Mackenzie Nature

Observatory

2000

Annual Report

on our

Migration Monitoring,

Other Birding Projects

and our

Fish & Wildlife Projects

Mackenzie Nature Observatory

Executive Committee: President - Ryan Bichon
Vice President - Christy Butt
Secretary-Treasurer - Vi Lambie
Directors: David Lambie
Cheryl Freeman
Cheryl Omand
Donna Thornton
Leslie Yaremko

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.*

Mackenzie Nature Observatory
P.O. Box 1598
Mackenzie, BC
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Our New Banding Lab at Mugaha Marsh
photo by John D. Lambie

Acknowledgements

Thanks to everyone who helped with this report - Shawna Pelech (CWS -Delta), Jukka Jantunen, Amélie Rousseau, Vi Lambie, David Lambie, John D. Lambie, Cheryl Omand, Donna Thornton, Leslie Yaremko, and Ryan Bichon.

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Mackenzie Nature Observatory's Birding Projects in 2000
Volunteers / Project Coordinators / Sponsors

Coordinators for the 1999 Christmas Bird Count: *Cheryl Omand, Diane Gobeil*
Volunteers for our 1999 Christmas Bird Count:
Ryan Bichon; Janet & Bob Groseth; David, Vi, & John Lambie Jr.; Bob & Cheryl Omand; Sharleen Pitkiethly; Jim & Cyntha Tuck; Cheryl Freeman; Liz Munroe; Vida Tattrie, Wally Evers, and Judy & Dieter Dietrich.

BC Coordinator for Owl Surveys: *Dick Cannings*
Volunteers for Owl Surveys: *Linnea Cross-Tallman & Alf Tallman, John, Vi & David Lambie, Vida Tattrie & Rae Yeo, and Cynthia & Jim Tuck*

Volunteers for Mackenzie's Project Feeder Watch: *Judy & Dieter Dittrich, Cheryl Freeman, Janet & Bob Groseth, John, Vi & David Lambie, and Vida Tattrie.*

Migration Monitoring
Transect Coordinators: *Cheryl Omand, Vi Lambie*
Volunteers for transects: *Ryan Bichon, Linnea Cross-Tallman, Cheryl Freeman, Sandra Kinsey, David Lambie, John A. Lambie, John D. Lambie, Vi Lambie, Laird Law, Robin McKinley, Cheryl Omand, Bob Omand, Anna Rynsburger, Cynthia Tuck, Jim Tuck, Jill Werk, and Leslie Yaremko.*
.

Banding Lab Coordinator*: John D. Lambie*
Volunteers who helped with Banding Lab*: Paul Becker, Ryan Bichon, Linnea Cross-Tallman, Dieter Dittrich, Bob Groseth, Dirk Krop, David Lambie, John A. Lambie, John D. Lambie, Vi Lambie, Cheryl Omand, Chris Strong, Donna Thornton, Cynthia Tuck, and Jim Tuck*

Bander in Charge: *Jukka Jantunen*

Long Term Volunteers at Banding Station: *Amélie Rousseau, Sandra Kinsey, and Laird Law*

Banding Station Coordinators: *Vi Lambie and Cheryl Freeman*
Banding Station Coordinator for Data Entry: *David Lambie*
Volunteers at the Banding Station: *Ken Barwise, Linnea Cross-Tallman, Cheryl Freeman, Martina Frey, Gordon Haley, James Haley, Diana Hogan, Sandra Kinsey, David Lambie, John A. Lambie, John D. Lambie, Vi Lambie, Laird Law, Rachel Morley, Cheryl Omand, Bob Omand, Amélie Rousseau, Donna Thornton, and Jim Tuck*

Bander/Trainer: Ken Burton
Banding Clinic Participants*: Linnea Cross-Tallman, Martina Frey, Diana Hogan, Jukka Jantunen, Sandra Kinsey, David Lambie, Vi Lambie, Laird Law, Amélie Rousseau, and Donna Thornton.*

Sponsors of the Migration Monitoring Program in 2000: *BC Hydro Peace/Williston Fish & Wildlife Compensation Program, the James L. Baillie Memorial Fund (Bird Studies Canada), the Government of Canada Millennium Partnership Fund (Canadian Migration Monitoring Program), Canadian Wildlife Foundation,and Canadian Wildlife Service.*

Individuals who made cash donations to the Migration Monitoring Program: *Mr. Laird Law, Mr. Alan Simcoe, Ms. Donna Thornton, Mr. Ken Burton, Dr. David Hussell, and Ms. Wendy Easton*

Other Supporters of the Migration Monitoring Program in 2000: *Slocan Forest Products, Mr. Laird Law, Mackenzie Home Centre, Donohue Forest Products, Mr. Bruce Borrowman, BC Ministry of Forests, District of Mackenzie, BC Rail, and Macleods True Value*

Migration Monitoring in 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. 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, 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. For a complete list of our volunteers in 2000 refer to the previous page.

Canadian Wildlife Service (CWS) Contacts for the Project:
Rhonda Millikin worked with us on the program until the fall of 1998 when she took a leave to complete her Ph. D. at Kingston Royal Military College. Since then we worked with Wendy Easton until August of 2000 when she left on maternity leave. Now Shawna Pelech is our contact. All these changes in such a short period of time has meant local volunteers have had to assume more of the work load.

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 all the birds we have banded in the Mackenzie Region from 1994 to 2000.

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

BC Programs Director for Bird Studies Canada:
Richard Cannings is the Director of BC Programs for Bird Studies Canada.

BC Representatives on the Bird Studies Canada Board:
Fred Cooke who works with the Canadian Wildlife Service and Simon Fraser University and George Curlow who is a director of Wildbird Trust of BC are the two representatives from BC

Mackenzie Nature Observatory Bird Committee:
Vi Lambie, David Lambie, Ryan Bichon, Cheryl Freeman, Cheryl Omand, and Linnea Cross-Tallman

2000 in Review by Vi Lambie

Looking back at 2000 I will try to touch on some of the highlights of the year.

Sharp-shinned Hawk Recovery

On 8 October 1999 a Sharp shinned Hawk was captured in a mistnet at Boise Idaho and then released to continue its migration. It was a hatch year Sharp-shinned Hawk that we had banded on 13 September 1999 at Mugaha.

Lincoln Sparrow Recovery

A Banded Lincoln's Sparrow hit the window of the Columbian Connection Coffee Shop in the Hart Shopping Centre in Prince George on 28 April 2000 and the bird was turned in to Beryl Nesbit by Arnold Laroque. Beryl in turn gave it to Doug Wilson who in turn contacted us thinking it would be one of ours. We checked our records and when it wasn't one of ours we contacted the Banding Office. The bird had been banded by Mrs. Burk of Troy, Mt and had been banded approx. 11 S. of Bernadino, Arizona.

BC's First Nocturnal Owl Survey

This spring our members did four survey routes as part of BC's Nocturnal Owl Survey which was coordinated by Dick Cannings, the Director of Bird Studies Canada's Programs in BC. Thanks to Jim Tuck for preparing the maps for all our routes. Thanks to Dick Cannings for sending me the information on the results of everyone's first survey this spring. They were as follows: Two Boreal Owls and one Great Horned Owl were heard on the Heather Lake route, one Northern Saw-whet Owl was heard on the Misinchinka Route and one Northern Saw-whet Owl was heard on the Mackenzie route, with none being heard on the Pack route the first time out. On later surveys a Northern Hawk Owl, a Boreal Owl and a Northern Saw-whet Owl were heard on the Pack route. On the second run of the Heather Lake route no owls were heard, but on the 3rd attempt 3 Barred Owls and 1 Northern Saw-whet Owl were heard.

Spring Transects

We started to prepare for the spring transects by working on some tapes to help our volunteers with bird song identification. We appreciate Cornell Lab for Ornithology allowing us to use their Tanager training tape and the Birds in Forested Landscapes (thrushes & hawks) training tapes to help our volunteers prepare for spring transects. These tapes are great tapes that deal with a specific group of birds. Thanks to David Lambie for putting together a tape of the flycatchers we get. David and I started to work on a tape of our local birds, but we still have some work to do on it before it will be ready. Jim Tuck organized a training session that we held at Christy Butt's - It was a great opportunity to share tips on bird ID - Thanks Jim and Christy.

Thanks to the Tucks and Lambies for doing some much needed maintenance on our transects. The wet snow that we had early last fall bent many trees over and in some cases broke them off.

We started spring transects on the last weekend of April and did them until the first weekend of June. Seventeen volunteers put in 115 field hours doing our spring and fall transects. We managed to get nearly complete coverage on the weekends at all three sites in the spring. In the fall we simply did not have the man power to do all the transects so we concentrated our efforts on Mugaha and Chichouyenily.

We desperately need to take time to make a tape of the birds calls if we are to continue doing fall transects as very often it is only the calls that we hear, making it difficult to identify the birds.

Baillie Birdathon

Thanks to those that took part in the Baillie Birdathon (Linnea Cross-Tallman, Martina Frey, Vi & David Lambie) to help us raise funds for our birding projects and thanks to all who gave us donations.

Banding Lab

This year Bird Studies Canada applied for a grant from the Millennium Partnership Fund to help the stations of the Canadian Migration Monitoring Network (CMMN). As one of the full member stations of the CMMN we were eligible for a $5000 grant. With our other funding needs covered by donations and grants we decided we could try to build a banding lab to replace our wall tent. I don't think we realized the challenge we were taking on!

A very special thanks to John D. Lambie for the time and commitment he put in to getting the lab ready before we started our fall banding. He spent a good portion of his holidays at the marsh working on the lab. Thanks to all who helped us - Jim Tuck, John A. Lambie, David Lambie, Bob Groseth, Paul Becker, Ryan Bichon, Dieter Dittrich, Dirk Krop, Chris Strong, Donna Thornton, Linnea Cross-Tallman, and Cheryl Omand.

A big thanks to Slocan Forest Products for donating

used plywood, windows, a door, and a desk for the lab. Thanks to Donohue Forest Products (now Abitibi) and Mackenzie Home Centre for giving us a discount on the building materials. Thanks to BC Rail for donating the used railway ties for the foundation.

John Lambie, Bob Groseth and Paul Becker working on the banding lab

Working on the lab had its bonuses. We always had birds singing as we worked - different ones at different times of the day. Tennessee Warbler, Swainson's Thrush, Yellow Warbler, Song Sparrow, Warbling Vireo, Least Flycatcher, Dark-eyed Junco, American Robin, Western Tanager, and Purple Finch to name a few. Then we had a male Ruffed Grouse that would drum in response to the sound of a hammer! In addition to the birds we had the moose to watch in the marsh - a couple cows with calves, one with one calf, the other with twins; a large bull and some others. We saw up to 5 moose at one time in the marsh.

We were able to give the walls and floor of the lab a coat of paint before the season started, but the counters didn't get made so we just used the banding bench we had in the tent. John completed the deck and stairs for the second entrance during the first days of banding - he would work on that stopping to help with the net rounds if things got busy.

Visit by Dick Cannings - Bird Studies Canada's Program Coordinator for BC

Dick called in to see us on July 7 when he was up in our area. We discussed the BC Programs including the Migration Monitoring stations in BC. He was hopeful that Vaseux Lake would get up and running this fall, but it didn't happen. He went out to Mugaha Marsh to see the location of our station. Hopefully when he visits next time the station will be operating.

2000 Banding Season

This year we were fortunate enough to have a couple come to run our station. Jukka Jantunen to be our bander in charge and Amélie Rousseau to be our long term volunteer for the full season. Jukka had his Master banding permit in his home country of Finland and he had banded at Long Point in Canada as well as at Mackenzie as a long term volunteer in 1998. For our project Jukka had a subpermit under the CWS Delta's permit. He also had a BC permit to cover birds not covered by the federal permit. Amélie had worked with Dr. David Hussell on his Tree Swallow project at Long Point plus she had been a long term volunteer here in 1998.

Jukka and Amélie arrived on Thursday, the 20th of July so they would have time for a day of birding before the season started. On Saturday local volunteers helped Jukka and Amélie to set up the mistnets and check to see that we had everything that we needed in the lab. With it being our first year using the lab we knew there may be things we forgot about.

Our other long term volunteers, Laird Law and Sandra Kinsey, from Prince George arrived around noon on Saturday. Laird and Sandra have volunteered at our station for two to three weeks each year since 1995.

Our first day of banding was July 23. It was a good day with 117 birds banded . It looked like we were to be in for another busy year, but that was not to be - a 50 bird day was to be a good day. The lower capture rate may have been partially due to the birds having to go further out into the marsh to drink. There had always been water near some of our netlanes and this had attracted the birds, but this year it was dry by the netlanes except for the end of the season. Another problem was the high vegetation and the birds flying over rather than into the mistnets. In spite of us

having removed many of the larger poplar trees last season and pruning some of the willows and alders the vegetation was still above net height this fall. We had miscalculated how much a tree can grow in one season! Williston Reservoir has lower water levels again this year and as a result water has not been backed up into the marsh since 1997 so there hasn't been the flooding needed to keep the vegetation in check.

This proved to be a very strange year; in the paragraph above I complained about it being dry by the nets, but by the weather we had you would never have thought this could have been the case as it seemed to rain far more often than other seasons. I do know this year we lost more days to wet weather than we ever did in the past. A couple days we only worked a half an hour before the rain became too hard to leave nets open! Some days we didn't even get them opened.

A hatch year male American Redstart
- photo by John D. Lambie

This year brought several changes in the numbers of birds we captured. Normally the race for the number one warbler of the season has been between American Redstarts and Northern Waterthrushes. Both American Redstart and Northern Waterthrush numbers fell and Wilson Warbler numbers increased. The American Redstarts remained #1 in standard banding, but if we included non-standard banding the Wilson Warblers would have been # 1.

Licence of Occupation

This summer our licence of occupation for our banding site was completed. It is good for ten years starting in August of 1999. We would like to thank Mari Wood for helping us with getting this process started. Also thanks to Grant Parker from the District of Mackenzie who came out to help us determine which netlanes were within the municipality. We needed the licence of occupation to put up the building for getting hydro and for our banding lab.

Isotope Project - a project supported by the Canadian Migration Monitoring Network (CMMN)

The CMMN was formed in part to document population trends in a target group of northern nesting birds that are poorly monitored by other programs . As regional populations of a species do not always decline in parallel it is important to know what populations are being monitored by each station.

This fall we were asked to take part in a project designed to determine the breeding origin of some of our migrants based on the stable isotope ratios found in feathers. Deuterium (a naturally occurring stable isotope of hydrogen) is found in differing proportions in rainfall across North American, and isotope ratios found in rainwater in the growing seasons are reflected in food webs and in feathers grown by birds during the breeding season. The principal investigators for this project are Erica Dunn, Keith Hobson and Len Wassenaar of Environment Canada.

This project is supported by the Canadian Migration Monitoring Network and three stations were invited to participate, Atlantic Bird Observatory in Nova Scotia, Delta Marsh in Manitoba and us. The five species that we were collecting samples from were American Redstarts, Blackpoll Warblers, Myrtle Warblers, Northern Waterthrushes, and Wilson's Warblers. The same species are being sampled from Ontario stations by David Hussell (Ontario Ministry of Natural Resources) and Keith Hobson and Len Wassenaar of Environment Canada.

Blackpoll warbler - photo taken with club camera

Two tail feathers, the 4th rectrice on each side, were collected from hatch year birds of the different species. We collected the required number of samples of American Redstarts and Wilson's Warblers and were only 3 short of having the 30 samples of Northern Waterthrush feathers. We did not get sufficient numbers of Blackpoll or Myrtle Warblers to get the full number of samples. We have sent the feathers to Erica Dunn and look forward to seeing what the analysis of the feathers will tell us.

MacGillivray's Warbler/Mourning Warbler Project (MGWA/MOWA)

When John and I attended the Canadian Migration Monitoring Conference at Delta Marsh in September of 1999 we met Doug Collister of Inglewood Bird Observatory in Calgary. Doug Collister and Grahame Booth had designed a project to come up with more information on MacGillivray's and Mourning Warblers as they may be getting hybrids at their station. They asked us if we would help. They provided a data sheet for collecting information on each MGWA we caught plus we were asked to take a couple photos of each. Thanks to Friends of the Environment Foundation we had a new camera to help with this project. The lens didn't arrive right away so our bander and volunteers helped us out for the first few days by taking the required photos. We hope the information we collected will help Doug & Grahame with their project.

Bander's Training Clinic

This year Wendy Easton and Shawna Pelech of CWS arranged for Ken Burton, a qualified bander trainer to visit each of the BC banding stations. We tried to choose a time when most of our volunteers would be able to attend, but peoples schedules and holidays did not work out with Ken's schedule. Ken was in Mackenzie from August 19 - 21 and for those of us that were able to attend it proved to be a great learning experience. Ken arrived on the 19th and that evening and the afternoon of the 20th we met at the Ministry of Forests to go over Pyle and to discuss moult patterns. On the morning of the 20th we ran the banding station just like any other day only Ken was able to explain some of the criteria we had discussed in the classroom using the birds we were banding.

