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SASKATCHEWAN

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BLUE JAY

Volume 71 Number 1 March 2013

Front Cover: *Sharp-tailed Grouse, April 9 2013* *- Randy McCulloch*
Back Cover: *Conglomerate Cliffs, Cypress Hills, SK* *- Anne Brigham*

Varied Thrush *- Joel Priebe*

Taking a break after watching Sandhill Cranes at the north end of Last Mountain Lake, Saskatchewan: Alexander Wetmore (seated on the ground at left), James Fisher (centre), and Roger Tory Peterson (immediately to Fisher's right). The identities of the other people in the photograph are not known, 29 August 1959 (photograph by S.G. Sealy).

Mystery Photo *- Photos by Gord Hammell*

Blue Jay

Vol. 71 No. 1 March 2013 1 - 76

BIRDS

71st ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT - 2012

ALAN R. SMITH, Box 154, Avonlea, SK, S0H 0C0, Email: *alanrandi@sasktel.net*

The Counts. Ninety counts were conducted this year, down one from last year. We welcome new or revived counts at Borden-Radisson, Floral, and Meadow Lake South. On the other hand, recognition is long overdue to Daisy Myers who conducted her 50th count at Leader since her first in 1957!

The Weather. Compared to last winter this winter was much colder, with deeper snow, but with lower winds. Average minimum and maximum count temperatures this past count period were -18 to -12C (-7 to -2 in 2011-12), snow depths were 17 to 34 cm (5 to 13 cm in 2011-12) and wind speeds 4 to 12 k/h (8-18 k/h in 2011-12).

The Birds. The 113,000 birds counted were slightly below the average for the last 10 years. Ten fewer species (98) were seen this year compared to last year, but the average number of species per count set a new record at 19.4 species. The latter figure has grown steadily. For example, in 1992 there were only 14.2 species per count. A couple of factors that could be in play are the spread of the introduced Eurasian Collared-Dove and House Finch, and the increasing popularity of bird feeders.

For the first time in seven years, Saskatoon's lead for the most species was challenged. Both Saskatoon and Estevan had 47 species on count day plus the count period, but Saskatoon retains the crown as it had one more species (42) than Estevan on count day.

Population Trends. In many ways this was an interesting year for population trends in many species – some are listed here, but see Table 7 for others.

The common waterfowl were way down both over last year and the longer term. Early snow denied field foraging to the Mallard and Canada Goose, but the decline of the Common Goldeneye is more difficult to explain. Eurasian Collared-Dove continues to expand with a record 377 birds at 19 localities. Snowy Owl numbers remained high for the second year straight.

Once considered a rarity, the Varied Thrush seems to have arrived as a regularly wintering bird with records at 8 localities. Tree-foraging Red-breasted Nuthatches and Brown Creepers were up substantially over last year. The numbers of most species of finches were up, with White-winged Crossbill numbers at a historic high. House Finches were an exception, as their populations have remained stable for the second year in a row.

Rarities. For the third consecutive year no new species were added to the all-time list of species seen on the CBC; the total remains at 184 species.

The few rarities included our fourth Eastern Towhee on the new Floral Count, our fourth record of Savannah Sparrow on the Denholm Count, and our sixth and seventh Lincoln's Sparrows on the Codette Lake and Morse counts. Single Northern Cardinals were seen on count day at Togo and count period at Prince Albert.

Count areas and participants
(Names of compilers are in italics).

1. ARCHERWILL. Gerald Hiron, Susan Hiron, Audrey Hnetka, *Elaine Hughes*, Dorothy Klettberg, Willie Klettberg, Cecil Reimer, Mary Reimer, Judy Revoy, Carmen Smith.

2. AVONLEA. *Alan Smith*, Blaine Sudom.

3. BALGONIE. Stephane Canévet, Jared Clarke, Myrna Hunter, Fran Kerbs, Laurie Koepke, Kim Mann, Kristen Martin, *Brett Quiring*, Tanner Schilller, Bernard Tremblay, Duncan Willis.

4. BANGOR. *Allan Bolton*, *Lynn Bolton*, Aileen Hayward, Alan Hayward, John Maddaford, Leslie Maddaford, Bev McLaren, Raye McLaren.

5. BIGGAR. Greg Goring, Linda Schnedar, Lorrie Sielski, Larry Sutherland, *Guy Wapple*, Marguerite Wapple, Rob Wapple, Sandra Wapple, Ann Weekes.

6. BIRCH HILLS. Carman Dodge, Margaret Mareschal, *Maurice Mareschal*, Don Weidl.

7. BORDEN-RADISSSON. Denise Giroux, Heather Giroux, Ron Jensen, *Stan Shadick*.

8. BROADVIEW. Joy Pearson, Lorne Pearson, *Don Weidl*.

9. CABRI. *Carman Dodge*, Keith Dodge, Ken Dodge.

10. CANDLE LAKE. Doug Boivin, Carman Dodge, Margaret Mareschal, Maurice Mareschal, Barb Weidl, *Don Weidl*.

11. CATER. Beverly Beland, *Orval Beland*, Donna Long, Waldy Long, Fred Roske, Ed Schulkowsky.

12. CHATSWORTH S.D. Albert Ellinboe, Lisa Hermiston, George Maben, *George Murray*, Laurie Murray, Dorothy Nabe, Marcel Pelletier, Bethany Rooke, Matthew Rooke, Stewart Rooke, Carol Tangedal, Rudy Tangedal.

