	1	14	84			3	10 1/2			1	3			172	36
13-Sep-02	20	8	3	2	14	84	117	28	4	11	1	3	1	3			159	30
14-Sep-02	25	9	5	4	14	84	155	28	4	14			2	5 1/2			130	24
15-Sep-02	33	9	3	2	14	84	181	33	4	12 1/2			2	5			123	27
16-Sep-02	12	3	4	3	14	84	86	27	4	17							122	32
17-Sep-02	24	6	1	1	14	84	169	31	3	11 1/2							67	23
18-Sep-02	28	6	0	0	14	72.5	99	27	4	13							85	23
19-Sep-02	44	12	3	2	13	78	252	38	4	14 1/2	2	2 1/2	1	2 1/2			255	32
20-Sep-02	5	4	0	0	13	78	326	33	4	12	1	3					371	33
21-Sep-02	17	7	0	0	13	71	91	28	4	12 1/2	1	2 1/2					107	28
22-Sep-02	32	10	1	1	13	78	75	21	4	12	2	6					79	18

Appendix 6 Mugaha Marsh Banding Station - Measures of Effort Fall 2002

Date	Banded		Recaptured		# Nets open	# Total nethours	Census				# Observers				# Observed		
	# Individ	Species	# Individ	Species			# Individ	Species	code 1	hrs	code 2	hrs	code 3	hrs	code 4	hrs	Indiv
23-Aug-02		SE/2			30 km		90%			13°C	15°C						
24-Aug-02					30 km	30 km	30 km	30%	30%	30%	11°C	11°C	18°C				
25-Aug-02	SE/1	SE/1-2	S/1	30 km	30 km	30 km	30 km	90%	90%	20%	15°C	16°C	16°C				
26-Aug-02		S/1	W/1	30 km	30 km	30 km	30 km	20%	20%	30%	10°C	11°C	17°C				
27-Aug-02				30 km	30 km			60%	90%		12°C	14°C					
28-Aug-02	SW/2	SE/2-3	W/1	10 km			30 km	100%	100%	20%	15°C	16°C	16°C				light showers
29-Aug-02	S/1			5 km			30 km	100%	60%	0%	9°C	13°C	10°C				
30-Aug-02		1		20 km	20 km			60%	70%		7°C	9°C					
31-Aug-02	S/2		S/3	20 km			30 km	100%		20%	10°C		14°C				rain most of the day
1-Sep-02				30 km			30 km	90%		20%	10°C		9°C				showers around 15:00
2-Sep-02			S/1	30 km	20 km		30 km	90%	100%	70%	6°C	7°C	9°C				rain at noon, showers later
3-Sep-02		W/1	NE/2	30 km	30 km		30 km	70%	80%	80%	5°C	8°C	7°C				
4-Sep-02	NE/2			30 km	30 km		30 km	100%	100%	20%	6°C	6°C	6°C				
5-Sep-02		NW/1		30 km	30 km		30 km	40%	10%	0%	2°	4°C	6°C				
6-Sep-02				30 km				90%			0°C						
7-Sep-02	E/1	ESE/2-3	W/2	30 km	30 km		30 km	90%	100%	30%	8°C	6°C	1°C				
8-Sep-02	SW/2	SW/2		30 km	30 km			80%	90%		8°C	8°C					
9-Sep-02	S/2	S/3	SW/3	20 km			20 km	100%	100%	50%	7°C	5°C	9°C				light rain at noon
10-Sep-02	W/1			30 km	30 km			100%	100%		8°C	9°C					
11-Sep-02	SE/1	SE/1		5-10km	5-10km			100%	100%		7°C	7°C					
12-Sep-02	SE/1			20 km			30 km	100%		0%	7°C		6°C				
13-Sep-02			S/1	.5km	1 km		20 km	100%	100%	100%	5°C	6°C	10°C	fog	fog		light rain
14-Sep-02		SE/2-3		5-20km	5-20km		30 km	95%	50%	30%	9°C	10°C	16°C				thunder storm around 16:00
15-Sep-02			S/1	30 km	30 km			20%	20%	100%	8°C	7°C	10°C				rain
16-Sep-02	S/2		SW/1	30 km	30 km		30 km	50%	50%	20%	9°C	9°C	10°C				
17-Sep-02	S/1	S/2	S/1	30 km	30 km		30 km	40%	50%	50%	6°C	6°C	9°C				
18-Sep-02	S/3	S/3	SW/4	20 km	10km		2km	100%	100%	100%	7°C	8°C	6°C				drizzle rain
19-Sep-02	NW/2	SE/1	NW/2	20 km	20 km		30 km	100%	100%	70%	5°C	5°C	6°C				showers in afternoon
20-Sep-02				30 km	30 km		30 km	30%	70%	20%	-.5°C	2°C	2°C				
21-Sep-02	SE/1	E/1-2	S/1	10 km	10 km		5-10 km	100%	100%	100%	2°C	4°C	6°C				rain
22-Sep-02	NW/1	NW/1		20 km	20 km			80%	95%		5°C	6°C					