Ken Burton, Jukka Jantunen and Amélie Rousseau on the last day of the clinic - photo by David Lambie

Monday morning the weather did not cooperate and we were unable to open the nets because of rain. We were prepared and instead of working with live birds

we put to use the road and window kills I have had in my freezer. Several were of the same species which really proved to be helpful when you were learning about aging and sexing a given species. With the specimens we were allowed more time to learn except for the final group of birds which Ken encouraged us to treat as if we were banding live birds. Thanks to Ken for running the training sessions and Thanks to Wendy and Shawna for arranging for him to visit our station. The following is a list of individuals present for one or more of the training sessions: Amélie Rousseau, Jukka Jantunen, Sandra Kinsey, Laird Law, David Lambie, Vi Lambie, Diana Hogan, Donna Thornton, Linnea Cross-Tallman and Martina Frey.

Those of us who were able to volunteer at the station this year were lucky as Jukka was experienced in using feather wear to age and sex birds and he was able to reinforce what Ken had taught us

UNBC Students Visit Station

Roy Rae, Senior Lab Instructor for the Forestry Program at the University of Northern British Columbia in Prince George, brought six students (FSTY 333 Forestry Field Camp) up to our station on 31 August. It turned out to be a relatively good day - not large numbers of birds, but a good variety which is a good combination when you have visitors as it provides a greater opportunity to explain things to them. We enjoyed having them visit and we hope they enjoyed it as well.

Prince George Naturalists Club Visits Station

Once again this year Sandra Kinsey organized a visit by members of the Prince George Naturalists. We really appreciate you doing this Sandra!

Local Tours of Station

This year Cheryl Omand tried to coordinate some tours of the station - Her write up is below

"Guided Tours at Mugaha Banding Station
- by Cheryl Omand

The banding station has always had a few tourists stopping by each season. This year we hoped to have something a little more organized. Flyers were dropped off at the Chamber of Commerce office for use at the tourist imformation booth, at the local radio station , the newspaper and at the rec center, plus various bulletin boards around town. This was done late in the banding season and response to this would have to be considered poor. Kay Fries, from the Mackenzie Times paper came on a tour and wrote up an excellant article on the banding station and its history. Suggestions for the upcoming year are to start the tours earlier with advertising before the season starts."

Although many visitors didn't come the days Cheryl set for the tours her posters no doubt helped send the tourists our way, some from as far away as Germany.

Volunteers

Martina Frey, one of our new volunteers in 2000
photo by David Lambie

In 2000 we had seventeen volunteers assist with spring and fall transects putting in 115 field hours doing transects. This does not include their travel time nor does it include time spent doing maintenance of the transects. Another 540+ hours were put in by volunteers building the banding lab. Nineteen volunteers put in a combined total of 1073 volunteer hrs and 109 volunteer days at the banding

left to right back row David Lambie, Martina Frey, Vi Lambie, Jukka Jantunen, John Lambie, front row Linnea Cross-Tallman, Mrs. Cross, Amélie Rousseau - photo by Mr. Cross

University of Northern BC Students and Instructor Visit Banding Station - photo by John D. Lambie

station. Over 70 hrs were put in mending the nets from 1999 for the 2000 season. Thanks to Friends of the Environment Foundation we will have new nets for 2001, but we still plan to mend some of the better old ones to have as spares. Volunteers wash the bird bags, take out water to the station, do the vegetation management - basically looking after all aspect of the program - we only hire the bander in charge and someone to enter the transect data. The hours volunteers put in vary greatly, but people commit what time they can and all help is greatly appreciated.

Sponsors

Our sponsors are so very important to our program. Funding for all aspects of the project for equipment (eg: new nets, camera, lens, bird guides, pruning shears), supplies (eg. data forms, flagging ribbon), perdiems, bander's contract, etc. are all part of keeping the project going. Below I have listed the contributors to our project, the amount we have received with a summary of how the funds have been used. I have also listed gifts in kind and other types of support we received. In Appendix 2 you will find a list of all our financial supporters since we started in 1994.

BC Hydro Peace/Williston Fish & Wildlife Compensation Program

We thank Mari Wood and Fraser Corbould for continuing to support our program and for including it in their budget. They continued to be our main sponsor with their contribution of $6000 to the program this year. Thanks to Mari's help we now have a licence of occupation for our banding site - she started the process for us last year and it was completed this year. To date the funds we received from the Compensation Program have been used to help pay the bander's contract, to pay insurance on our building and equipment, to obtain permits to haul the trailers we use for accommodations, and to pay hydro.

James L. Baillie Memorial Fund for Bird Research and Preservation

We received a grant of $2000 from them to help pay our bander's contract. We have received $1600 and we will receive the remainder when we submit the progress report and data for the 2000 season.

Canadian Wildlife Foundation

They gave us a grant for $3500. These funds have been used to pay the perdiems for our long term volunteers, a portion of the bander's contract, and to purchase some equipment and supplies for the station.

Friends of the Environment Foundation

We received a grant of $4000 from the Canada Trust Community Fund, Prince George Chapter of the Friends of the Environment Foundation. The funds have been used to purchase equipment and supplies for the station and to pay the travel allowance for our bander.

Canadian Wildlife Service

We received $2000 from the Canadian Wildlife Service in March to help offset the money that we used out of our reserve fund in 1999 and to pay other expenses relating to the 1999 season such as the computerization of the 1999 transect data. We have a contract with CWS for the 2000 season, but to date we haven't received any of the funding. Their funds will be used to pay for entering the 2000 transect data and other costs relating to the program.

The Canadian Millennium Partnership Fund

As one of the full member stations of the Canadian Migration Monitoring Network we were eligible for a grant of $5000. We decided to build a banding lab with this grant. We have received $3000 and will receive two addition installments of the grant.

Donations from Individuals

We received a combined total of $400 in donations from individuals - Mr. Laird Law, Mr. Alan Simcoe, Dr. David Hussell, Ms. Wendy Easton, Mr. Ken Burton, and Ms. Donna Thornton .

Mr. Bruce Borrowman

Bruce donated a used refrigerator to our banding station. It will be a real asset as the fridges in the trailers are so tiny.

Mr. Laird Law

Laird donated a used bicycle to the banding station. It really was appreciated on those raining days when you had to get to the far netlanes in a hurry!

BC Ministry of Forests - Mackenzie District

They donated the use of their small travel trailer for our long term volunteer's accommodations. We also want to say thanks for them allowing us to store our trailer in the Ministry of Forests compound.

Slocan Forest Products

Slocan Forest Products donated used plywood, windows, a door, and a desk for our new banding lab. Their contribution of a used cell phone enabled us to meet the workers compensation board safety requirements.

Donohue Forest Products (now Abitibi)
Donohue gave us a special price on the lumber we needed for our banding lab.

Mackenzie Home Centre
They gave us a discount on the price we paid for our building supplies.

The above three contributions made it possible for us to stay on budget for our banding lab.

MacLeods True Value
Each year MacLeods True Value has given us a special rate for our photocopying. We have to do lots so this is really appreciated.

Thanks to all our Sponsors and Volunteers! Without your support the program couldn't continue.

Thanks to Hunters

In September we posted a notice "No Hunting Please - Workers in Area until September 26" and we would like to thank all the hunters for respecting our signs - it made it much nicer for our banders and volunteers.

Returns

This year we had 38 returns - birds banded previous years and recaptured this year. They were:
1996: 1 American Redstart, 1 Yellow Warbler, and 1 Slate-colored Junco.
1997: 2 American Redstarts, 1 Northern Waterthrush, 1 Yellow Warbler, 1 Black-capped Chickadee, and 1 Song Sparrow
1998: 4 American Redstarts, 2 Northern Waterthrushes, 2 Yellow Warblers, 1 Alder Flycatcher, 1 Least Flycatcher, 1 Black-capped Chickadee, and 1 Flicker Intergrade.
1999: 5 American Redstarts, 2 Orange-ccrowned Warblers, 3 Yellow Warblers, 1 Audubon's Warbler, 1 Least Flycatcher, 1 Warbling Vireo, 1 Blue-headed Vireo, and 3 Oregon Juncos.
A summary of the species, age and sex of each return plus the times each return has been captured along with the initials of who banded/processed them is given in Appendix 3.

This Flicker Intergrade was intially banded on 28 July 1998 as an after hatch year male and recaptured on 20 August 2000. It was rather a coincidence as I had shown Ken Burton the photos of the Flicker the day before and he was the one who processed it when we captured it. - photo taken by Sandra Kinsey using club camera

Foreign Recapture

Our first ever capture of a bird banded elsewhere was a hatch year male Wilson's Warbler captured on 10 September. It had been banded on 14 August 2000 at Mother Goose Lake on the Alaskan Peninsula about 400 miles SW of Anchorage (57 1841 N, 157 2657 W). Just a few days previously Jukka had noted that some of our Wilson's Warblers had an orange tinge to the feathers above the bill which fit the description in Pyle of the coastal race.
Just recently we had an email from David Hussell told us that the banding atlas shows no previous long-distance encounters of this species in Western Canada.

Jukka Jantunen's (our Bander in Charge) Report for the Fall 2000 Banding Season

After every season the ultimate question is; how was the season? For the 2000 fall season there are many different but equally correct answers. One could say it was slow and boring due the relatively low catch. On the other hand it was very interesting with a few new species captured, a good showing of some usually uncommon birds and, oh yes, the ever present challenge, learning experience and satisfaction after every single Empidonax flycatcher. One thing everybody agrees on is that it was a wet season!

The second question is what did we do? Two months is a long time to do the same thing day after day, some say. Fortunately those people have no idea of the diversity of every aspects of bird banding. Every day is different, starting with weather conditions which can affect the opening of the nets. Some mornings it was dry and nice and it was possible to just to walk through the netlanes and open all the nets in a few minutes, where as some other mornings some of the nets were frozen solid and it took up to two hours to open them! Most of the time this season, however, we played first whether-to-open-or-not-, and then open-and-close-game because of the rain. Also the pace of the catch varied. Sometimes we caught most of our birds early morning and then nothing. A few days were pleasantly busy all morning long and there were, how else, those few chaotic closing rounds with nets full of Pine Siskins (up to 50 in nets 3&4 at worst!). Finally, every single bird is a different case with varying difficulty of extraction (2 seconds to 5 minutes) and very different aging and sexing due to the differences between the species as well as variation within the species.

This year we spent lots of time studying species identification, sexing and especially aging by both plumage and skull. I can proudly say that most of our volunteers were eager to learn. Skulling was an especially difficult and demanding task, but most learned it well. Feather wear and shape, molt and plumage coloration were all much practised and reasonably well learned as well. Perhaps our greatest achievement was with the Empidonax flycatchers, with which we advanced on the level where we were able to identify every single individual to the species by visible plumage-characters alone, and there was no need to measure them for that purpose any longer. We did, however, practise some caution and measured a few birds every now and then just to make sure that we were still on the right track.

On the weekend Aug 20-21st we were fortunate to enjoy Ken Burton's banding clinic. Ken came all the way from sunny California to teach BC banders (he stopped at two other banding stations as well) about aging and sexing by plumage, and especially how to use and interpret "The bander's bible" (Peter Pyle's Identification Guide to North American Birds). We spent an evening and an afternoon in the classroom, banded one morning and studied Vi's bird skins the other morning. All this, especially the Pyle lectures, were, to say the least, very demanding but at the same time incredibly educating. I believe that all the participants can now use the guide much more effectively than before.

Weather

This fall's weather seemed to play a very important part in this year's banding results. As was mentionned in the introduction, we had a very rainy fall. In fact, many people said that it had been the rainiest summer/fall they had ever seen in Mackenzie. However, the weather for the first 2 weeks was very nice. The temperature was quite high during the day (over 25C) and there were very few cloudy periods. And then the rain began! There were at least 4 mornings when we could not open the nets at all because of constant rain. And by looking at our banding results we can see how this bad weather affected our catch (see banding). On the night of August 31st, a cold spell hit the region. The high altitudes of the mountains received a fair amount of snow, and the temperature at the banding station was around –1C. A few days later, another cold spell brought some more snow to the mountain tops. In general, the weather in the rest of September was quite nice but it became fairly cold during the last

week of banding (the nets were frozen on a few mornings).

Banding

As said earlier the banding was slow this fall, and slow to the point that the season total 2239 was the lowest of the fall seasons 1997-2000, which have comparable length of banding (from late July to late September). An additional 170 birds banded in non standard banding (NSB) boosted the numbers up a little, but there was more effort in NSB this year than previously. The species total 65 was the second lowest among the four comparable years.

The season started nicely with 117 birds banded on the very first morning. After that the numbers went down to around 30 birds/morning for the first week and then it got even worse. There were a few busier days but in general it was very slow until Aug 23rd when we banded 127 birds, which was also the highest number for the whole season. And with it's Pine Siskins, it was a nice reminder of the fall 1998! That day was a turning point and for almost the rest of the season banding was decent with 30-60 birds/typical morning and we could have easily built up nice numbers if the rain just had left us alone! The beginning of September was very good and it looked like we had a good chance of reaching the 2500 mark, in spite of the slow first half of the season. We had two more days with more than a hundred birds (Sep 1st 117 and 10th 114) and 98 birds on the 3rd, but the last week was slow again, and cold, seemingly anticipating the end of the banding season.

As one can expect as a result of a low banding total, many species had their poorest showing in the station's history. This was especially noticeable with the stations "corner stone species," species which usually are consistently the most numerous ones, like many warblers. An amazing eight species of the stations regular 13 species of warblers, together with an additional six other species (altogether 14 species), had an all time low! Just to show the extreme uniqueness of the season, 11 species, two of which were warblers and four sparrows, recorded all time highs! Furthermore Alder Flycatcher (99), Orange-crowned Warbler (120) and Lincoln's Sparrow (51) all had their second best showing. The record highs and lows are briefly summarized below.

Record high	No. banded	Record low	No. banded
Downy Woodpecker	18	Northern Saw-whet Owl	1
Hammond's Flycatcher	67	Least Flycatcher	77
Black-capped Chickadee	101	Dusky Flycatcher	17
Boreal Chickadee	6	Warbling Vireo	49
Gray-cheeked Thrush	4	Tennesee Warbler	2
Townsend's Warbler	20	Yellow Warbler	64
Wilson's Warbler	167	Magnolia Warbler	30
Chipping Sparrow	49	Yellow-rumped Warbler	38
Fox Sparrow	11	American Redstart	169
Song Sparrow	26	Northern Waterthrush	65
White-crowned Sparrow	56	MacGillivray's Warbler	17
		Common Yellowthroat	46
		Western Tanager	6
		White-throated Sparrow	4

One can only speculate about the main reasons for a good or a poor showing of a given species, and these can include things like breeding success, local and general weather conditions, and local vegetation and water level. Whatever the reasons are, it is worth remembering that there is so much general fluctuation in the annual numbers of passerines that it can easily overshadow the results of a given single season at a single banding station , and therefore all of the guess work below should be considered as just that. In the case of Mugaha Marsh I believe that the main factor behind the good season for sparrows and poor one for many warblers was the low water level, which kept the grassy areas and the understorey of the bushes near the net-lines dry, creating conditions preferred by many sparrows. On the other hand, the dry conditions arguably caused the water and moisture loving species, like Northern Waterthrush, American

Redstart and Common Yellowthroat, to forage closer to the water and further away from the nets. Also,

in general, moist areas have more insects, so many other insectivorous species, like the rest of the warblers, could have easily shifted their feeding areas closer to the water as well. Another local reason for the low catch of birds could be the fact that the bushes within the banding area are getting too tall and many birds simply, when moving in the canopy, flew over the nets. Yet, the very same change has made the habitat perfect for Downy Woodpecker which almost tripled the previous all time total! The same early snowfall, that pushed most of the pipits down from the mountains, probably is also, at least partly, responsible for the big wave of Wilson's Warblers. Finally, we know at this point that the breeding season in the north was not very successfull due to the cold spring and rainy summer (for example the Whitehorse,YT, MAPS-station had it's poorest catch of hatch-year birds ever) and there is no reason to think that this would not reflect to the catch further south (i.e. Mackenzie among others).

Sharp-shinned Hawks were a common sight at the netlanes throughout the season, and they even caused a couple of casualties, but only two (Jul 28th, Aug 25th) got tangled and were banded. Only the second SB **American Kestrel**, a HY male, was banded on Aug 29th. Early in the season ground traps were used for trapping shorebirds instead of sparrows and as a result, 5 **Least Sandpipers** got a piece of aluminium around their leg as a memory of their landing at Mugaha Marsh. Owling is very popular among our volunteers and this year was no exception. Unfortunately, however, despite lots and lots of effort, the owls did not co-operate and we ended banding only one **Northern Saw-Whet Owl**. Most of the record numbers of **Downy Woodpeckers** were evenly scattered in ones and twos per day during the first three week period of banding leaving only a couple of birds for the rest of the season.