13. CHRISTOPHER LAKE. *Jeannie Walker*.

14. CHURCHBRIDGE. Cas Chyz, Verna Chyz, Barb Godard, Rick Godard, Elin Johnson, Ron Johnson, Phyllis Kaeding, Martha Karau, *Wally Karau*, Elaine Pollock, John Pollock, Denis Putland, Dianne Putland, Jack Sauser, Kris Sauser, Ed Wirth, Gloria Wirth.

15. CLARK'S CROSSING. Bruce Boldt, Annemarie Buchmann-Gerber, Dave Cook, Louise Cook, Lorne Duczek, Daniel Giesbrecht, May Haga, Marilyn Haskins, Jeff Jensen, Ron Jensen, Robert Johanson, Gwen Klypak, Henry Klypak, Gordon Koshinsky, Margaret Koshinsky, Audrey MacKenzie, Bill MacKenzie, Murray Morgan, Hilda Noton, Sylvia Raginski, Nick Saunders, Jan Shadick, Stan Shadick, Bev Schmidt, Marten Stoffel, Guy Wapple, *Michael Williams*, Dianne Young.

16. CODETTE LAKE. *Doug Boivin*, Carol Mezaros, Donald Mezaros, Barb Weidl.

17. CRAVEN. Barbara Barnett, Don Bird, Jody Broughton, Stephane Canevet, Blanche Cooper, Jim Cummings, Rob Cunningham, *Trevor Herriot*, Louise Holloway, Phil Holloway, Florence Holt, Fran Kerbs, Laurie Koepke, Bob Luterbach, Kent Lynn, Barbara Mader, Kim Mann, Andy McDonald, Kevin Moore, Marilynn Phillips, Curtis Pollock, Brett Quiring, Susan Rollins, Brian Sterenberg, Al Sulma, Jeanette Taylor, Robb Taylor, Louis Webb.

18. CREIGHTON. Karen Prokopetz, *Brenda Schmidt*, Harvey Schmidt, Terry Smith.

19. CROOKED LAKE. *Boyd Metzler*, Don Weidl.

20. CROOKED RIVER. Helen Carson, Lyle Carson, *Margaret Mehler*, Morley Mehler.

21. CYPRESS HILLS PROVINCIAL PARK (Centre Block). David Larson, Margarette Larson, Angela Litke, Matt Litke, Brynne Martin, Mimi Martin, Camille Munroe, *Melody Nagel-Hisey*, Lesa Newell, Pake Newell, Cassidy Schock, John Schock.

22. DENHOLM. Beverly Beland, Gerard Beland, Linda Beland, *Orval Beland*, Gord Moore, Anna Symynuk, Larry Symynuk.

23. EASTEND. Roxie Binkley, Duane Bristow, Kevin Bristow, Betty Davis, Diane Dohei, *Robert Gebhardt*, John Hanlin, Joan Hodgins, Harvey Johnson, John McIntyre, Mary Thomson, Heidi Topham, Eldon Wig.

24. ENDEAVOUR. *Norman Harris*.

25. ESTEVAN. Barry Dies, Marilyn Dies, Kathy Hedegard, Kathy Kazakoff, Larry Preddy, *Guy Wapple*, Sandra Wapple.

26. ESTUARY NORTH. Cathy Cocks, *Dean Francis* Fran Francis.

27. FENTON. *Carman Dodge*, Maurice Mareschal, Don Weidl.

28. FLORAL. Nick Saunders, *Guy Wapple*.

29. FORT QU'APPELLE. Peter Ashcroft, Peter Heerschop, Alice Isfan, Jean McKenna, Alan Mlazgar, Laureen Nickolson, Wendy Paquin, *Keith Stephens*, Colette Stushnoff, Richard Stushnoff, David Sutherland.

30. GARDINER DAM. Greg Fenty, Maxine Forsberg, Jeff Jensen, Ron Jensen, Kevin Moore, Nick Saunders, Stan Shadick, Marten Stoffel, *Guy Wapple*.

31. GOOD SPIRIT LAKE. *Bill Anaka*, Dorothy Riesz, Ray Riesz, Lloyd Wilson, Marg Wilson.

32. GRANDORA. Danelle Messer, Mika Messer, *Verna Messer*.

33. GRASSLANDS NATIONAL PARK. Pat Fargey, *Michael Fitzsimmons*, Brett Grant, Robert Harwood, Laura James, Matthew Johnson, Catherine Macauley, Eli Morgan, Emmet Morgan, Heather Sauder, Adrian Sturch, Emmet Sturch, Ashley Wruth.