Appendix 7

Williston Reservoir Levels



Date	Feet
July 23, 2002	2204.86
July 24, 2002	2204.86
July 25, 2002	2204.82
July 26, 2002	2204.83
July 30, 2002	2204.53
July 31, 2002	2204.53
August 06, 2002	2204.60
August 12, 2002	2204.33
August 21, 2002	2204.38
August 23, 2002	2203.71
August 26, 2002	2203.39
September 03, 2002	2202.70
September 13, 2002	2201.80
September 18, 2002	2201.19
September 23, 2002	2200.99
September 27, 2002	2200.66
September 30, 2002	2200.79
October 04, 2002	2200.85
October 08, 2002	2200.86

Note: Stopped spilling July 29

Appendix 8 Species Banded in Mackenzie (53 Omineca Crescent)									
date	time trap	Species Banded							
	was open	Pine Siskin	Common Redpoll	Dark-eyed Junco	Gray-crowned Rosy		Evening Grosbeak	Purple Finch	Gambel's White-crowned
		PISI	CORE	UDEJ/ORJU	Finch	GCRF	EVGR	PUFI	Sparrow GWCS
Apr 24/02	4 hrs	7	3	1					
Apr 25/02	6hrs	4	10						
Apr 26/02	4hrs	1	8						
Apr 29/02	6 hrs. 30 min	7	2						2
May 2/02	2 hrs	7		1					8
May 3/02	5 hrs 45 min	12	1	3					6
May 7/02	2hrs 30 min					52			7
May 8/02	1 hr 15 min	6				2			1
May 9/02	1 hr. 25 min	30							
May 10/02	6 hrs 20 min	3					1	9	15
May 11/02	5 hrs 15 min	8						20	12
May12/02	2 hrs 35 min	1					2	2	15
May 13/02	7 hrs							13	9
May15/02	7 hrs 20 min						6	37	12
May18/02	30 min	3							
May 19/02	2 hrs 30 min	3					2	3	
May 27/02	2 hrs 30 min	4						3	
Totals	67 hrs 25 min	96	24	5		54	11	87	87

Combined total of birds was 364 for a capture rate of 5.39 birds per hour the trap was operated

Appendix 9: Christmas Bird Count results

CW = Count week; 3 days before and 3 days after count day

Count Year	1982	1994	1995	1996	1997	1998	1999	2000	2001	
Month		Dec	Dec	Jan	Jan 3	Dec 20	Dec 19	Dec 17	Dec 29	
Temp. in °F	40°F	18°F	9°F	18°F	-4°F	-0.4°F	14°F	14°F	-0.4°F	
Temp. in °C	4°C	-8°C	-13°C	-8°C	-20°C	-18°C	-10°C	-10°C	-18°C	
Species										Total
Mallard					2					2
Green-winged Teal					2					2
Golden Eagle					1					1
Bald Eagle		1				1CW		2	3	6
Spruce Grouse		1CW			1CW					0
Willow Ptarmigan						7				7
White-tailed Ptarmigan			8			CW				8
Ruffed Grouse		1CW		2	3	2		CW	1	8
Northern Pygmy Owl				1						1
Great Gray Owl			1					CW		1
Downy Woodpecker		6	1	2	3	7	5	4	5	33
Hairy Woodpecker	1	12	6	6	7	4	3	3	3	45
Three-toed Woodpecker		7	5	1	1			2	1	17
Black-backed Woodpecker				1				2		3
Gray Jay	6	10	22	5	4	9	2	10	4	72
Steller's Jay	8	95	94	41	74	68	21	60	44	505
Black-billed Magpie		1	2		1CW	8	2	4	1	18
American Crow	3		4		6	8	3		6	30
Common Raven	72	273	337	227	399	212	192	366	240	2318
Black-capped Chickadee	31	101	102	82	63	103	71	61	63	677
Mountain Chickadee	9		1						3	13
Boreal Chickadee									1	1
Red-breasted Nuthatch	28	8	51	8	21	5	9	7	45	182
Winter Wren				3						3
American Dipper	1	2	1	1	1	4		1		11
Golden-crowned Kinglet		2			2					4
Northern Shrike			2	1					1	4
Bohemian Waxwing						5	16			21
European Starling	6		9		27	2	10	10	15	79
White-throated Sparrow			1							1
Unidentified Dark-eyed Junco		1	6	13	1	3	1		2	27
Slate-colored Junco							1			1
Snow Bunting			12	CW		39				51
Red-winged Blackbird						2CW				0
Rusty Blackbird							1			1
Pine Grosbeak	24	49	311	60	82	115	29	24	107	801
Purple Finch						1				1
White-winged Crossbill			29		7				6	42
Red Crossbill					6					6
Hoary Redpoll						4				4
Common Redpoll							384	6	466	856
Pine Siskin	9					74			7	90
Evening Grosbeaks		142	159	4	484	27	680	81	447	2024
House Sparrow	35	392	498	42	64	164	339	8	20	1562
Chichadee species									4	4
Grosbeak species									6	6
Hawk species			1CW							0
Redpoll Species	175	108	859	319	164	929				2554
Woodpecker species							2			2
Total Individuals	408	1210	2521	819	1424	1800	1771	651	1501	12105
Total Species	14	17	24	19	23	23	17	17	23	43