Five **Yellow-bellied Flycatchers** (2 on Sep 4th) was slightly on the high side for the species. **Alder Flycatchers** were common through Jul-Aug with some banded almost every day. There were two noticeable peaks : Aug 12-14th with 13 and especially Aug 31st-Sep 3rd with 26 birds banded. Sep 1st had the highest single day total (9) and the last two for the season were on Sep 9th. **Least Flycatchers** were especially numerous during the last week of July (37 banded, nearly 50% of the season total!) indicating both the local breeders getting caught as well as the peak migration of the adults. The numbers of Leasts went gradually down during August, except the peak of young birds on Aug 23rd-26th when 9 were banded. The season high day total was 9 on Jul 25th and only two were banded in September, on 4th and 16th. The migration of **Hammond's Flycatchers** was quite different from the one of the Least's. Numbers were low in July and building up in August with a small peak on Aug 14-17th (15) and more on Aug 22nd-29th (30), the latter peak coincidencing with the young Least's. Six were banded on Aug 24th and 29th, and the last one was on Sep 20th, two weeks behind the others. **Dusky Flycatchers** were generally uncommon, with a high of 3 banded on Aug 20th and the last one on Sep 6th.

Both **Blue-headed** and **Cassin's Vireo** were unusually uncommon with only two banded of each species. **Warbling Vireos** were well scattered through Jul-Aug without any obvious peaks. Six were banded on three dates. **Black-capped Chickadees** were banded in small numbers right from the beginning of the season but they started a strong movement in early September and peaked around the middle of the month. The best banding days were 12 on 9th, 16 on 14th and 12 on 25th. The Black-caps brought numbers of **Boreal Chickadees** with them although relatively few, all 6 between Sep 15th-22nd and nevertheless a new record, were banded compared to the numbers moving through. The only **Brown Creeper** for the season was banded on Sep 17th. A few **Golden-crowned** and **Ruby-crowned Kinglets** were caught throughout the season but both species peaked in September. The highest numbers of Golden-crowns were 10 on 18th and 11 on 20th. The peak of Ruby-crowns was on 9-14th with 94 banded, 32 of which on 10th. Of the 4 **Gray-cheeked Thrushes** banded, the first one (on Aug 11th) was still in full juvenal plumage possibly indicating breeding somewhere nearby. **Swainson's Thrushes** were common through the early season and peaked on Aug 23rd-27th with 29 banded while only three **Hermit Thrushes** were banded before the small peak of eight on Sep 8-13th. The only two **Varied Thrushes** were caught, one each on Aug 22nd and Sep 14th. One of the most exiting moments of the NSB was on Sep 3rd when 14 **American Pipits** were banded with just two nets on the large mudflats of Mugaha Bay.
Orange-crowned Warblers were scarce until Aug 24-27th when 17 were banded. They were a common catch through the first half of September with a single day high of 20 on 9th. There were fewer local **Yellow Warblers** banded in July than normally and then they were almost absent until late August, after which there was an obvious, and surprisingly late, peak in early September with 14 on 3rd. Seven on Aug 7th was

the only highlight of the otherwise uneventful showing

of **Magnolia Warblers** while **Yellow-rumped Warblers** were common as expected but they just kept flying over the nets and marsh leaving the banding total very low. The record occurence of **Townsend's Warblers** started with the first banded on Aug 3rd and continued with ones and twos on most days in late August – early September. Three were banded on Sep 10th. This was the first year when less than 200 **American Redstarts** were banded and yet it was still one of the most numerous birds. Many were banded almost every day and the high numbers were 11 on Jul 23rd and 10 on Aug 6th and 24th. The last one was on Sep 23rd. All the six **Ovenbirds** were banded in August (4 from 2nd-7th) and most of the **Northern Waterthrushes** were gone by the end of that month as well, with the highest numbers already in July (12 on 23rd). The fall was very poor for both **MacGillivray's Warbler** and **Common Yellowthroat**, with no peak at all for the former but a nice peak of 19 during the first six days of September for the latter. The season total of **Wilson's Warbler** was perhaps the greatest surprise of the fall with a very pronounced peak on Aug 29th-Sep 3rd with 70 (20 on Sep 1st) banded and further 19 on Sep 10th.

The first **American Tree Sparrow** banded (Sep 4th) was still in juvenal plumage and could have easily been a local offspring driven down from the nearby alpine areas by the heavy snowfall. The remaining 5 birds were concentrated near the end of the season. **Chipping Sparrows** occured in record numbers, most of them in July and the first week of August, with 12 on Jul 27th and 9 on Aug 3rd. The last one was already on Aug 22nd. **Savannah Sparrows** were most numerous in early September with five on 1st. Most of the **Fox Sparrows** were either the northern subspecies zaboria or the northern Rockies subspecies altivagans but one schistacea-type bird was banded as well. Four on Aug 31st was the single day high. Most of the **Song Sparrows** departed quite early, probably local breeding birds, and only three birds were banded after mid-August last of which was on Sep 12th. **Lincoln's Sparrows**, also probably mostly local birds, were common early in the season and then, after a slow mid-August, there was a little early September wave of new birds, perhaps migrants from further north. The first **White-crowned Sparrow** was banded on Aug 15th and they peaked Aug 27th-Sep 9th, with 7 on Sep 9th, and 6 on Aug 30th and Sep 3rd. Banding **Juncos** was very interesting. At first it was mostly numerous unidentifiable local juveniles pouring into the nets with a few identifiable Oregons, both advanced HY's and adults. Then, as the molt advanced, we were able to identify them more and more so that by late August unidentified Juncos were rare, and those that we did leave unidentified showed strongly mixed characters of both Oregon and Slate-colored Junco's. The occurence of Juncos was strongly two-fold, first in July as already described, then very few through August and an illdefined but fairly strong showing in September. The highest day totals in July were 30 on 23rd, 7 on 30th, 6 on 24th and 27th, and in September 17 on 10th and 10 on 20th. Most of the Juncos were Oregons and only a handful of Slate-coloreds, many of them of the intermediate subspecies cismontanus, were banded. Icterids and finches were uncommon, except the ever present **Pine Siskins**, which were caught in decent, not horrifying, numbers like 1998. The peak numbers were 91 on Aug 23rd and 54 on Sep 1st.

During the season we banded four new species for the station. First of these was a **Common Redpoll** still in full juvenal plumage on Jul 28th. As there were no records of the species during the summer it is possible that this bird had started it's southbound migration extremely early instead of being a local offspring. It was followed by a HY **Vesper Sparrow** banded on Jul 30th and then stayed in the area for more than a month. An adult female **Philadelphia Vireo** on Aug 4th wasn't just a new banding species, but a whole new species for the Mackenzie region. The same day it was seen accompanied by two HY birds, possibly indicating breeding somewhere nearby. The fourth new banding species was **Semipalmated Sandpiper**, two of which wandered into the ground-traps in the marsh on Aug 8th. The Sep 10th **Lapland Longspur** was only the second one of this species to be banded in Mackenzie.

Observations

The time spent observing birds during and between net-rounds, and in the afternoons was rewarded with a number of notable records including interesting visible migration of waterfowl and hawks, and several new species for Mackenzie District. Naturally, most of the observing took place at Mugaha Marsh, but visits to nearby Mugaha Bay and Williston Reservoir produced the best birds. A few visits were also made to Morfee Mountain, Sewage lagoons and the local airport. One thing we all learned was that there is still much to be learned about the birds of Mackenzie! Combination of banding and active field birding will undoubtedly continue to increase our knowledge of local bird fauna as well as is sure to bring many more happy surprises!

Red-throated Loon was seen twice in August as a fly-by at Mugaha Marsh and it proved to be a regular migrant in small numbers at Williston Reservoir, where up to four were seen after mid-September. The peak of migration is probably after the banding season finishes. While **Horned Grebe** was surprisingly scarce this fall, with just one at Mugaha Marsh on Aug 12th and another at Williston Reservoir on Sep 20th, the **Red-necked Grebe** was quite common both at Mugaha Marsh and especially at Williston Reservoir where there were 22 on Sep 16th and 56 on 20th. Additional 13 was seen in Mugaha Bay on Sep 20th. **Great Blue Heron** was more common than usual. The numbers started to build up early with six present at Mugaha Marsh already on Aug 1st and soon 10 or more birds were seen almost daily with the peak being 15 birds on the 23rd. It is not sure of course if we were seeing the same birds or if new ones were coming in, but the herons were there well into September (eight still on the 16th). **Greater White-fronted Goose** migration was fairly strong. The first 112 were seen on Aug 29th, the peak 461 on Sep 1st and 93 on Sep 2nd. After that only small
numbers were seen. The local **Canada Geese** were a common sight mostly in small numbers, although two gatherings of over a hundred birds were recorded : 180 in Mugaha Bay on Aug 19th and 120 at Williston Reservoir on Sep 10th. A few fairly small flocks of northern migrants were noted after mid-September. The largest numbers of **Northern Pintails** (200 on Sep 1st and 150 on Sep 8th) and **American Wigeons** (100 on Sep 1st) were in Mugaha Bay. **Northern Shovelers** (100 on Aug 19th-22nd), **American Green-winged Teals** (60 on Aug 17th) and **Blue-winged Teals** (20 on Aug 5th) were most numerous at the Sewage Lagoons. **Gadwall** was seen on two occasions only: three were at Mugaha Marsh on Jul 21st and one was at the Sewage Lagoons on Aug 31st. By the end of the banding season **Redhead** was seen three times: two at Mugaha Marsh on Aug 2nd and
Sep 19th and one at the Sewage Lagoons on Sep 9th. The first two **Canvasbacks** were at Mugaha Marsh on Sep 1st. Flocks of 24 on Sep 19th and 34 on 20th were seen migrating among flights of other ducks. A **Greater Scaup** at Mugaha Marsh on Aug 6th felt a little out of season and the next ones weren't seen until Sep 3rd. At least two female **Ring-necked Ducks** with their ducklings spent the early season at Mugaha Marsh. **Lesser Scaups** were seen in small numbers from early August, but it wasn't until mid-September when they became common. A flock of 55 (+ another of 105 unidentified scaups, most likely lessers) was seen during a good duck flight on Sep 19th. A flock of six at Williston Reservoir on Sep 17th was the
highest number of the three records of **White-winged Scoters**. Four **Hooded Mergansers** were at Mugaha Bay Sep 1st and 16th, while eight were at Mugaha Marsh on Sep 23rd and nine on 24th. Two broods (6+3 chicks) of **Ruddy Ducks** were at the Sewage Lagoons. The largest flights of ducks included 184 on Sep 1st (NOPI 55, AMWI 15 etc.), 265 on Sep 2nd (NSHO 75, NOPI 45, AMWI 45 etc.) and 513 on Sep 19th (NOPI 135, LESC 55, MALL 48, AMWI 44, CANV 24 etc.).

Northern Harriers were swooping tirelessly across Mugaha Marsh from mid-August through September with at least four different birds on Sep 1st. The breeding of the local pair of **Ospreys** failed because a Great Horned Owl ate the young chicks on the evening of Jul 22nd. After a few days of "mourning" the Ospreys started the construction on the platform nest and showed some courtship behavior. At some point, however, with the falling temperatures and days coming shorter, they finally, and fortunately, gave up and headed to the south. One or two **Bald Eagles** were seen almost daily with minimum of four on Sep 5th. One **Cooper's Hawk** was seen on Aug 13th and two **Northern Goshawks** on Sep 20th and 22nd. The migration of **Sharp-shinned Hawks** was in full swing by late August with highest day counts in September (9 on 5th and 13 on 12th). A juvenile **Broad-winged Hawk** migrating south-east over Mugaha Bay on Sep 12th was a nice surprise while an adult dark-morph **Swainson's Hawk** on the alpine habitat at Morfee Mountain on Jul 21st and Aug 29th was an expected one. A little surprisingly, a few dark **Harlan's Hawks** were seen among more common regular **Red-tailed Hawks** in late August and September. The regular ones were on the move on Sep 5th with 8 seen in a couple of hours. An adult **Golden Eagle** was at Morfee Mountain on Aug 29th and another adult flew high over Mugaha Marsh on Sep 20th. Small falcons, **Merlin** and **American Kestrel**, were hunting over the marsh every day, with typically one to three of each species per day except on Aug 26th when there were five Kestrels near the Osprey platform. An adult **Peregrine Falcon** was seen four times : Aug 20th, Sep 5th, 13th and 20th.
A **Sora** was spotted at Mugaha Marsh on Jul 29th and egg shells were found in the marsh a few days later. One was heard there in the late evening of Aug 13th and a juvenile, perhaps the one heard, was found dead on the road next morning. Soras were very common at the Sewage Lagoons with six on Aug 19th and 22nd. A pair of **Sandhill Cranes** was seen almost every day early in the season travelling back and

forth between Mugaha Bay and the cutblocks where they were

feeding on abundant blue berries. Six were seen on Aug 12th, 22 on Aug 29th and 16 on Sep 1st. One was travelling south high on the sky on Sep 20th. Shorebird migration was quite interesting this fall, partly due the low water level in Williston Reservoir and Mugaha Marsh. There was only one record of a **Black-bellied Plover**, a juvenile circling around the Sewage Lagoons on Aug 31st, but five records of a total of 12 **American Golden Plovers** with the first flying over Mugaha Marsh on Aug 18th and five juveniles at Mugaha Bay on Sep 8th being the highest number. There were just a few **Killdeers** at Mugaha Marsh but at Mugaha Bay there were 21 on Aug 16th. **Semipalmated Plovers** were seen almost daily in August with the high counts of six at Mugaha Marsh on 13th and 10 at Mugaha Bay on 27th. Eight **Greater Yellowlegs** at Mugaha Marsh on Jul 25th was the high count for this species. **Lesser Yellowlegs** were far more numerous with high counts of 50 on Aug 2nd and 43 on Aug 13th, both at Mugaha Marsh. **Solitary Sandpipers** were more common at the Sewage Lagoons than elsewhere with seven there on Aug 19th. **Least Sandpipers** were common through the season till early September with biggest numbers at Mugaha Bay where 26 was counted on Aug 16th and 50 on Aug 27th. **Semipalmated Sandpipers** weren't uncommon either, but numbers were smaller. Ten was the high count both at Mugaha Marsh (Aug 8th) and Bay (Aug 27th). Of the more uncommon small Calidris sandpipers **Western** was seen on two occasions, one was at Mugaha Marsh on Jul 29th and two were at Mugaha Bay on Aug 27th, and **Baird's** three times with one at Mugaha Marsh on Aug 8th, one at Mugaha Bay on Aug 19th and three there on Aug 27th. **Pectoral Sandpipers** were roaming in the marsh in late August and early September with 54 on Aug 27th, 50 on Sep 1st and 58 on 9th. A few **Stilt Sandpipers** were seen with the "pecs". One was at Mugaha Bay on Aug 16th, two were at Mugaha Marsh on Aug 27th and Sep 1st, and one was at the Sewage Lagoons on Sep 5th. Regular tramping in the marsh revealed the true numbers of **Common Snipes** and they did live by their name. 25 were flushed on Jul 25th and over ten were seen on many days till early September. The migration of **dowitchers** was quite peculiar this fall. **Short-billed**, previously thought to be the more common one, was seen just once (a juvenile at Sewage Lagoons on Aug 17-22nd) while the season total of **Long-billed's** reached to hundreds with an adult peak of 15 on Aug 2nd and a juvenile peak of 35 on Sep 9th, both at Mugaha Marsh. Two **Upland Sandpipers** flew by Mugaha Marsh on Sep 2nd and one was reported from the town the previous day. Two **Wilson's Phalaropes** were seen. One was at Mugaha Marsh on Jul 24th and the other at the Sewage Lagoons from Jul 27th till Aug 5th. **Red-necked Phalaropes** were more common with three records from Mugaha Marsh, one from Mugaha Bay and the high count of 19 at the Sewage Lagoons on Aug 17th. In general, gulls were surprisingly scarce. **Bonaparte's Gull** was seen only four times, **Ring-billed Gull** just twice and there was a single record of a juvenile **California Gull** at Mugaha Bay on Sep 3rd. **Herring Gulls** were fairly regular, but only the record of a flock of 13 passing high over Morfee Mountain on Aug 29th was interesting.

Woodpeckers, other than Flickers, Downy, and Hairy, were uncommon with only one record for **Yellow-bellied** and **Red-breasted Sapsucker**, and **Three-toed Woodpecker** each. **Common Nighthawks** were hawking insects in the evening sky in fair numbers early in the season like the 17 on Jul 29th and 15 on Aug 3rd. One day a **Calliope Hummingbird** flew into the banding lab and buzzed against the ceiling burning the top of it's head. Afterwards this "skinhead" spent a couple of weeks at the stations hummingbird feeder and was easily recognized by it's unmistakable hair-cut. The last sighting of the species, of a different individual though, was on Sep 5th. A family of **Great Horned Owls** spent most of the season right at the banding station, possibly keeping the smaller owls away as only one **Saw-whet** was heard, and that was already in July.