34. GRAYSON. Carina Helm, *Charles Helm*, Daniel Helm, Linda Helm, Jeanette Zimmer, Karl Zimmer, Steven Zimmer.

35. HARRIS. Russ Barker, Ron Jensen, Nick Saunders, *Guy Wapple*.

36. HAZLET. Laurent Dudragne, *Ryan Dudragne.*

37. HUDSON BAY. *John Daisley*, Rosalie Daisley, Teena Johnson, Agnes Lewellin, Myra Paslowski, Dennis Reimer, Ruth Reimer, Gloria Stang, Mervin Williamson, Doris Winter, John Zolkowich.

38. INDIAN HEAD. Jan Beatty, C. Blenkin, C. Blenkin, J. Dixon, K. Dixon, Mike Duran, Eileen Escott, *Irv Escott*, Dave Gehl, A. Gibson, M. Gray, S. Hearn, Jim Jinks, Linda Jinks, J. Kort, L. Kort, Nick Kucharan, S. Kucharan, D. Loran, Dora Nichols, Adam Scott, A. Scott, B. Scott, Glenn Scott, J. Scott, Lorne Scott, Chad Skinner, Christine Skinner, Fred Skinner, L. Schaeffer, R. Schaeffer, Donna Thompson.

39. KENASTON. Doug Beckie, *P. Lawrence Beckie*, Tyler Beckie, Austin Cooper, Reid Cooper.

40. KENOSEE LAKE. Boyd Metzler, *John Pollock.*

41. KETCHEN NORTH. *Dallas Fairburn.*

42. KILWINNING. *Ed Driver*, Beryl Peake, Gerry Threlfall.

43. KINDERSLEY NORTH. *Jean Harris*, Keith Harris.

44. KINLOCH. *Don Forbes*, Doreen Forbes, Cliff Logan, Phillip Siwak, Doreen Wickstrom.

45. KYLE. Greg Nelson, Yvonne Nelson, Glen Pederson, Marten Stoffel, *Dan Zazelenchuk.*

46. LAC LA PLONGE. *Katherine Brewster*, Erin Conkin, John Conkin, Aislinn Petz.

47. LA RONGE. Sid Robinson, *John Schisler*, Jan Shewchuk, Joan Shewchuk, Karen Waters.

48. LAST MOUTAIN LAKE N.W.A.-NOKOMIS. *Ross Dickson*.

49. LEADER NORTH. *Daisy Myers*.

50. LOVE - TORCH RIVER. Carol Blenkin, Hal Birkett, Joan Birkett, *Bert Dalziel*, Duke Dalziel, Joan Dalziel, Kari Dalziel, Sara Dalziel, Scott Edwards, Dave Epp, June Epp, Elaine Inskster, Roseanne Kirkpatrick, Ron Knutson, Terry Knutson, Eilene L'Heureux, Jennette LeCuyer, Lynn Matthews, Bev Macauley, Dave Macauley, Lillian Nesset, Mark Todd, John Sinclair, Leonard Turtle.

51. LUSELAND. Estelle Finley, *Kim Finley*, Liam Finley.

52. MACDOWALL. Hazel Barton, Leah Barton, Myron Barton, Lon Borgeson, Dianne Brown, Val Drummond, Barb Sather, *Alan Smith*, Ione Surbey.

53. MACNUTT. Elizabeth Neuhofer, Adeline Markosky, Paul Peplar, John Skinner, *Tim Wendell*.

54. MEADOW LAKE. Bill Caldwell, Janet Caldwell, *Bob Wilson*, Ian Wilson.

55. MEADOW LAKE SOUTH. Jean Cheze, *Deidre Todd*.

56. MOOSE JAW. Ryan Dudragne, Jeff Mander, Dan Sawatzky, *Alan Smith*.

57. MOOSE MOUNTAIN. Bob Cameron, Kathy Hedegard, Doyle Thomas, *Val Thomas*, John Whitell.

58. MORSE. Larry Bonesky, Ryan Dudragne, Elizabeth Enns, Noel Enns, Stella Enns, Mike Francis, Roxanne Johnson, Randy McCulloch, Ryan McCulloch, Joel Priebe, Ken Priebe, *Myrna Priebe*, Lori Wilson.

59. NIPAWIN. *Carol Blenkin*, Doug Boivin, Vi Budd, Joyce Christiansen, Bert Dalziel, Rick Douslin, Patti Gaertner, Jennette LeCuyer, George Lidster, Doug Pegg, Shirley Phillips, Chelsea Turtle, Leonard Turtle, Barb Weidl.