Generally uncommon **Say's Phoebe** was seen in four different occasions : one was in perfect breeding habitat at Morfee Mountain on Jul 21st, one was at Mugaha Bay on Sep 3rd and at Mugaha Marsh one was seen on Aug 27th and two on Sep 5th. One to two **Olive-sided Flycatchers** were singing near the station for most of the first half of the season, but the highest number (4) was at cutblocks on Aug 11th. Two **Horned Larks** were seen at the top of Morfee Mountain on Jul 21st. The early snowfall probably forced the flock of 10 larks at the airport on Sep 9th and the one at Mugaha Marsh the next day down from the mountains, as surely was the case with 350 **American Pipits** at Mugaha Bay on Sep 3rd. There were still 70 pipits there on the 12th. The swallow flock at the marsh was at it's largest on Jul 31st, when there were 80 **Tree Swallows**, 50 **Bank Swallows**, 50 **Cliff Swallows** and 40 **Barn Swallows**. **Northern Rough-winged Swallows** peaked almost two weeks later, on Aug 12th, when a flock of 14 was at Mugaha Marsh.

Most of the Corvids, except the **Ravens**, were almost

completely absent at Mugaha Marsh for most of the season. Flocks of migrating **American Crows** were seen on three days with 13 on Sep 15th, 40 on 20th and six on 21st. **Steller's Jay** was seen twice, **Black-billed Magpie** once and **Gray Jay** four times in late August – September. Both **Black-capped** and **Boreal Chickadees** were moving through the area in September in record numbers. The high counts for Black-caps were 82 on 15th and 50 on 19th, while 10 of the total of 34 Boreals were seen on 15th and seven on 22nd. There were a few **Red-breasted Nuthatches** on the move as well but mostly in August with seven on 15th. The first **Brown Creeper** for the fall was seen on Aug 30th and three on Sep 15th was the highest day count. Both **Kinglets** were well represented in September with 29 **Ruby-crowneds** on 12th and 43 **Golden-crowneds** on 16th.

Of the two **Waxwing** species **Cedar** was clearly more numerous than **Bohemian** but both were quite scarce this fall. **Townsend's Solitaire** was seen surprisingly often with four records of singles from Mugaha Marsh (Aug 29th, Sep 12th, 16th and 21st) and one was at cutblocks on Sep 10th. **Mountain Bluebirds** were common at cutblocks with 15 there on Aug 11th and further five were at the airport on Sep 9th. There was a handfull of sightings of **Gray-cheeked Thrushes**. **Varied Thrushes**, with six on several dates and nine on Sep 10th, were perhaps slightly more numerous than usual. 88 on Sep 5th was the largest number of **American Robins** for the fall. **Yellow-rumped Warblers** were reasonably numerous around mid-September even though it didn't show in the banding totals as the birds simply flew over the area. 67 were counted on 15th and 64 on 16th. The highest number of **Townsend's Warblers** seen was three on Aug 30th. With all the banding and other activities going on, it wasn't easy to follow the numbers of "bush-dwelling" species like most of the warblers and sparrows. **American Redstarts** were very common through the first half of the season with at least 20 seen on Aug 2nd and 19 23rd, while 12 **Wilson's Warblers** were seen on Aug 30th.

The dry open bush habitat of the cutblocks was perfect for **Chipping Sparrows** so a flock of 40 there on Jul 30th wasn't a surprise. Similarly, the open grassland of Mugaha Bay was just made for **Savannah Sparrows** with 30 there on Sep 3rd and 25 on 8th. At least 15 **White-crowned Sparrows** were seen skulking in the bushes at Mugaha Marsh on Sep 12th while **Golden-crowned Sparrows** were only seen during the breeding season up at Morfee Mountain where six birds were singing on Jul 21st. **Lapland Longspurs** had perhaps their strongest showing ever in the region and flocks were seen everywhere where there was suitable habitat. Largest numbers were at Mugaha Bay where 200 were seen on Sep 8th and 100 on Sep 3rd. Elsewhere there were 100 at the cutblocks on Sep 10th, 80 at Mugaha Marsh on Sep 9th and 50 at the airport on the same day. Both **Crossbill** species were scarce with, surprisingly, **Red** being the more common one. **Pine Siskins** were present in decent numbers and they peaked after mid-August when 300 were tallied on 18th and 280 on 20th. A little surprisingly there were three records of **Common Redpoll** during the season – all from Mugaha Marsh. Three flew over on Aug 9th, two were seen on Aug 30th and one was heard on Sep 12th. **Evening Grosbeaks** were seen in small numbers through the season. One of the biggest surprises of the season wasn't all that pleasant, but a strong showing of the adaptability of **House Sparrows**. First a female was seen in the willows in the middle of the marsh on Aug 4-5th, remarkably just the way they are in their natural habitat in the Mediterranean, and then two females were the very first birds at our new feeder on Aug 17th. They roosted inside the little shed and enjoyed the feeder on the next day as well.

Last but not least, the banding group recorded astonishing eight new species for the Mackenzie District. Only one of these, the Philadelphia Vireo, was banded and the details of that bird are in the banding section of this report. The rest were seen as follows:

Pacific Loon

On Sep 16th there was a flock of five adults at Williston Reservoir, where another adult was seen following the lake south the next day.

Western Grebe

Western Grebes proved to be regular, if not almost common, at Williston Reservoir. The first three were seen on the first visit there (Sep 16th) and the highest number 15 was seen on Sep 20th.

Double-crested Cormorant

One was seen in Mugaha Marsh in the afternoon of Aug 21st.

Pacific Golden Plover

A juvenile was spotted in company of a juvenile American Golden Plover at the mudflats of Mugaha Bay on Sep 8th.

Sanderling

A flock of five juveniles was feeding on the sandy

beach at Williston Reservoir "lookout" on Sep 19th.

Parasitic Jaeger
Yet another new species recorded at Williston Reservoir! Two light-morph adults were seen flying south there on Sep 17th.

Smith's Longspur
On Sep 1st there were at least two Smith's in a small flock of Lapland Longspurs at the mudflats of Mugaha Bay. On Sep 3rd seven were seen at the same place.

Canadian Wildlife Service (CWS) Report

The following two articles Habitat Associations and Timing of Migration of Birds Banded at Mugaha Marsh and Migration Timing for Species Monitored at Mugaha Marsh 1996-2000 were specifically prepared for our report.

Our thanks to our bander and the volunteers who helped get the data entered and submitted so quickly. Thanks to Shawna for making time in her busy schedule to prepare these reports for us.
The Figures and Tables she refers to in her written report immediately follows her report.

Habitat Associations and Timing of Migration of Birds Banded at Mugaha Marsh

By Shawna Pelech & Wendy Easton

Migration monitoring is a key source of information on the ecology and population trends of landbirds in British Columbia. One of the primary roles of Canadian Migration Monitoring Network is to monitor species and populations that are not adequately covered in other programs such as Breeding Bird Surveys.

Mackenzie Nature Observatory has banded 58 species at Mugaha Marsh that are in the top 3 priority categories for migration monitoring in Canada (e.g. Alder Flycatcher, Orange-crowned Warbler). Further, 56 of the species banded have more than 14% of their Canadian breeding range in British Columbia, and are therefore considered a high to very high responsibility for British Columbia monitoring, research and conservation (Dunn 1997) (Figure 1). Twenty-seven (38%) of the species banded at Mugaha have no to poor data available from Breeding Bird Surveys (BBS) in British Columbia (e.g. Blackpoll Warbler) (Figure 2), and only 34 have been classified as being potentially well monitored by BBS.

Clearly, continued migration monitoring at Mugaha Marsh is vital in our attempt to better understand population trends and ecology of these species. Landbird monitoring by the Mackenzie Nature Observatory is particularly important to increase our limited knowledge of populations in northern British Columbia. With five years of data now available, Bird Studies Canada can begin analysing trend data for species monitored at Mugaha Marsh. At a regional level, CWS-Delta has begun some preliminary analysis of the habitat associations of species banded at Mugaha Marsh and will continue with more regional analysis in the future. Here, I summarize the habitat association data and take a preliminary look at the timing of migration of the most common species banded at Mugaha Marsh.

Habitat Associations
The habitat, food types and life history strategies associated with bird species can provide insight into a species distribution, its function in an ecosystem and its vulnerability to environmental change. Knowing these aspects of the ecology of species banded at Mugaha allows us to look for common trends in species with similar characteristics and can help us identify potential causes of population patterns.

Methods: The following is a brief summary of the habitat associations and related characteristics of the species banded at Mugaha Marsh. I have summarised these characteristics for species with an average of at least 10 individuals captured per year. I have also added the 2000 fall banding data to the summaries provided by Wendy Easton for the Mackenzie Nature Observatory 1999 Progress Report. These summaries are based on the proportion of all individuals captured (belonging to the habitat or category of interest), and better reflect the relative abundance of different species and species groups that are monitored at Mackenzie. One problem with this method, however, is that the proportion of individuals of a certain category or species can decrease or increase even if total number or number/effort stays the same (i.e. as numbers of other species change). Thus, summaries and particularly trends over time should be interpreted with caution. We are working on calculating number captured per unit effort (e.g. per net hour) which will help alleviate this problem.

Pine Siskins are not included in the proportion summaries because of a large influx of individuals banded in 1999 (1330). To give an indication of the population trends for species banded at Mugaha Marsh, I used trend data from the most recent

analysis of 1966-1999 Breeding Bird Survey (BBS)
data for

British Columbia (Sauer et al. 2000, http://www.mp2-pwrc.usgs.gov/bbs/index.htm). Trends ≥ 0.2 were classed as increasing, ≤ -0.2 as decreasing and values in between as no apparent change. I did not include trends for species where BBS trends were based on fewer than 15 BBS routes or where trend data were classified as having important deficiencies by Sauer et al. (2000).

Results: Some relatively consistent patterns have emerged from the 1996-2000 banding data at Mackenzie. The large majority of the species monitored and individuals banded at Mackenzie are neotropical migrants-species that winter south of Florida, most are insectivorous, and most glean prey off of foliage (Table 1, Figures 3-5). Most species and individuals are shrub, conifer or ground nesters, though there is some variability in the proportion of conifer and shrub nesters banded each year (Figure 6).

The breeding habitat of the birds monitored at Mackenzie is divided between shrubby, deciduous, early successional or riparian habitat and forested habitat. Most (17) of the 29 species that are well monitored at Mackenzie are associated with early or riparian habitat, with 10 species associated with forested habitat and 1 with early successional habitat with limited vegetation (Table 1). However, it appears that in most years the number of individuals banded is slightly greater for forest associated species than early successional/riparian associated species (Figure 7). A large proportion (~65-70%) of the birds banded can also be classed as riparian (though they may also use other habitats). Approximately 8 % of the individuals banded belong to the riparian obligate category (species that are only found in riparian habitat), though the proportion of obligates has decreased in recent years (Figure 8). A smaller, and quite variable, percentage (~20%) are associated with coniferous forests, but of that the vast majority are found only in old growth or mature stands (Figure 9).

Based on the characteristics of many of the species banded at Mackenzie, potential threats to these populations can be identified. Forestry, agriculture and oil/gas exploration are the most common sources of habitat loss for forest birds in northern BC. Indeed, a greater proportion of the forest and particularly mature/old forest birds banded at Mackenzie show decreasing vs. increasing trends based on 1966-1999 BBS data (Figure 10). Lowland riparian, and particularly riparian obligate species, could be particularly vulnerable to habitat loss in BC, given that much of the forestry and other development is concentrated in the more easily accessible valley bottoms. A slightly larger proportion of riparian/early successional individuals banded at Mackenzie show decreasing vs. increasing BBS trends (Figure 10). It is possible that some of early successional/riparian species banded at Mackenzie could be using shrubby, early successional habitat in areas of regeneration (e.g. logged sites) or at forest edges. The quality of this habitat for nesting and survival, however, is still unknown. Differences in the composition or structure of vegetation in these modified habitats could lead to changes in the abundance, composition and timing of insect prey or availability of suitable nest sites. Changes in the abundance and diversity of competitors, predators or nest parasites may also threaten both forest and riparian species in these altered landscapes. For example, there appears to be an increase in the northern distribution and abundance of Brown-headed Cowbirds, a nest parasite, as land is cleared for agriculture and ranching in British Columbia. Approximately half of the individuals banded at Mackenzie are susceptible to nest parasitism by Brown-headed Cowbirds (Figure 11) and these species could be negatively impacted by an increase cowbird abundance in northern BC.

Through continued migration monitoring at Mackenzie we can detect population patterns and determine if trends are related to changes in various habitats types and wildlife communities in BC. There is also the potential for banding data collected at Mackenzie to provide information on the productivity of certain species through the ratio of adult to hatch year birds banded each year. This information, along with direct studies on the nesting success of these species in northern BC, will help us determine the causes of some of the population patterns that we have already seen in BBS data and that may emerge as trend data for fall migration at Mackenzie becomes available.

Migration Timing for Species Monitored at Mugaha Marsh 1996-2000

The timing of both spring and fall migration for birds varies among species, among years for a single species and even with the age or reproductive status of an individual. Migration timing represents a compromise among various constraints: time required for fledging young and molting, deterioration of environmental factors and food availability on the breeding ground, and distance to and conditions en

route to wintering grounds. Timing involves both genetic constraints

within a species and proximate environmental and biological cues (e.g. weather) that are assessed by individual birds.

Banding at Mugaha Marsh has traditionally taken place from late July to late September each year, coinciding with the fall migration of most songbirds in northern British Columbia. Determining the peak banding times of various species at Mackenzie can help us 1) determine the variation in migration timing among species, 2) relate migration timing to broad scale and local weather conditions, 3) provide additional clues to conditions and extent of breeding on breeding grounds, and 4) ensure we are monitoring the majority (75%) of the migration period for a species.

Methods: I have plotted the number of individuals banded each day for the 1996-2000 banding seasons at Mackenzie for all species pooled and separately for each species where at least 50 species were banded per year. Because I have not incorporated net hours into the banding totals, this is a very preliminary analysis and does not represent the number of individuals banded per unit effort.

Results: At a very broad scale, it appears that most species banded at Mackenzie can be classed into early or late migrants relative to the fall banding season each year (Table 2). For example, the majority of Northern Waterthrushes and Least Flycatchers are banded early in the season, while Golden-crowned and Ruby-crowned Kinglets fall at the opposite end of the scale with most individuals captured later in September (Figures 12-15). Although most of the species banded at Mackenzie are Neotropical Migrants, some of the differences between the early and late groups are likely due to the location of their wintering grounds. Most of the early species winter south of Florida and northern Mexico while the later species, including several classed as neotropical migrants, have wintering ranges that extend north into southern and central USA (Table 2). Typically, the greater the distance between wintering and breeding grounds the later and earlier the species arrives and departs from the breeding area, respectively. Molt strategies could also explain some difference in timing. For example, most of the post-breeding (prebasic) molt in Least Flycatchers occurs on the wintering grounds. This may allow individuals to begin migration earlier, which could contribute to the early banding peaks for this species at Mackenzie.

It is difficult at this point to detect patterns in migration timing among years. There may be a slight trend for later migration in 2000 compared to previous years. Peaks in the total number of individuals banded in 2000 appear to be later in the banding season (Figure 16), and a similar pattern is seen within some species (e.g. Wilson's Warblers, Alder Flycatchers, Yellow Warblers). This might indicate that weather and/or food conditions were relatively good on breeding grounds in 2000 allowing some species to remain on breeding grounds longer. Not all species show this pattern however, and any patterns observed at this point are speculative. The number of birds banded per day not only involves the timing of migration within a species, but also weather and wind conditions at Mackenzie and in northern BC in general. Distinct peaks in number of individuals banded could also represent the passage of birds of separate age, sex or reproductive classes (e.g. if non-breeders can begin migration earlier). Incorporating total net hours, local and regional weather information, and age and sex of banded birds into the time series summaries is necessary in order to determine and explain patterns in timing of migration.

An additional use of the banding time series data is to determine the likely coverage of a species migration period at Mackenzie. A general recommendation is that banding stations monitor 75% of the days of a species migration in an area (corresponding to approximately the middle 95% of the individuals passing through). The banding period at Mugaha Marsh appears to meet this criteria for most species. It is possible that certain species could be better monitored with an earlier (e.g. Least Flycatcher, Northern Waterthrush) or later (e.g. Ruby-crowned Kinglet, Yellow-rumped Warbler) banding season. Some trials with non-standard early or late banding may help determine coverage for these species. However, given time and financial constraints, Mackenzie Nature Observatory appears to be banding during the optimal period to cover the peaks in migration for the widest range of species.

The Mackenzie Nature Observatory (MNO) has continued to do an outstanding job of monitoring migrating birds at Mugaha Marsh. The staff, volunteers and agencies involved with MNO have provided valuable information on the status and biology of northern landbirds. All involved, particularly the Lambies, have invested much of their time and energy into the migration monitoring program. CWS-Delta gratefully acknowledges and

commends all participants for their impressive efforts and dedication.

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Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

Dunn, E.H. 1997. Setting priorities for conservation, research and monitoring of Canada's landbirds. Canadian Wildlife Service Technical Report No. 293..

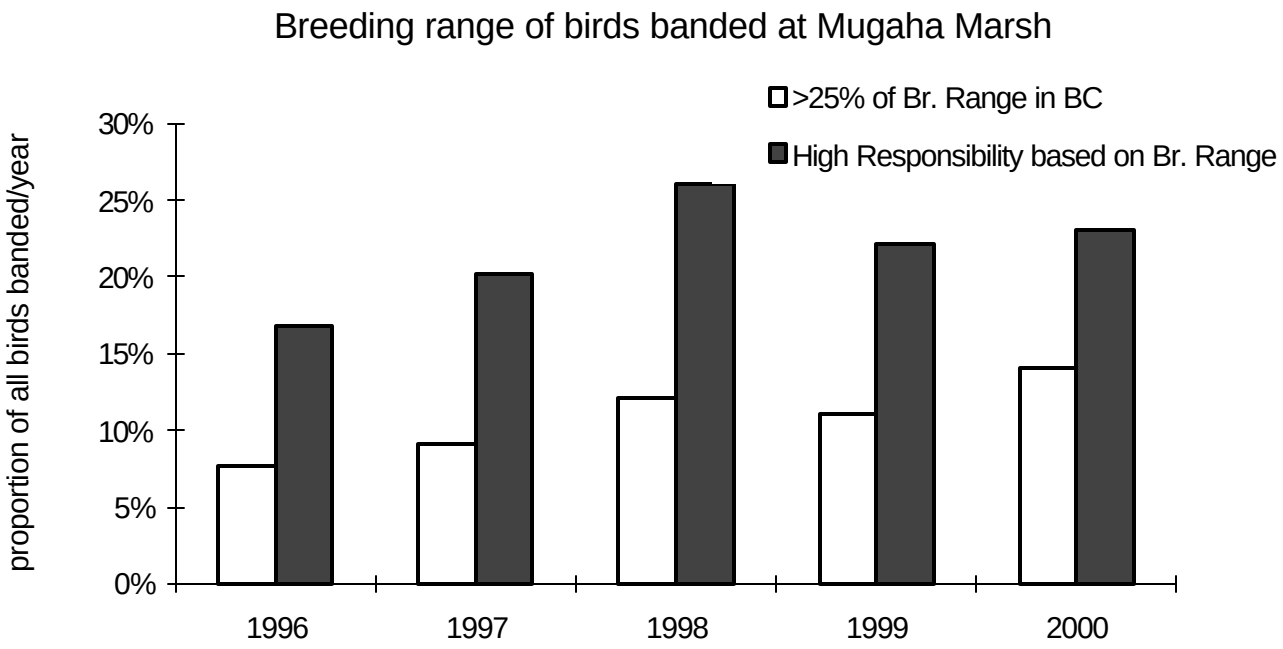

Figure 1. The proportion of birds banded at Mugaha Marsh with greater than 25% of their Canadian breeding range in BC, and the proportion considered high responsibiltiy for BC based on BC breeding range information (> 14% in BC) (Dunn, 1997).

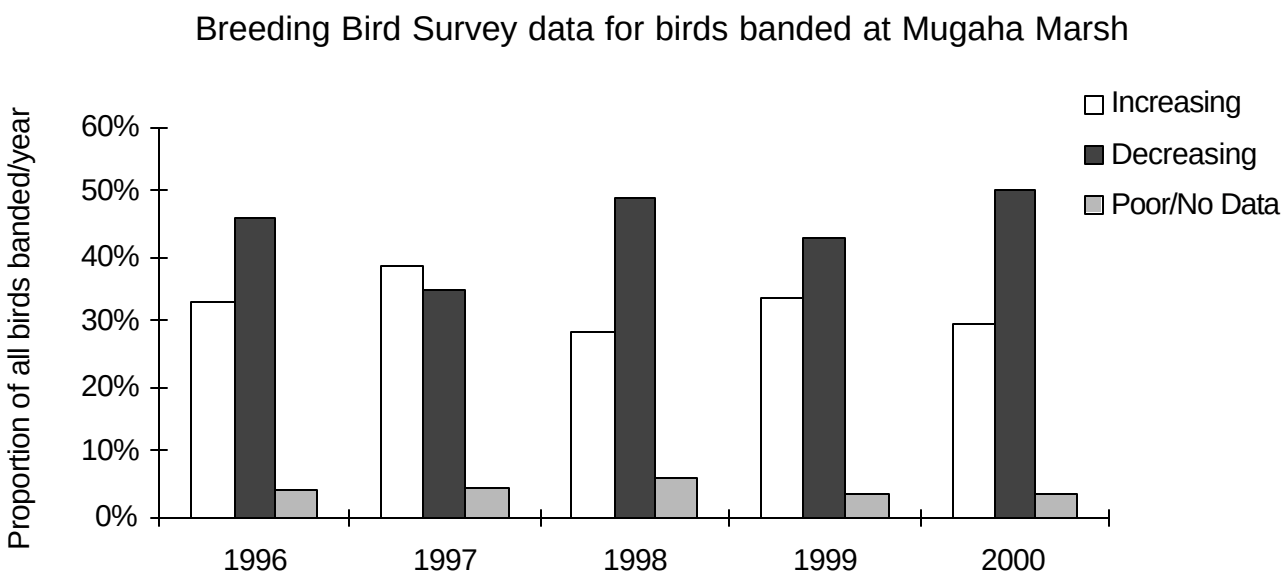

Figure 2. The proportion of birds banded at Mugaha Marsh from 1996-2000 with increasing or decreasing 1966-1999 population trends in Breeding Bird Surveys in BC, and the proportion with no, poor or imprecise data available from Breeding Bird Surveys (e.g. less than 14 routes per species).

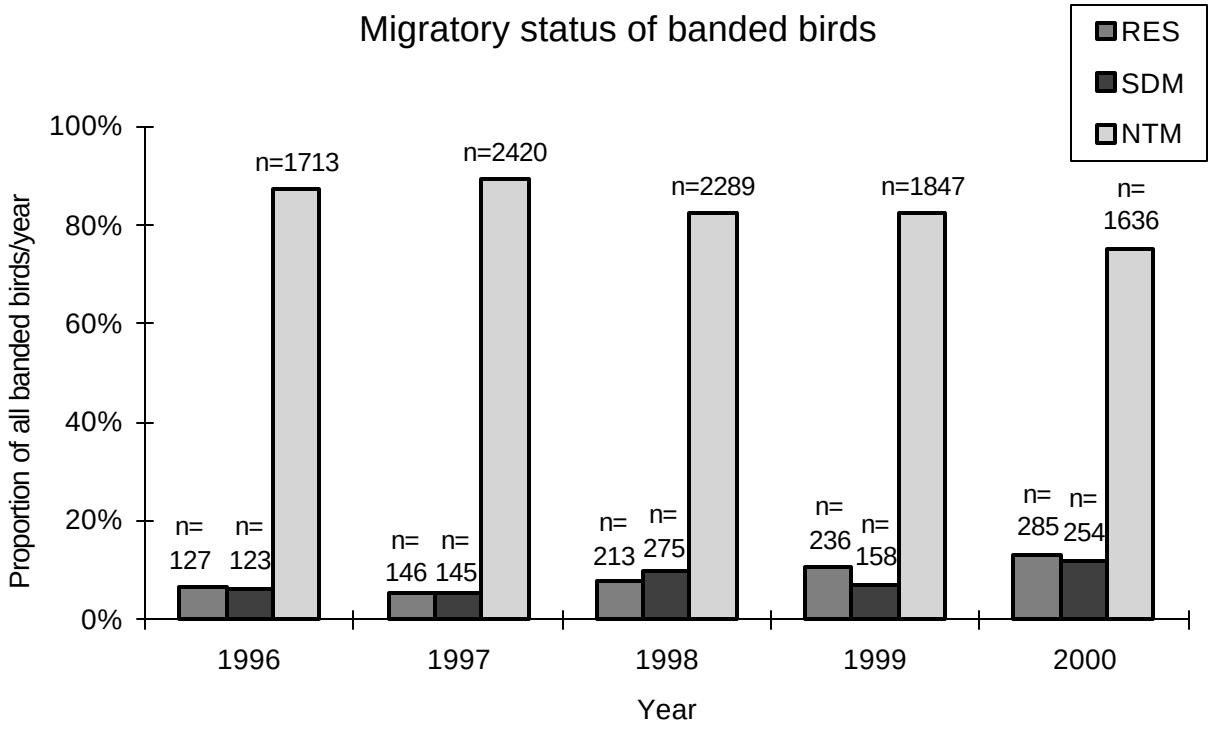

Figure 3. The proportion of Neotropical migratory (NTM), short-distance migratory (SDM) and resident (RES) bird species banded at Mugaha Marsh, Mackenzie from 1996-2000.

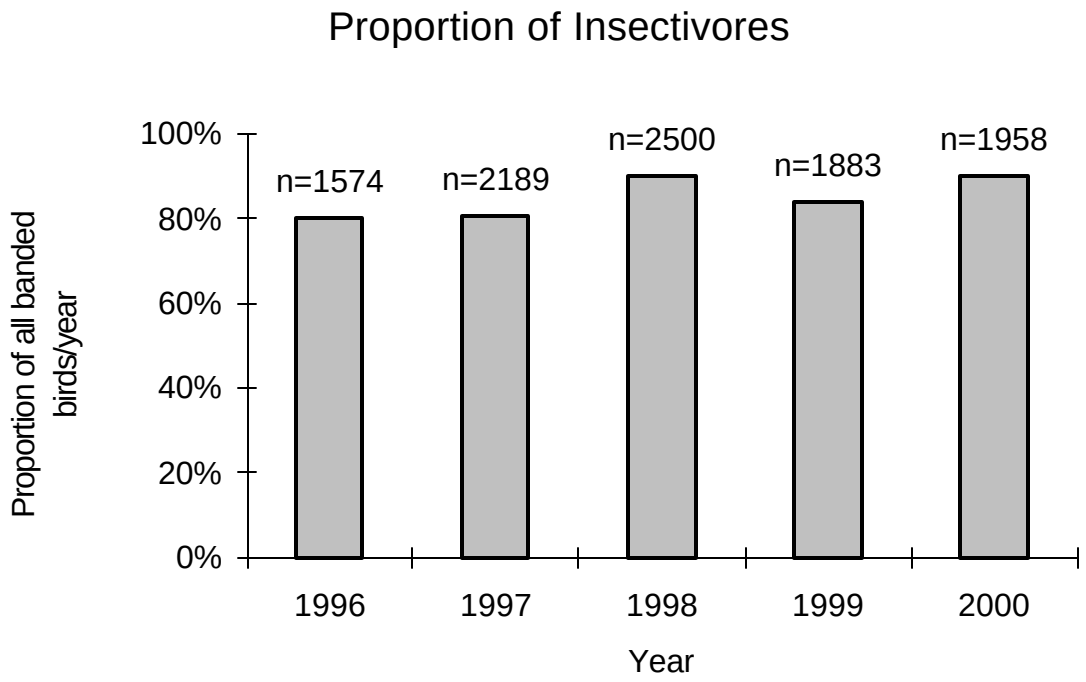

Figure 4. Proportion of insectivorous birds banded at Mugaha Marsh from 1996 - 2000

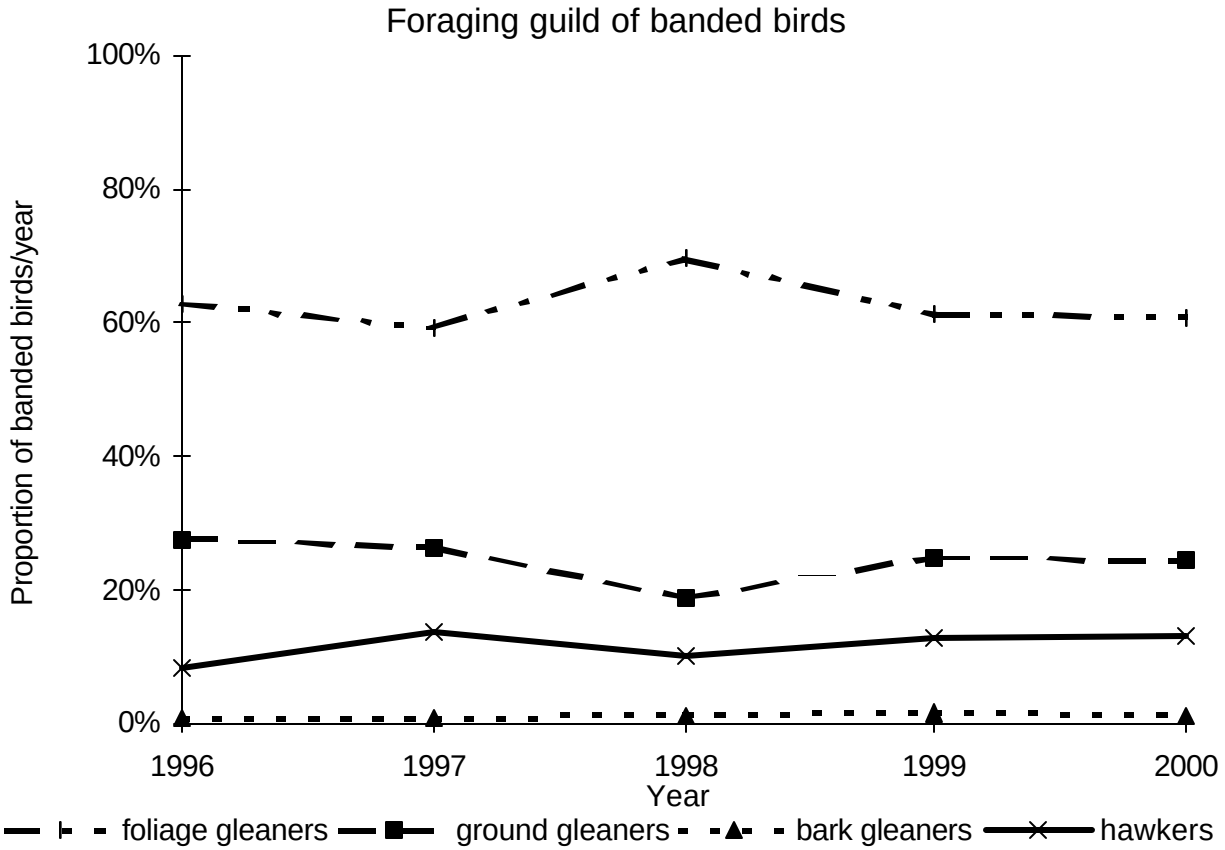

Figure 5. The preferred feeding method (foraging guild) of birds banded at Mugaha Marsh, Mackenzie during the fall seasons of 1996-2000. Birds are classed as those who primarily glean prey/food from foliage, ground, bark or catch prey aerially (hawker).