60. NISBET FOREST, NORTHWEST. *Sandra Jewell*.

61. NISBET FOREST, WEST. *Kim Clark*, Shamara Clark, Suzanne Clark, P. Levesque, Rory Schnarr.

62. ODESSA. *Arden Curts*, Denise Curts, Denny Curts, Fred Curts, Nolan Curts.

63. OUTLOOK. *Alan Smith*, Graham Thomson.

64. PIERCE LAKE. *Ted Hindmarch*, Phil Shore.

65. PIKE LAKE. Alison Baudru, Adelle Bittner, Katherine Brewster, Donna Bruce, Ann Christensen, Ted Christensen, John Conkin, David Cook, Louise Cook, Yvonne Cuttle, Elsbeth Dormuts, Shelly Fisher, David Forbes, Joe Fry, Kathy Fry, Michael Gollop, May Haga, Greg Hutchings, Robert Johanson, Audrey MacKenzie, Bill MacKenzie, Bob McNaughton, Murray Morgan, Annessa Musgrove, Hilda Noton, Keith Pahl, John Patterson, Frank Roy, Marc Sabourin, Nick Saunders, *Beverley Schmidt*, Stan Shadick, Guy Wapple, Karen Weibe, Michael Williams, Scott Wilson, Van Wishingrad, Diane Young, Dwight Young, Jackson Young, Nancy Young.

66. PRINCE ALBERT. Steve Abbott, Jim Bahr, Doug Braaten, Marie Braaten, Brian Christensen, Helen Christensen, Kim Clark, Shamara Clark, *Carman Dodge*, Pat Dunn, Marilyn Fehr, Andrea Fisher, Harold Fisher, Shelly Fisher, Bonnie Green, Howard Green, Kaitlyn Green, Ruth Griffiths, Nadine Hug, Ron Jensen, Gwen Klebek, Jacques Lavoie, Justine Lofstrom, Elaine McMillan, Michael Newman, Alyana O'Shaughnessy, Siobhan O'Shaughnessy, Tim O'Shaughnessy Christine Rye, ,John Rye, Phil Taylor, Don Weidl.

67. QU'APPELLE. *Christine Blair*.

68. QU'APPELLE VALLEY DAM. May Haga, Robert Johanson, Nick Saunders, Jan Shadick, Stan Shadick, Carl Siemens, Hollyce Siemens, Marten Stoffel, Guy Wapple, *Michael Williams*.

69. RAYMORE. *Valeriana Harris*, Sheila Lamont.

70. REGINA. Marla Anderson, Lionel Bonneville, Stephane Bonneville, Lyn Brokofsky, Jim Elliot, Ruth Englund, Bob Ewart, Terry Ford, Shirley Friel, Norm Henderson, Dale Hjertaas, Paule Hjertaas, Myrna Hunter, Phyllis Ilsley, Fran Kerbs, Laurie Koepke, Rhéal Larouche, Maureen Lee, Bob Luterbach, Kim Mann, Richard Marcotte, Wayne Pepper, *Brett Quiring*, Chris Ratch, Margaret Skeel, Frank Switzer, Doyle Thomas, Val Thomas.

71. ROKEBY. A. Denseowich, B. Harris, Lloyd Liebracht, M. Maier, Lorn Niebergal, Fred Phillips, *Martin Phillips*, Kirk Scrernick, Ray Thies.

72. ROSCOMMON S.D. Bernice Althouse, Kate Althouse, Marjorie Finnie, Ruby Finnie, Brian Irving, *Dianne Sloan*, Graham Sloan, Marguerite Sloan, Mabel Sokoloski.

73. ROULEAU. Annika Bahrey, Jeff Bahrey, Owen Bahery, Rylan Bahrey, Allen McGratten, Noreen McGratten, *Patricia Sterzuk*, Rachel Sterzuk, Irvine Warren.

74. ROUND LAKE (Qu'Appelle Valley). Jaxon Finkas, *Boyd Metzler*, Gary Tinnish, Mary Ward.

75. SALTCOATS. Christine Blazieko, Olga Brygadier, Walter Brygadier, *Rob Wilson*.

76. SASKATCHEWAN LANDING PROVINCIAL PARK. Laurent Dudragne, Ryan Dudragne, *Dan Zazelenchuk*, Ray Zeller.

77. SASKATCHEWAN RIVER FORKS. Carman Dodge, Barb Weidl, *Don Weidl*.

78. SASKATOON. Tony Allen, Alison Baudru, Neva Bayliss, Jin Beverage, Janny Bos, Heather Brenneman, Heinz Buchman, Annemarie Buchmann-Gerber, David Burgess, Jennifer Burgess, Mike Chorney, George Christenson, Jacquie Christenson, Ken Coutu, Monique Coutu, Ewen Coxworth, Gordon Crockford, Yvonne Cuttle, Phil Davenport, Sonia Davenport, Linda Delver, Ken Dodge, Lorne Duczek, Anne Dzus, Melanie Elliott, Kathy Exner, Joan Feather, Lesley Fell, Greg Fenty, Jennifer Fenty, Terri Fenty, Elizabeth Friesen, Cathy Fry, Kristen Fry, Joe Fry, Martin Gerard, Mike Gollop, May Haga, Audrey Hall, Anne Hanbidge, John Hanbidge, Katie Hanbidge, Marlene Hanbidge, Wilburn Hendrickson, Alice Hiller, Kodi Hiller, Ed Holgate, Dane James, Jeff Jensen, Julie Jensen, Ron Jensen, Marlene Kalanack, Arlene Karpan, Robin Karpan, Richard Kerbes, Gordon Koshinsky, Margaret Koshinsky, John Lahey-Wiggs, Michael Lahey-Wiggs, Anna Leighton, Ted Leighton, Audrey MacKenzie, Bill MacKenzie, Bob McNaughton, Priscilla Mah, Colleen

Meldrum, Larry Mitchell, Scott Mitchell, Maxine Morrison, Hilda Noton, Marika Olynyk, Asha Perera, Alison Philips, Marella Rosta, Mary Jean Roy, Craig Salisbury, Rob Salisbury, Lorriene Salsisbury, Trish Santo, Nick Saunders, Doug Schmeiser, Irene Schmeiser, Jan Shadick, Stan Shadick, Siddartha Sharma, Eileen Shpyth, Henry Shpyth, Laurie Slinger, Jan Solem, Jennifer Solem, Penny Stalker, Marten Stoffel, Andrew Taylor, Gordon Taylor, Grayson Taylor, Margot Taylor, Philip Taylor, Mary Toews, Don Torrie, Gwen Van der Kamp, Hilda Voth, Guy Wapple, George West, Bev Will, *Michael Williams*, Amy Wilson, Scott Wilson, Gary Wobeser, Jim Wood, Sandy Woynarski, Stan Woynarski, Diane Young, Dan Zazelenchuk, Norman Zlotkin.

79. SAWYER LAKE. Maureen Blight, *David Weiman*.

80. SHAMROCK. *Hugh Henry*, Milton Knudsen, Randel McCulloch, Joel Priebe, Myrna Priebe, Lori Wilson.

81. SNOWDEN. Esther Chamberlin, Sylvia Debbler, Diane Friesen, Ed Hagel, *Irene Hagel*, Lillian Kuzniar, Linda Patton, George Pickett, Jack Pickett, Heather Priestley, Karen Priestley, Valerie Rein, Jodi Rudd, Bev Smears, Bill Thompson, Tim Thompson, Irene White.

82. SPINNEY HILL. *Ed Driver*, Margaret Driver.

83. SQUAW RAPIDS. *Ryan Dudragne*, Dan Sawtzky.

84. SWIFT CURRENT. Jacquie Bolton, Stacy Bolton, Norris Currie, Laurent Dudragne, Mary Ann Dudragne, Ryan Dudragne, Arnold Ens, Karen Gornick, Dave Green, Esther Green, Katie Hagman, Norma Hain, Leonard Head, *Hugh Henry*, Kim Houghtaling, Stephanie Houghtaling, Leonard Howes, Lois Howes, Dot Letkeman, Janet Payne, Harold Steppuhn, Irene Stinson.

85. TOGO. Donna Dewores, Barb Elsasser, *Doug Elsasser*, Amanda Harper, Anita Huziak, Ed King, Louise King, William Koreliuk, Woody Mutrie, Clarence Pfeifer, Karen Pfeifer, Zane Woodworth, Zoria Woodworth, Claudia Zengl.

86. WEYBURN. Cindy Boehm, Cecil Burr, Tanis Dionne, Glen Fleming, Milie Fleming, Mavis Goranson, Dale Huff, Sandi Huff, Darcy McCormick Elma McCormick, Don Payak, Doyle Thomas, *Val Thomas*, Kim Thorson, Myrt Thorson, John Whitell.

87. WHITE BEAR. Sigvald Jordheim, Greg Nelson, Yvonne Nelson, Marten Stoffel, *Dan Zazelenchuk*.

88. WHITEWOOD. Ken Aldous, Carole Armstrong, Cindy Ashfield, Joe Ashfield, Paul Ashfield, Freda Ede, Tom Ede, Grant Erickson, Jaxon Finkas, Art Hinse, Joyce Kydd, Florence Luhtala, Jean Meadows, *Boyd Metzler*, Harry Mitchell, Marilyn Mitchell, Donna Mohr, Tony Saltasuk, Carol Sawatzke, Dawn Vennard, Diane Veresh, Pat Ward.

89.WINGARD-FORT CARLTON. Myron Barton, Rebecca Beam, Mitch Forseille, *Alan Smith*.

90. YORKTON. Lorna Bright, Donna Brown, Mae Ann Chilman, Warren Crossman, Mavin Fairclough, Joyce Gardner, Bob Graham, Ethel Krekiewetz, Edie Knellis, Marge McKay, Boyd Metzler, Ethel Rahn, Kaarina Rahn, Dorothy Riesz, Ray Riesz, *Geoff Rushowick*, Patrick Rushowick, Dale Sharpe, Gary Shury, Stan Williams.