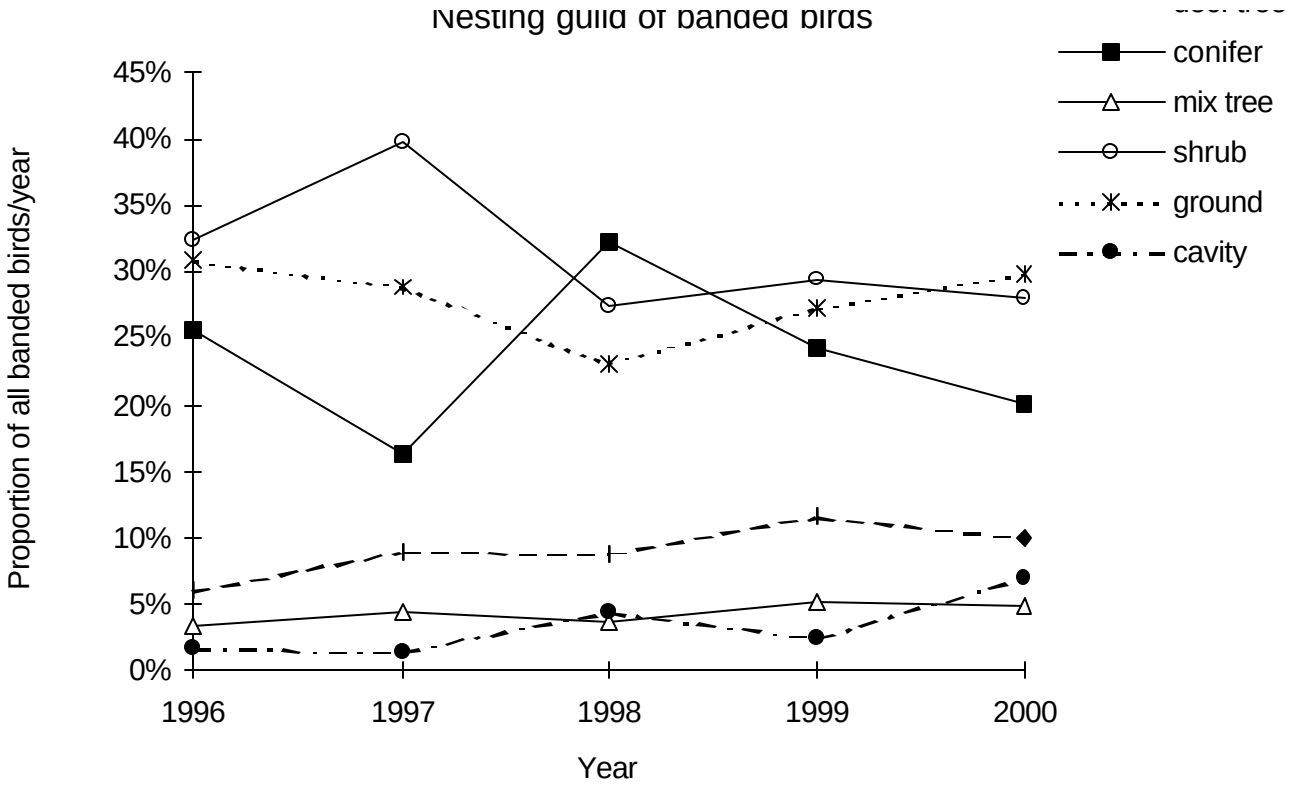

Figure 6. The preferred breeding substrate (nesting guild) of birds banded at Mugaha Marsh during the fall seasons of 1996-2000. Birds are classed as those who primarily nest in deciduous trees (dec. tree), coniferous trees (conifer), either deciduous or coniferous trees (mix tree), shrubs (shrub), on the ground (ground), or in cavities (cavity).

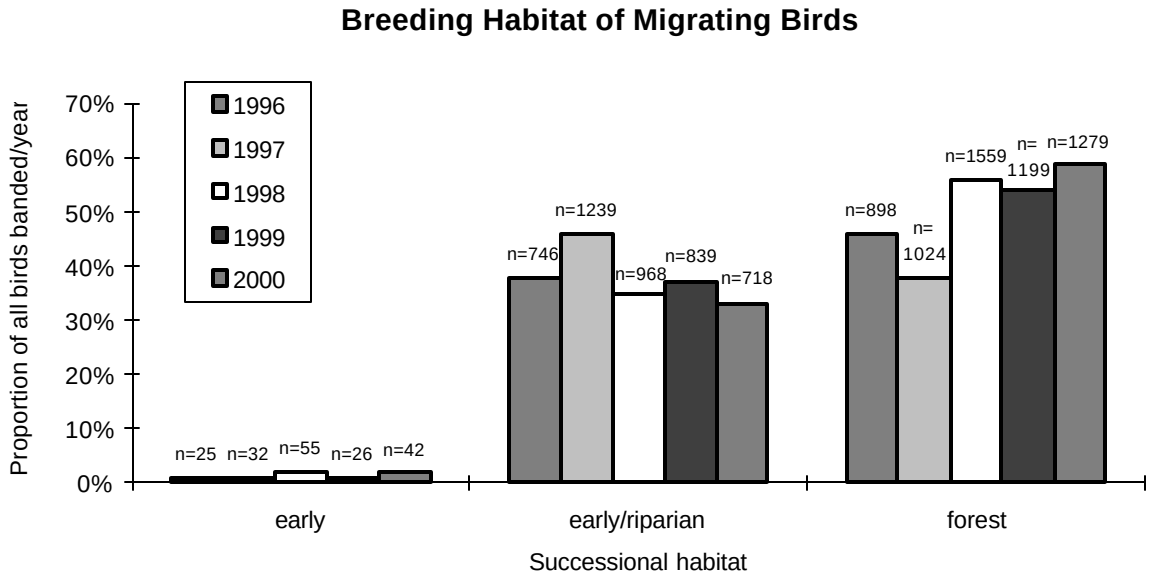

Figure 7. The breeding habitat of birds banded at Mackenzie in: early successional habitats with a limited density of deciduous vegetation (early); shrubby, deciduous habitat either riparian or early, successional habitats with similar attributes (early/riparian); in forested habitat including a variety of ages, interior/edge/gaps (forest)

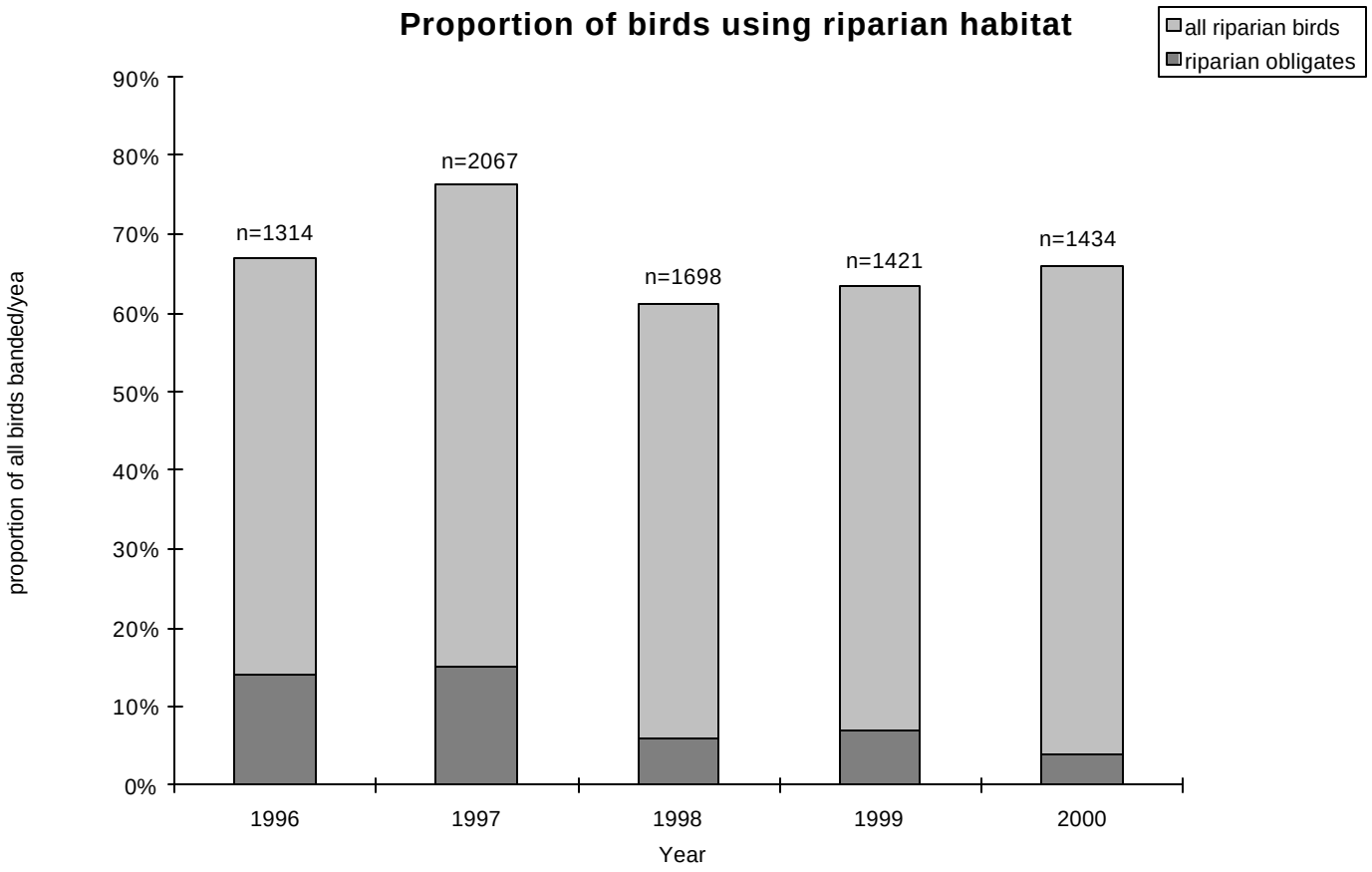

Figure 8. Proportion of all birds banded at Mugaha Marsh that are regularly associated with only riparian habitat (riparian obligates) and those riparian birds that also use other habitats (all riparian birds).

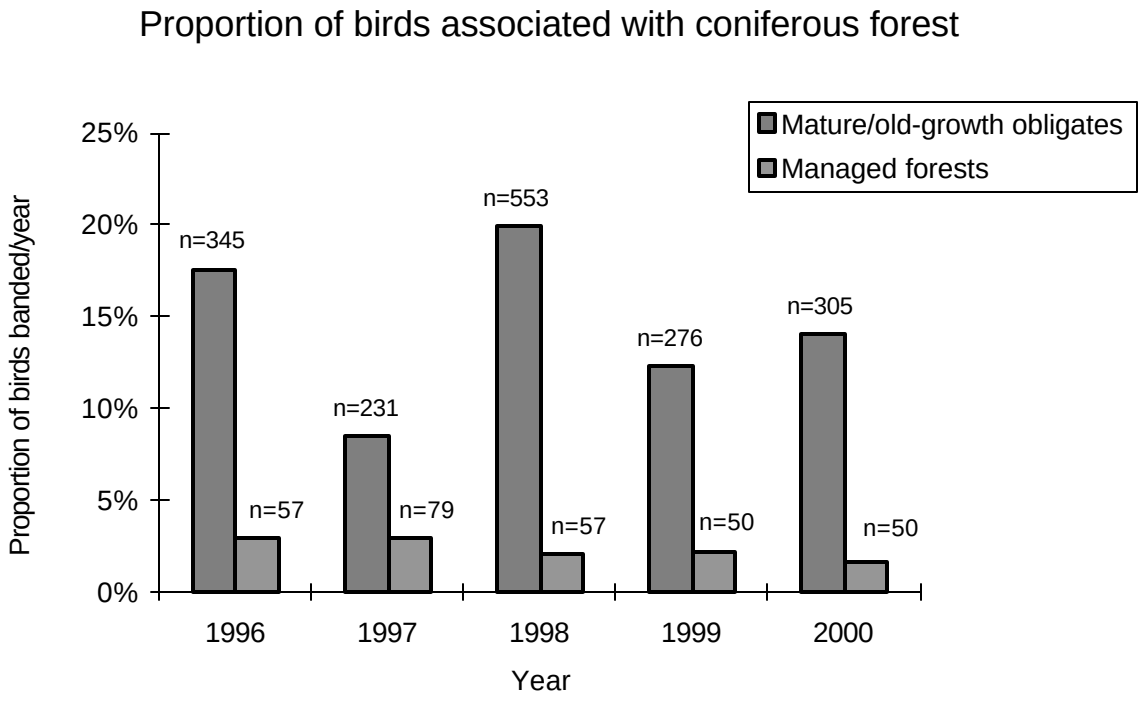

Figure 9. Proportion of banded birds breeding in only mature/old-growth forests compared with birds that are regularly observed in managed forests of intermediate-mature ages.

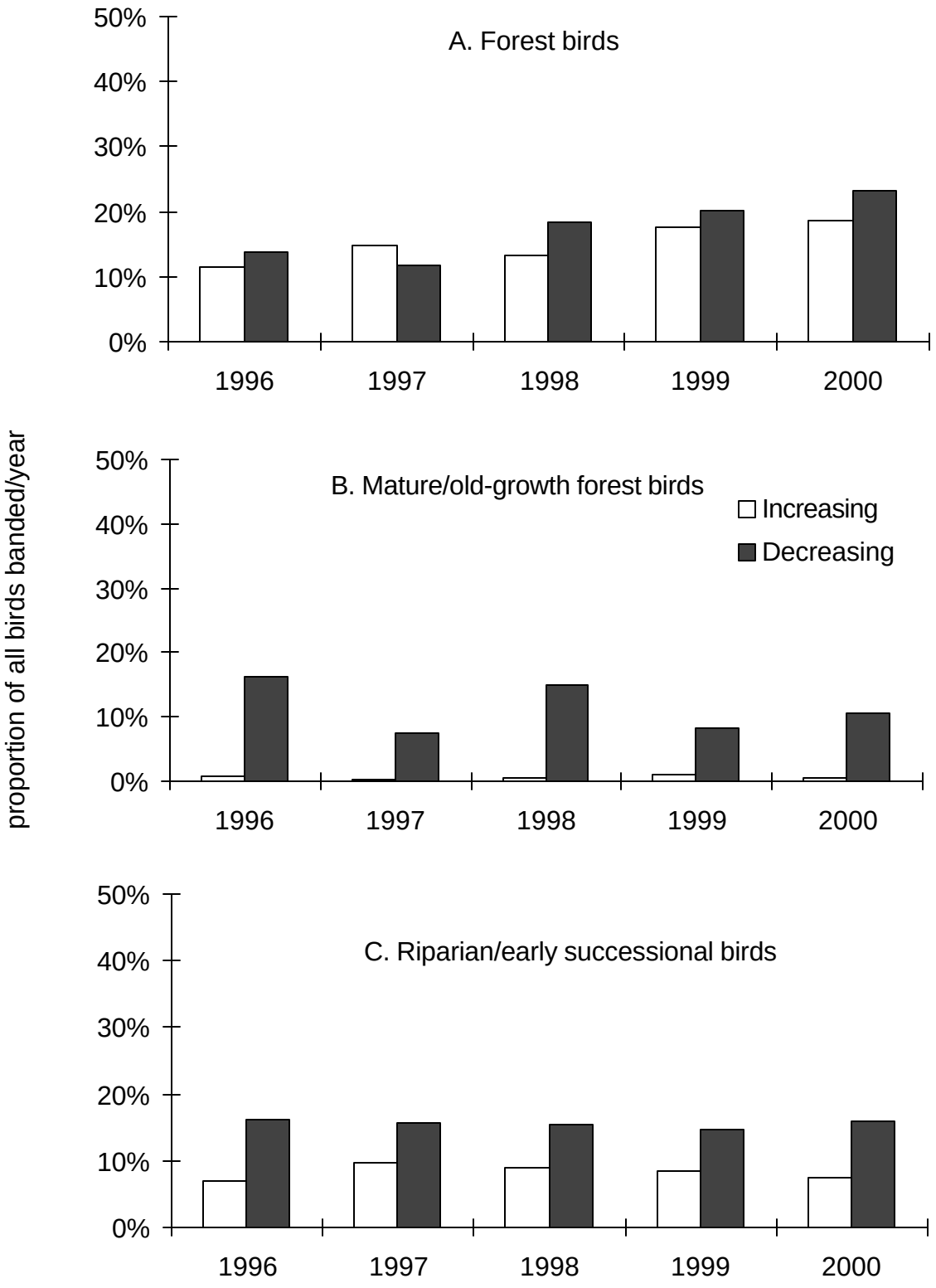

Figure 10. The proportion of birds banded at Mugaha Marsh with increasing or decreasing popoulation trends in the Breeding Bird Surveys (1966-1999) grouped according to their breeding habitat.

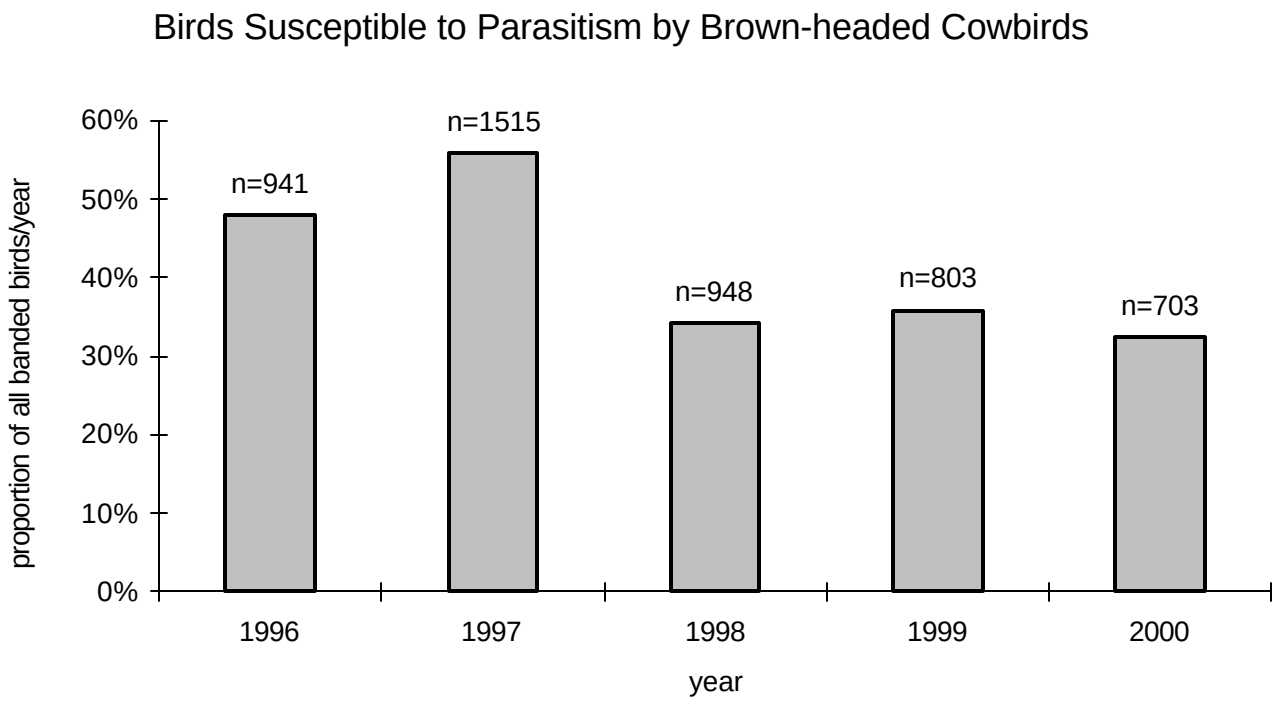

Figure 11. Proportion of birds banded at Mugaha Marsh from 1996-2000 that are susceptible to parasitism by Brown-headed Cowbirds.

Table 1. Habitat associations and ecological characteristics of the top 29 species (avg. ≥ 10 individuals/year) banded at Mugaha Marsh from 1996-2000.

Species	Total # banded 1996-2000	Avg # banded /year	Avg % of birds banded/year	Migratory Class[a]	Foraging Class[b]	Food Type[c]	Nest Layer[d]	Breeding Habitat[e]	1966-1999 BBS Trend	% of Canadian Breeding Range in BC
PISI	2015	403	15.74	SDM	GG	I	Con	For	-1.6	56.28
AMRE	1410	282	11.84	NTM	FG	I	Shr	E/Rip	-0.1	16.93
RCKI	1348	270	11.47	NTM	FG	I	Con	For	-1	14.89
NOWA	1025	205	8.66	NTM	GG	I	Gnd	Rip	1.1	13.7
DEJU	628	126	5.41	RES	GG	S	Gnd	E/Rip	-0.8	14.44
YWAR	569	114	4.74	NTM	FG	I	Shr	E/Rip	-1.3	17.06
OCWA	554	111	4.72	NTM	FG	I	Gnd	E/Rip	-1.4	20.01
YRWA	542	108	4.52	NTM	FG	I	Con	For	-0.7	14.65
WIWA	518	104	4.45	NTM	FG	I	Gnd	E/Rip	-2.8	15.5
COYE	495	99	3.99	NTM	FG	I	Shr	E/Rip	3.1	22.45
ALFL	495	99	4.18	NTM	HAWK	I	Shr	E/Rip	-0.4	9.54
LEFL	426	85	3.53	NTM	HAWK	I	Decid	E/Rip	0.3	13.67
SWTH	374	75	3.19	NTM	FG	I	Mix Tr	For	0.2	16.04
WAVI	316	63	2.67	NTM	FG	I	Decid	E/Rip	2.5	34.64
GCKI	274	55	2.24	SDM	FG	I	Con	For	-0.1	24.69
BCCH	256	51	2.15	RES	FG	I	Cav	For	-1.1	50.83
HAFL	254	51	2.16	NTM	HAWK	I	Decid	For	2	78.81
MAWA	250	50	2.12	NTM	FG	I	Con	E	0.3	4.73
WCSP	194	39	1.71	SDM	GG	I	Shr	E/Rip	0.3	15.9
LISP	192	38	1.67	NTM	GG	I	Gnd	E/Rip	8.1	13.92
SAVS	159	32	1.33	NTM	GG	I	Gnd	For	-0.1	11.75
DUFL	128	26	1.07	NTM	HAWK	I	Shr	E/Rip	-1.7	76.02
MGWA	126	25	1.06	NTM	FG	I	Shr	E/Rip	0.1	63.8
BLPW	115	23	0.95	NTM	FG	I	Con	For	-4.9	11.02
SOSP	103	21	0.88	SDM	GG	I	Shr	E/Rip	-0.6	20.82
CHSP	101	20	0.89	SDM	GG	I	Shr	E/Rip	-0.1	17.88
AMRO	84	17	0.68	NTM	GG	I	Mix Tr	E/Rip	0.6	12.77
TOWA	65	13	0.54	NTM	FG	I	Con	For	0.2	83.91
HETH	58	12	0.49	NTM	GG	I	Shr	For	0	19.11

a NTM = neotropical migrant, SDM = short distance migrant, RES=winter resident; b FG = foliage gleaner, GG = ground gleaner, Hawk = hawker (catches insects in flight); c I = insects, S = seeds; d Con = conifer tree, Decid = deciduous tree, Shr = shrub, Gnd = ground, Mix Tr = conifer or deciduous tree, CA = cavity; e For = forest (all types), E/Rip = shrubby deciduous habitat-either riparian or early successional, E = early successional with limited density of deciduous vegetation

Table 2. Migratory class, winter range and relative timing of occurrence/migration at Mugaha Marsh for the most commonly banded species (avg ≥ 50 individuals/year) at Mugaha Marsh.

Species	Avg # banded /year	Migratory Class	Relative Timing at Mackenzie	Northern Limit of Winter Range
AMRE	282	NTM	early	S. Baja
NOWA	205	NTM	early	S. Baja
YWAR	114	NTM	early	S. Baja
ALFL	99	NTM	early	N. South America
LEFL	85	NTM	early	N. Mexico
SWTH	75	NTM	early	C. Mexico
WAVI	63	NTM	early	N. Mexico
MAWA	50	NTM	early	S. Mexico
HAFL	51	NTM	mid-early	S. Arizona
RCKI	270	NTM	late	C. USA/NW Coast
OCWA	111	NTM	late	N. California
YRWA	108	NTM	late	C. USA/NW Coast
WIWA	104	NTM	late	S. California
GCKI	55	SDM	late	N. USA/C. BC
COYE	99	NTM	mid-late	N. California
PISI	403	SDM	irruptive	S. Canada/NW Coast
BCCH	51	RES		
DEJU	126	RES		

Nestboxes by John & Vi Lambie

The outcome of the nestboxes we have checked so far have not been as successful as on previous years. At Slocan of the 24 boxes we have there 3 were not used, 2 had nests that weren't finished, 5 were used by Mountain Bluebirds, but only two were successful, 14 were used by Tree Swallows with nine being successful.

Of the 31 boxes we checked south of Mugaha 11 had not been used, 2 were rodent nests, 1 was a wasp nest, 3 were successful Mountain Bluebird nests, 7 were successful Tree Swallow nests, and 4 were Tree Swallow nests of questionable outcome, 2 were unsuccessful Tree Swallow nests and one nest was not finished. This year when we first checked one of the boxes south of Mugaha it had Mountain Bluebirds at it. When we returned later to check on it the nestbox was occupied by a family of Tree Swallows and the Mountain Bluebirds were nesting in an old Flicker nest nearby.

The four boxes we have under the Hydro line near Buth Creek were all used by Tree Swallows; 2 were successful Tree Swallow nests, but two were of questionable outcome as the boxes had been torn off the post by a bear.

Of the 6 boxes we have in the Mackenzie Secondary School Woodlot 5 were used by Tree Swallows, 2 were successful and 3 were of questionable outcome and the one box was not used. Some of the boxes in this area will need to be moved as the new trees are becoming too tall.

Many of our other boxes must be checked later in the winter as they are over water or in boggy areas. Hopefully the success rate in them will have been greater.

Mackenzie's Project Feeder Watch

Local birders watched their feeders on two consecutive days once every two weeks from November until June last year (1999-2000). We extended the count by 5 count periods to pick up information on the early returning migrants. During the standard 10 count periods that are used by the National program we had 22 species recorded. Of the 22 species, 5 species (Steller's Jay, Evening Grosbeak, Pine Grosbeak, Common Redpoll and House Sparrow) were recorded by all our feeder watchers. By adding the extra 5 count periods we had a total of 37 species reported. Of special interest was the Rusty Blackbird that stayed around until December and one reappeared at the same feeder in April - Could it have been the same bird? Another special sighting was the Rose-breasted Grosbeak that showed up in a backyard on May 31. It was a beautiful male, and only the third sighting of this species in Mackenzie.

WBT Wild Bird Trust of British Columbia

by Vi Lambie

Over the past few years we have submitted information from our banding station, bird transects and personal sightings to help with Volume 4 of Birds of BC which has just recently gone to the printers. Wayne retired from his position with the Ministry of Environment in May, but he continues to work on birding projects. He is a Director with the Wild Bird Trust which recently established Canada's first provincial wildlife data centre. It is located in Victoria next to an 11 acre nature sanctuary.

We encourage our members to continue to support Wayne and Wild Bird Trust by submitting bird sightings, nest record cards, banding summaries by species and month, winter counts, etc. It will help with publications, new habitat range maps, etc.

1999 Christmas Bird Count
by Cheryl Omand

The Christmas Bird Count was held on December 19, 1999, in the Mackenzie area. It was a cloudy day with a temperature of 14°F (-10°C). Light snow flurries were present also. Seventeen species were identified,with a total birds counted for the day at 1771. Fourteen people participated in the count and ten people did counts at their feeders. Altogether 35 man hours was spent on this project. The participants were Ryan Bichon; Janet & Bob Groseth; David, Vi, & John Lambie Jr.; Bob & Cheryl Omand; Sharleen Pitkiethly; Jim & Cyntha Tuck; Cheryl Freeman; Liz Munroe; Wally Evers, Vida Tattrie and Judy & Dieter Dittrich. Most of the participants met at the Marabello restaurant for coffee and dessert that evening. The tallies were gathered and some stories were exchanged about our bird sightings, for the day.

Appendix 4 gives a summary of the species and numbers of birds observed on our Christmas Bird Counts.

Appendix # 2
Sponsors (Those who donated $100 or more) to our Birding/Migration Monitoring Program 1994-2000:

Fletcher Challenge Canada (FCC) Mackenzie Wood Products
1994 - $4200, 12 misnets and banding equipment
1995 - $600, 12 more mistnets

BC Hydro Peace/Williston Fish & Wildlife Compensation Program
1995 - paid for one bander directly
1996 - $5000
1997 - $5000
1998 - $5000
1999 - $7000
2000 - $6000

Finlay Forest Industries
1995 - $3400
1996 - $5000
1997 - $3000
1998 - $3400
1999 - $976.28
- gift in kind valued at $218.38

TimberWest (formerly FCC - Mackenzie Wood Products)
1996 - $5000

James L. Baillie Memorial Fund
1996 - $1500
1997 - $2000
1998 - $2500
- $1500 (Rhonda Millikin's grant for the banding clinic)
1999 - $1000
2000 - $2000 (we have received 1600 to date)

BC Wildlife Federation
1996 - $1008
1997 - $5185.80

Slocan Group - Mackenzie Division (formerly TimberWest)
1997 - $2000 (gift in kind)
- $3000

Mr. Laird Law
1998 - $460
1999 - $480
2000 - $200

Canada Trust Friends of the Environment Foundation
1999 - $2000
2000 - $4000

Fletcher Challenge - Mackenzie Pulp
1999 - $100

Canadian Wildlife Service
1999 - $816
- $2000 (funds for '99 actually received in 2000)
2000 - we have a contract foir $2500 - we have received no funds to date

Canadian Wildlife Foundation
2000 - $3500 (funds received in 1999)

Mr. Alan Simcoe
2000 - $100

Mr. Bruce Borrowman
2000 - gift valued at $125

Canadian Millenium Partnership Fund
2000 - $5000 - we have received 2000 to date

Mackenzie Nature Observatory (formerly the Environment Section of Mackenzie Fish & Game Association) have raised additonal funds for the project as well.

The following have loaned us travel trailers to use for accommodations for our bander and long term volunteers:

BC Ministry of Forests - Mackenzie District
1994 -2000

Jarl & Sue Sundve
1996

Carp Lake Logging
1997

Note: since 1998 MNO has had one small travel of its own that it uses

Appendix 3 Returns in 2000

1. American Redstart, band no. 2090 17036, banded 11 August 96 as an ASY/M, recaptured 6 August 98 (VL), 30 July 99 (DCB), 3 September 99 (SM), 31 August 2000 (VL), 1 September 2000 (AR)

2. American Redstart, band no. 2090 17987, banded 29 July 97 as an ASY/M. recaptured 23 August 2000 (DWL).

3. American Redstart, band no. 2090 17998, banded 29 July 97 as an AHY/F, recaptured 3 September 2000 (DWL).

4. American Redstart, band no. 2110 06226, banded 23 July 98 as a SY/M (BG), recaptured 13 August 98 (PNP) and 7 August 2000 (LL).

5. American Redstart, band no. 2110 06263, banded 25 July 98 as a HY/F (PNP), recaptured 26 August 2000 (AR).

6. American Redstart, band no. 2110 06273, banded 26 July 98 as a HY/M (AR), recaptured 28 July 98 (AR) and 31 July 2000 (AR).

7. American Redstart, band no. 2110 06322, banded 29 July 98 as a HY/M (PNP), recaptured 27 August 2000(VL).

8. American Redstart, band no. 2130 32885, banded 19 July 99 as an ASY/M (DCB), recaptured 13 August 99 (DCB), 12 September 99 (VL) and the 31 July 2000 (JPJ).

9. American Redstart, band no. 2130 32914, banded 22 July 99 as an AHY/F, recaptured 4 September 2000 (AR).

10. American Redstart, band no. 2130 32930, banded 25 July 99 as SY/M (SK), recaptured 28 August 99 (SM) and 5 August 2000 (JPJ).

11. American Redstart, band no. 2130 33020, banded 3 August 99 (DCB), recaptured 11 August 99 (DCB), and 13 August 2000 (VL).

12. American Redstart, band no. 2130 33041, banded 05 August 99 as SY/M (SK), recaptured 24 July 2000 (SK) and 11 August 2000 (VL).

13. Northern Waterthrush, band no. 3111 59377, banded 13 August 97 as an AHY/U, recaptured 8 August 98 (JPJ), 22 August 99 (DCB), 31 July 2000 (VL) and 24 August 2000 (VL).

14. Northern Waterthrush, band no. 3111 59813, banded 24 July 98 as an AHY/U, recaptured 13 August 98 (PNP), 16 August 98 (PNP), 17 August 98 (PNP), 12 August 99 (DCB), 17 August 99 (DCB), 08 August 2000 (JPJ) and 11 August 2000 (AR).

15. Northern Waterthrush, band no. 3111 59841 banded 27 July 98 as AHY/U (JPJ), recaptured 19 August 99 (DCB), 24 July 2000 (JPJ) and 29 July 99 (SK).

16. Orange-crowned Warbler, band no. 2160 69240, banded 15 August 99 (DCB), recaptured 29 August 99 as AHY/M (DCB) and 18 September 2000 (VL).

17. Orange-crowned Warbler, band no. 2160 69655, banded on 3 September 99 (SM), and recaptured 6 September 2000 (AR).

18 Yellow Warbler, band no. 2110 05633, banded on 20 August 97 as an AHY/M, recaptured on 22 July 99 (LL), 25 August 99 (DCB) and 26 August 2000 (AR).

19. Yellow Warbler, band no. 2110 06343, banded on 29 July 98 as HY/U (JPJ), recaptured 10 August 99 as an AHY/M (DCB), 16 August 99 (DCB), and 4 August 2000 (AR).

20. Yellow Warbler, band no. 2120 50113, banded on 23 July 98 as an AHY/M (MG), recaptured 23 August 98 (LL), 26 August 98 (PNP) and 23 July 2000 (LL).

21.Yellow Warbler, band no. 2120 19393, banded on 21 July 98 as an AHY/M (PNP), recaptured 24 August 99 (VL) and 2 August 2000 (AR)

22. Yellow Warbler, band no. 2140 49912, banded as AHY/M 27 July 99 (DCB), recaptured 17 August 2000 (AR)

23. Yellow Warbler, band no. 2140 49742, banded on 23 July 99 as AHY/F (DCB), recaptured 15 August 2000 (DWL)

24. Yellow Warbler, band no. 3500 19479, banded on 7 August 1996 as AHY/M, recaptured 31 July 97, 19 August 97, 20 August 97 (KCH), 21 August 99 (DCB) and 15 August 2000 (JPJ).