Table 1-1. Weather and Snow Cover

Locality	Date	Minimum Temp (°C)	Maximum Temp (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.
Archerwill	17 Dec 2012	-10	-6	10	10	4	4	light snow	light snow
Avonlea	20 Dec 2012	-16	-10	0	10	0	20	clear	clear
Balgonie	5 Jan 2013	-18	-8	0	5	20	40	mostly clear	mostly clear
Bangor	3 Jan 2013	-15	-5	18	30	45	50	mostly clear	partly cloudy
Biggar	27 Dec 2012	-24	-19	5	20	5	40	overcast	overcast
Birch Hills	15 Dec 2012	-10	-7	2	5	22	40	clear	partly cloudy
Borden-Radisson	20 Dec 2012	-23	-19	12	15	20	50	partly cloudy	partly cloudy
Broadview	26 Dec 2012	-27	-21	2	2	25	30	partly cloudy	clear
Cabri	29 Dec 2012	-5	-4	10	15		20	clear	clear
Candle Lake	29 Dec 2012	-19	-16	2	5	25	30	clear	mostly clear
Cater	1 Jan 2013	-3	-1	5	30	25	45	cloudy	cloudy
Chatsworth S.D.	5 Jan 2013	-15	-8	2	10	5	30	cloudy	cloudy
Christopher Lake	3 Jan 2013	-3	0			6	10	mostly clear	mostly clear
Churchbridge	14 Dec 2012	-10	-2	10	20	15	35	light fog	overcast
Clark's Crossing	15 Dec 2012	-17	-13	5	12	20	50	clear	clear
Codette Lake	26 Dec 2012	-20	-20	0	5	0	50	overcast	overcast
Craven	15 Dec 2012	-8	-5	2	11	24	40	clear	clear
Creighton	29 Dec 2012	-30	-18	2	9	20	45	light snow	mod.snow
Crooked Lake	21 Dec 2012	-17	-10	0	5	3	12	mostly clear	partly cloudy
Crooked River	27 Dec 2012	-23	-18		2	30	60	cloudy	cloudy
Cypress Hills P.P.	28 Dec 2012	-10	-4	0	5	5	60	partly cloudy	partly cloudy
Denholm	25 Dec 2012	-26	-21	0	8	15	30	cloudy	mostly clear
Eastend	3 Jan 2013	-9	-1	5	20	4	10	mostly clear	mostly clear
Endeavour	24 Dec 2012	-30	-21	0	5	30	40	clear	overcast
Estevan	31 Dec 2012	-26	-12	0	10	0	20	light fog	light fog
Estuary North	31 Dec 2012	-10	-15	0	5	25	45	clear	clear
Fenton	17 Dec 2012	-15	-9	0	0			partly cloudy	light snow
Floral	20 Dec 2012	-26	-17	10	20	10	35	partly cloudy	partly cloudy
Fort Qu'Appelle	21 Dec 2012	-15	-9	2	5	10	40	clear	clear
Gardiner Dam	17 Dec 2012	-19	-12	0	25	10	40	clear	partly cloudy
Good Spirit Lake	29 Dec 2012	-20	-15	9	13	32	40	light fog	cloudy
Grandora	4 Jan 2013	-14	-8	0	0	10	24	partly cloudy	partly cloudy
Grasslands N.P.	14 Dec 2012	-19	-13	0	5	5	30	mod. fog	
Grayson	24 Dec 2012	-25	-17	0	10	5	35	partly cloudy	partly cloudy
Harris	19 Dec 2012	-21	-20	0	5	15	35	clear	clear
Hazlet	31 Dec 2012	-18	-10	10	10	5	30	mostly clear	partly cloudy
Hudson Bay	26 Dec 2012	-20	-18	0	5	40	45	partly cloudy	overcast
Indian Head	27 Dec 2012	-22	-16	0	10	10	40	cloudy	cloudy
Kenaston	30 Dec 2012	-20	-13	0	15	15		overcast	mostly clear
Kenosee Lake	16 Dec 2012	-16	-11	10	20	10	40	partly cloudy	light fog
Ketchen North	26 Dec 2012	-25	-21	5	10	50	60	overcast	partly cloudy
Kilwinnning	14 Dec 2012	-17	-11	5	5	15	40	mod. fog	mostly clear
Kindersley North	26 Dec 2012	-28		2	3	25	35	mostly clear	mostly clear
Kinloch	15 Dec 2012	-8	-2	2	5	34	39	light fog	cloudy
Kyle	20 Dec 2012	-18	-13	11	25	10	30	partly cloudy	partly cloudy

Table 1-2. Weather and Snow Cover

Locality	Date	Minimum Temp (°C)	Maximum Temp (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.
Lac La Plonge	30 Dec 2012	-34	-24	2	2	30	60	clear	mostly clear
La Ronge	2 Jan 2013	-16	-8	12	19	34	35	light snow	cloudy
LMLNWA-Nokomis	29 Dec 2012	-30	-13	0	19	4	27	partly cloudy	partly cloudy
Leader North	21 Dec 2012	-18	-10	0	5	25	30	partly cloudy	cloudy
Love-Torch River	26 Dec 2012	-24	-17	2	5	30	35	overcast	partly cloudy
Luseland	4 Jan 2013	-8	-2	0	10	14	32	mostly clear	mostly clear
Macdowall	30 Dec 2012	-23	-17	0	0	40	60	clear	mostly clear
MacNutt	5 Jan 2013	-12	-12	0	0	20	30	partly cloudy	
Meadow Lake	26 Dec 2012	-16	-14	2	5	0	4		clear
Meadow Lake South	5 Jan 2013	-11	-10	2		8	31	overcast	
Moose Jaw	5 Jan 2013	-18	-9	7	30	20	40	clear	clear
Moose Mountain	3 Jan 2013	-10	2	8	12	8	15	partly cloudy	mostly clear
Morse	21 Dec 2012	-40	-14	20	59	13	20	overcast	overcast
Nipawin	28 Dec 2012	-22	-20	5	10	20	40	partly cloudy	partly cloudy
Nisbet Forest NW	5 Jan 2013	-12	-6	0	6		60	mostly clear	light snow
Nisbet Forest West	30 Dec 2012	-20	-14	5	15	15	30	mostly clear	mostly clear
Odessa		-15	-20	10	20	10	25	partly cloudy	overcast
Outlook	26 Dec 2012	-32	-27	0	0	20	40	light fog	clear
Pierce Lake	15 Dec 2012	-18	-13	0	4	30	40	mod. fog	mostly clear
Pike Lake	5 Jan 2013	-11	-6	13	33	10	40	mostly clear	mostly clear
Prince Albert	16 Dec 2012	-18	-12	10	10	20	20	clear	clear
Qu'Appelle	5 Jan 2013				15	8	8	mostly clear	
Qu'Appelle Dam	16 Dec 2012	-19	-8	0	23	5	30	mostly clear	partly cloudy
Raymore	1 Jan 2013	-14	-3	10	50	5	30	overcast	light snow
Regina	29 Dec 2012	-28	-8	5	10	20	50	clear	partly cloudy
Rokeby	21 Dec 2012	-15	-5			20	40	mostly clear	mostly clear
Roscommon S.D.	31 Dec 2012	-28	-22	15	20	30	40	mostly clear	partly cloudy
Rouleau	20 Dec 2012	-27	-21	2	5	20	50	clear	mostly clear
Round Lake	14 Dec 2012	-4	-1	5	10	2	20	overcast	overcast
Saltcoats	29 Dec 2012	-24	-17	9				light snow	
Sask. Landing P.P.	28 Dec 2012	-12	-6	2	5	4	20	overcast	clear
Sask. River Forks	14 Dec 2012	-19	-15	2	5	15	20	clear	clear
Saskatoon	26 Dec 2012	-29	-25	0	9	15	45	partly cloudy	mostly clear
Sawyer Lake	5 Jan 2013	-11	-7	10	25	40	40	mostly clear	cloudy
Shamrock	2 Jan 2013	-7	-7	8	45	18	22	overcast	overcast
Snowden	5 Jan 2013	-9	-3	2	5	19	49	partly cloudy	partly cloudy
Spinney Hill	17 Dec 2012	-21	-15	0	19	30	50	mod. fog	clear
Squaw Rapids	15 Dec 2012	-7	-6	2	5	15	30	overcast	cloudy
Swift Current	29 Dec 2012	-7	-3	10	30	22	28	cloudy	overcast
Togo	4 Jan 2013	-15	-10	0	5	20	30	overcast	light fog
Weyburn	15 Dec 2012	-10	-5	4	6	10	12	partly cloudy	mostly clear
White Bear	30 Dec 2012	-11	-7	2	15	10	30	overcast	overcast
Whitewood	23 Dec 2012	-20	-17	5	15	15	30	overcast	light snow
Wingard-Ft. Carlton	29 Dec 2012	-17	-9	0	0	20	40	overcast	partly cloudy
Yorkton	20 Dec 2012	-16	-12	3	6	30	63	overcast	clear

Table 2-1. Effort and Habitat Coverage. Wild Fruit: p=poor, f=fair, g=good, e=excellent.