25. Audubon's Warbler, band no. 2140 49735, banded on 22 July 99 as AHY/U (LL), recaptured 6 September 2000 (JPJ)

26. Black-capped Chickadee, band no. 2120 50569, banded on 29 July 98 as HY/U (PNP), recaptured 27 August 98 (VL), 6 September 98 (LL), and 18 September 2000 (AR).

27. Black-capped Chickadee, band no. 2390 27798, banded 30 August 97 as HY/U, recaptured 20 September 2000 (AR).

28. Flicker Intergrade, band no.1453 30439, banded as AHY/M on 28 July 98 (PNP), recaptured 20 August 2000 as ATY/M (KMB).

29. Alder Flycatcher, band no. 2120 50743, banded on 3 August 98 as AHY/U (VL), recaptured 27 July 99 (DCB) and 30 July 2000 (AR)

30. Least Flycatcher, band no. 2110 06223, banded on 22 July 98 as HY/U (PNP), recaptured 23 July 2000 as AHY/F (JPJ).

31. Least Flycatcher, band no. 2140 49921, banded on 27 July 99 as AHY/F (SK), recaptured 29 July 99 (VL), 30 July 99 (DCB), 31 July 99 (DCB), 26 July 2000 (LL), 29 July 2000 (AR), and 5 August 2000 (SK).

32. Warbling Vireo, band no. 2160 69064, banded 5 August 99 as AHY/F, recaptured 7 August 2000 (LL).

33. Blue-headed Vireo, band no. 1651 13122, banded 16 September 99 as AHY/U, recaptured 15 September 2000 (JPJ).

34. Song Sparrow, band no. 1461 99632, banded on 24 September 97 as AHY/U, recaptured 27 July 98 as AHY/F (JPJ), 8 August 99 (LL) and 24 August 2000 (JPJ).

35. Oregon Junco, band no. 2171 20961, banded on 18 August 99 as HY/M (DCB), recaptured 4 September 2000 (AR).

36. Slate-colored Junco, band no. 1561 38824, banded 10 September 96 as HY/U Oregon Junco, recaptured 5 August 97, 3 Sept 97 (RE), 15 Sept 97 (VL), 17 Sept 97 (RE) and as AHY/M 5 August 2000 (JPJ). possible Hybrid

37. Oregon Junco, band no. 1651 13096, banded on 8 September 99 as AHY/M (DCB), recaptured 10 September 2000 (DWL).

38. Oregon Junco, band no. 1651 13098, banded on 8 September 99 as AHY/M (DCB), recaptured 23 July 2000 (LL)

Appendix 4. Christmas Bird Counts in Mackenzie

Count Year	1982	1994	1995	1996	1997	1998	1999
Month		Dec	Dec	(Jan)	(Jan)	Dec	Dec
Species / Mean Temp.	40°F	18°F	9°F	-18°F	-4°F		14°F
Mallard					2		
Green-winged Teal					2		
Golden Eagle					1		
Bald Eagle		1				1CW	
Hawk species			1CW				
Spruce Grouse		1CW				1CW	
Willow Ptarmigan						7	
White-tailed Ptarmigan			8			CW	
Ruffed Grouse		1CW		2	3	2	
Northern Pygmy Owl				1			
Great Gray Owl			1				
Downy Woodpecker		6	1	2	3	7	5
Hairy Woodpecker	1	12	6	6	7	4	3
Woodpecker species							2
Three-toed Woodpecker		7	5	1	1		
Black-backed Woodpecker				1			
Gray Jay	6	10	22	5	4	9	2
Steller's Jay	8	95	94	41	74	68	21
Black-billed Magpie		1	2		1CW	8	2
American Crow	3		4		6	8	3
Common Raven	72	273	337	227	399	212	192
Black-capped Chickadee	31	101	102	82	63	103	71
Mountain Chickadee	9		1				
Red-breasted Nuthatch	28	8	51	8	21	5	9
Winter Wren				3			
American Dipper	1	2	1	1	1	4	
Golden-crowned Kinglet		2			2		
Northern Shrike			2	1			
Bohemian Waxwing						5	16
European Starling	6		9		27	2	10
White-throated Sparrow			1				
Dark-eyed Junco		1	6	13	1	3	1
Slate-colored Junco							1
Snow Bunting			12	CW		39	
Red-winged Blackbird						2CW	
Rusty Blackbird							1
Pine Grosbeak	24	49	311	60	82	115	29
Purple Finch						1	
White-winged Crossbill			29		7		
Red Crossbill					6		
Redpoll Species	175	108	859	319	164	929	
Hoary Redpoll						4	
Common Redpoll							384
Pine Siskin	9					74	
Evening Grosbeaks		142	159	4	484	27	680
House Sparrow	35	392	498	42	64	164	339
Total Species	14	17	24	19	23	23	17
Total Individuals	408	1211	2521	829	1424	1800	1771

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

Mackenzie Nature Observatory's Fish & Wildlife Projects in 2000

Arne & Dirk working downstream of the course fish barrier in May 2000 photo by David Lambie

Dina Creek Maintenance
by David Lambie

When we were the Environment Section of Mackenzie Fish & Game Association we assisted Arne Langston, Fish Biologist with BC Hydro Peace/Williston Fish & Wildlife Compensation Program, in the development of a series of spawning beds at Dina Creek. The creek is used by rainbow trout in the spring and to a lesser degree by brook trout in the fall. Members and local volunteers assist with the annual maintenance of the stream.

Dirk Krop, David Lambie, John & Vi Lambie, and Donna Thornton assisted Arne with the maintenance in the spring of 2000.

Large Rainbow Caught at Dina 1

On March 5, 2000, Walter Diewald caught a 12 pound rainbow that was 30 inches long when he was ice fishing at Dina 1. Arne Langston, fish biologist with BC Hydro' Peace Williston Fish & Wildlife Compensation Program took scales and other samples and sent them to Winnipeg to be analyzed. The rainbow was a non-hatchery fish and was eight years old. That meant it was from the first year of enhancement work that was done on Dina Creek. In 1992 the beaver dams were breeched and the existing stream bed was washed to expose spawning gravel. This was the preliminary work to the more extensive spawning beds that were put in the following year.

Annual Dina Creek Field Trip
by Leslie Yaremko

For the fifth year in a row students from Morfee, Mountain View, Mackenzie Elementary, and Mackenzie Secondary School accompanied Mackenzie Nature Observatory (MNO) volunteers and local Biologists to Dina Creek to learn more about fish and fish habitat. Dina Creek is only 26 km north of town and provides spawning habitat to rainbow trout in the spring and brook trout in the fall. The

educational field trip grew out of the Salmonid Enhancement Project that initially improved stream

A view of some of the spawning beds at Dina Creek

Students from local elementary schools peer into a deep pool along Dina Creek to observe adult rainbow trout who are using this stream system for spawning photo by Christy Butt.

Students are participating in water quality monitoring, as one of the educational stations on the Dina Creek Field trip provided annually by MNO photo by Donna Thornton

Baskets of gravel are placed in the stream bed one year before the Dina Creek Field Trip so that stream invertebrates inhabit and can be easily captured. During the educational trip students pull out the “benthic invertebrate baskets” and learn about invertebrate identification and their important function in stream ecology. - photo by Christy Butt

habitat at Dina Creek, which provides critical spawning habitat for fish in the Dina Lakes. The initial restoration work took place in 1992 with the local volunteers working in partnership with BC Hydro Peace Williston Fish & Wildlife Compensation Program biologists. MNO assists the BC Hydro Peace/Williston Compensation Program with the annual maintenance of the stream and the MNO's tradition of bringing students to Dina Creek to do hands-on activities and observe adult rainbow trout spawning is an excellent way to create interest in this and other local conservation projects.

Approximately 6 elementary classes and 2 highschool classes participated in the day trip which was held on June 1, 2000. The first activity was to release kokanee at Mugaha Creek, which the students had been raising in their classroom throughout the year. This fish release was completed under the supervision of Peace/Williston Biologists Arne Langston, and Randy
Zemlack. Students then were bused to Dina Creek where they rotated through several educational stations to participate in activities and observe rainbow trout spawning. Students learned about the importance of water quality to stream ecology and took dissolved oxygen measurements, ph, and water turbidity readings with the assistance of Leslie Yaremko (MNO director) and Marilyn Madrega, Biologist and Assistant Forester from Slocan Forest Products Ltd. Christy Butt (MNO Vice-President) and Rick McCordick, Biologist and Assistant Forester from Abitibi Consolidated Inc., helped students learn the basics of fish capture and identification. Students also took a closer look at stream habitat and at the many other interesting animals inhabiting the stream bed, particularly the aquatic invertebrates. Slocan Forester Ryan Bichon (MNO President) directed the Aquatic Invertebrate Station and had fun with the students picking through the stream bed gravel for various insects, whose presence and/or absence are a good indicator of stream health.

Despite a few mosquitoes, the Dina Creek Field Trip was once again a success and an enjoyable way for the students of Mackenzie to learn about nature and local conservation. Special thanks to Donna Thornton for organizing this year's trip. The Mackenzie Nature Observatory covered the cost of the school bus!

Stream Enhancement

On April 15, 1997 the Ministry of Fisheries and Oceans received environmental fine monies of $5000 after the prosecution of the Ministry of Forests under S. 79.2(f) of the Fisheries Act. The fine was directed by the Department of Fisheries and Oceans to the Mackenzie Nature Observatory for use in projects enhancing rivers and streams resident with non-salmon species. Over the years several members (Jim Ladds, Bob Groseth, Doug McComb, Mike Burns, John Lambie, Ryan Bichon, Christy Butt, Josef Kollbrand, and Donna Thornton) were involved in the Fish Committee chaired by Albert Grattan. The committee developed a list of projects where the funds could be used. and members listed the projects according to the priority they were to be given. In 1999 Donna Thornton became the chairperson for the Fish Committee and her report on the projects follows.

Weston Creek Island Project
Phase 1 – Summer 2000
by Donna Thornton

Spring 1999: Permission was received at a meeting in the spring of 1999 to continue with the Weston Creek enhancement project for Bull Trout. The plan called for rafts to be placed near the mouth of the creek but in sufficient water to remain afloat year round. The purpose was to provide shade, cover and underwater structure to increase invertebrate populations for this blue listed species of fish. As well, the surface of these rafts was to be planted to native species of vegetation to enhance waterfowl and shorebird nesting opportunities.
May 24, 1999: Derek Connelly (MNO past president) and Donna went on a scouting mission to see where the thalweg of Weston Creek was by observing how much of the bay/shores were exposed at low water levels.
August 8, 1999: Myron Reise (MNO volunteer) and Donna took manual water depths of inner bay and left 2 marker buoys.
May 2000: Chuck Kovacs of Donohue Forest Products Inc. (DFP) had now completed our raft (the original plan had called for two 10'x 20' ones but we got one approximately 16'x 20'). Peter Wright (MNO volunteer and DFP staff) assisted in this.
July 20, 2000: Lloyd Schultz (DFP-Navigation) organized the loading of the raft (~3 hours) onto the Finlay Nav. barge for delivery to Weston Creek. Rick Dickson and Andy Maillet (both from DFP-Nav.) were the Captain and Crew for the trip. Donna went up with them on the barge to assist in the final placement.

July 21, 2000: Raft delivered to Weston Creek Bay finder to evaluate water depths around point on south mouth

Weston Creek Floating Island - photo by Donna Thornton

Morfee Creek Twin Culverts Project - photo by Donna Thornton

shore from initial location. Water depth at selected location ~47.5 feet. Metal anchor cables were ~50 feet (15.25 m) with additional 1 m for height of lock blocks (total length ~16 m). Final site selection and unloading time took ~3 hours
August 22,2000: Thank you cards and small gifts were sent to Chuck, Lloyd, Rick and Andy (engraved key chains) in light of amount of effort involved.
August 26, 2000: Donna went out to the site and put MNO's name and personal phone number onto the raft with spray paint as per DFO instructions should it come free from its moorings over the course of the winter. A Bull Trout sign was also put at the end of MOF's Weston Creek recreation site/camping area on the point of land just north of the creek mouth.

Providing the raft stays in position this winter, we will implement Phase II of the project next spring. Invoices have yet to come in for construction and placement of the raft, to ascertain how much of the environmental fine money remains for further stream enhancement works.

Many thanks to all who participated in this project!! Stay tuned for updates early in 2001!!

Morfee Creek Twin Pipe Project
October 2000 by Donna Thornton

The twin culverts (CMP's) at about 10 km on the Parsnip West Forest Service Road (FSR) in the Mackenzie Forest District, had a long history of annual beaver problems. Located just northwest of the town of Mackenzie in northern BC, they are on a main forestry haul road that leads up the east side of the reservoir known as Williston Lake. One of the reasons why the beavers delighted in creating their dam at this site was because at the time of installation (well before the *Forest Practices Code of British Columbia Act* was created), the upstream lip of each CMP was somehow crumpled upward. This then allowed sediment to build up at both inlets and over time, the upstream habitat changed into a shallow pond that flooded along the FSR road bed with each successive dam. This FSR is considered a well used road as this segment leads to several local day use recreation sites favoured by the community as well as a Resort and Guide/Outfitter operation at the road's end near Finlay Bay. Additionally, just a few meters downstream of the culvert installation, is the site of the grade school children's annual kokanee release, as part of the Salmonid Program through the public school curriculum. This location was therefore considered to be an ideal candidate for some rehabilitation work to ensure fish passage through these culverts and attempt to foil our persistent dam builders.

Chris Anderson (MOF Engineering Assistant) approached Donna Thornton (MELP A/Forest Ecosystem Specialist) in the spring of 2000 to obtain permission to remove the dam to halt flooding, which was done in late May. Jeff Kotowsky (MOF Watershed Restoration Technician) later on contacted Donna with some ideas on enhancement work at the site. Subsequently, the funding fell through. However, later on in the year, Jeff talked to Donna again. This time it was a "go" and they both worked with Eberle Contracting from October 16 to 18, 2000. This time frame was not the optimum choice because it was outside of the timing window of least risk for instream works on fish bearing streams. After consultation with the Department of Fisheries and Oceans however, it was considered to still be a benefit with the expected gain in habitat and fish passage outweighing any possible losses of fish production in the immediate downstream vicinity.

Silty sediment was removed slowly and carefully upstream of the CMP's to not create underwater 'clouds' that could suffocate deposited fish eggs and invertebrates downstream. The area laboriously removed was ~3m x 4m in diameter and to a depth of ~1m. The curled metal edge of the south higher pipe was forced down and secured by depositing huge riprap chunks on it. Available local discarded and already cured concrete was used as riprap both upstream and downstream at the site. The curled metal edge of the north lower pipe was actually split apart and forced down. The weight of the water was expected to help maintain this new position.

Downstream, a large stepped pool of riprap chunks (~3m x 4m) was placed about the south pipe's outlet. A huge riprap chunk was placed inside the barrel of the CMP to further slow the water's velocity. The north pipe had a few large pieces of riprap placed immediately below the outlet. Both upstream and downstream banks and inbetween the two pipes were further armoured with large riprap chunks. The anticipated spring velocity for this stream was not considered to be excessive and therefore not in danger of "floating" away any of the concrete used as riprap. The downstream alders and willows and upstream sedges, grasses and rushes are all expected to fill in around this newly placed armour and further secure them in place.

MNO wishes to thank the many participants for their input and comments on this project and invites all to inspect the site!

Kennedy Siding Caribou
by Vi Lambie

The Kennedy Siding pine flats provide early winter habitat for a herd of Woodland Caribou that depict unique transitional behavior, almost "northern " ecotype and almost "mountain"ecotype. Citizens of Mackenzie enjoy the drive to Kennedy Siding in the fall to watch the animals as they feed on the lichens. The caribou are very trusting animals and will come very close to your vehicle.

Due to the importance of early winter habitat to caribou survival, Kennedy Siding was one of the areas that was initially proposed for protection at the local land and resource management table. It was felt that the habitat would need to be managed to remain good habitat for caribou; therefore, it has been proposed as a special management area for caribou. We are happy to say the Mackenzie land use plan was recently approved by government and look forward to it being implemented.

This past spring a group of representatives of companies and local clubs as well as concerned individuals met to discuss ways we could help the caribou. Christy Butt, our vice-president and biologist for Abitibi, took on the task of designing some information signs. She worked on the design, then sent the drafts to the interested individuals for suggested changes. When that was completed, Donna Thornton, MNO director and a Forest Ecosystem Specialist with Ministry of Environment, Lands, and Parks, contacted different companies to get an estimate of the cost for the signs.

Letters were sent out to potential sponsors and a notice was placed in the paper to try to generate funds needed for the signs. We have had a terrific response and will have sufficient funds to order all 5 signs. To date we have received support from BC Hydro Peace Williston Fish & Wildlife Compensation Program, Spruce City Wildlife Association, BC Rail. Rocky Mountain Riders Snowmobile Club and the McLeod Lake Indian Band.

Caribou at Kennedy Siding - photo by John D. Lambie