	Effort						Habitat Coverage (%)														
Locality	**Particpants**	**Km on foot**	**Hours on foot**	**Km by vehicle**	**Hours by vehicle**	**Hours at feeders**	**Evergreen forest**	**Mixedwood forest**	**Deciduous forest**	**Aspen grove/farmland**	**Aspen grove/prairie**	**Native prairie**	**Tame pasture**	**Farmland**	**Farmsteads**	**Urban**	**Open water**	**Riparian**	**Shield, bog,swamp**	**Wild Fruit Crop**
Archerwill	**10**	2.0	1.0	153	6.0	20.0		25						50	25					
Avonlea	**2**	3.0	1.5	104	5.0	0.5			15			5	5	35	10	30				p
Balgonie	**11**	3.0	1.0	350	11.5	0.0				35	5			50	5	5				g
Bangor	**8**	0.0	0.0	30	2.0	7.5				50				30	20					f
Biggar	**9**	18.0	9.3	330	8.3	9.0				6				35	15	44				g
Birch Hills	**4**	4.5	6.0	116	18.0	3.0				20			5	50	10	10	5			p
Borden-Radisson	**4**	1.0	0.5	207	8.0	0.0			10					70		20				
Broadview	**3**	1.5	1.0	131	7.0	2.0			20	35		5		25	5	10				p
Cabri	**3**	0.0	0.0	16	4.0	0.0								70	25	5				p
Candle Lake	**6**	2.5	2.0	146	9.0	0.0	20	20	30							30				p
Cater	**6**	0.0	0.0	247	8.0	2.0	5	10	5	15			5	50	5	5				f
Chatsworth S.D.	**12**	2.0	4.0	120	7.0	5.0				80		10			10					p
Christopher Lake	**1**	10.0	2.5	0	0.0	0.0		65		35										p
Churchbridge	**17**	0.0	0.0	130	10.0	74.0				9		13		75	2	1				f
Clark's Crossing	**28**	21.5	20.5	572	27.6	3.0				13	10	2		22	24	28	1			p
Codette Lake	**4**	2.0	2.0	112	4.0	6.0	5	10	20	20				15	25		5			f
Craven	**27**	29.0	6.5	603	25.0	12.0				30		5	5	35	10	15				f
Creighton	**4**	8.0	3.0	239	11.5	2.0	10	60								10			20	p
Crooked Lake	**2**	0.5	1.0	175	6.0	0.0			25	15	10			10	10		30			p
Crooked River	**4**	0.0	0.0	0	0.0	6.0		40						40	20					p
Cypress Hills P.P.	**13**	8.0	4.5	15	1.0	0.0	40	40	8			10			2					g
Denholm	**7**	6.0	0.5	193	8.3	0.7				15			5	70	5	5				f
Eastend	**13**	0.0	0.0	110	42.0	3.0		5		20	50	10	5	5		5	<1			f
Endeavour	**1**	0.0	0.0	0	4.0	3.0				30					70					g
Estevan	**7**	6.0	3.5	173	5.5	3.0								30	9	33	11	17		g
Estuary North	**3**	8.0	16.0	25	2.0	12.0						25		25				50		f
Fenton	**3**	0.0	0.0	110	5.0	0.0														p
Floral	**2**	5.0	2.8	172	6.0	0.0				14				50	19	17				f
Fort Qu'Appelle	**10**									25	20		10	20	5	20	<1			f
Gardiner Dam	**9**	17.0	10.3	477	17.3	1.0				6				50	17	7	15	5		f
Good Spirit Lake	**5**	0.0	0.0	123	6.0	6.0		5	5	5		5	5	30	5	40				f
Grandora	**3**	2.0	2.0	50	2.0	2.0			3	3	20		30	40	4					e
Grasslands N.P.	**13**	9.5	5.8	265	10.5	2.0						70	5	15	2	3		5		
Grayson	**7**	18.0	3.0	110	5.0	3.0			5	45				10	10	20	10			f
Harris	**4**	6.0	5.3	170	5.0	1.0				12				61		27				f
Hazlet	**2**	1.5	1.0	189	4.5	0.0						10		80	5	5				f
Hudson Bay	**11**							50						30		20				f
Indian Head	**32**	10.0	2.0	275	10.0	40.0	5			5				75	5	5	5			p
Kenaston	**5**	0.0	0.0	157	8.5	0.0								95		5				
Kenosee Lake	**2**	0.0	0.0	117	6.3	1.0		5	45	20						30				f
Ketchen North	**1**	1.0	1.5	50	2.5	5.5					30		20	20	20	10				
Kilwinnning	**3**	1.0	0.5	143	6.8	0.0														p
Kindersley North	**2**		0.5		4.0	0.5														
Kinloch	**5**	6.0	4.0	92	6.0	10.0	10	20	10	20			10	10	20					p
Kyle	**5**	20.0	10.0	376	30.0	0.0						5	5	40	35	10		5		f

Table 2-2. Effort and Habitat Coverage. Wild Fruit: p=poor, f=fair, g=good, e=excellent.

Locality	Particpants	Km on foot	Hours on foot	Km by vehicle	Hours by vehicle	Hours at feeders	Evergreen forest	Mixedwood forest	Deciduous forest	Aspen grove/farmland	Aspen grove/prairie	Native prairie	Tame pasture	Farmland	Farmsteads	Urban	Open water	Riparian	Shield, bog,swamp	Wild Fruit Crop
Lac La Plonge	**4**	5	0.3	46	6.0	2.5	25	35	25							15				f
La Ronge	**5**	1.0	6.0	69	4.5	5.0	10	37	17						8	20	8				g
LMLNWA-Nokomis	**1**	3.0	1.3	142	4.0	0.3				10	5	20	10	40	1	1		13		p
Leader North	**1**	5.0	1.0	6	1.0	4.0				25		50			25					g
Love-Torch River	**24**	4.5	4.6	272	11.7	22.0	10	10		60					10	10				p
Luseland	**3**	6.0	2.0	215	5.5	1.0				40	10		10	20	10	10				g
Macdowall	**9**	0.0	0.0	95	6.0	6.0		20	20	10				30	20					p
MacNutt	**5**	0.0	0.0	90	3.5	0.5			5	25	25			30	4	10	1			f
Meadow Lake	**4**	5.0	4.5	121	4.5	8.0		50						30		20				g
Meadow Lake South	**2**		0.0		5.0	0.0		10		40				40	10					g
Moose Jaw	**4**	17.0	6.5	292	8.5	0.5			10			5		35		45	5			g
Moose Mountain	**5**	0.0	0.0	225	8.0	0.0		62				3		25	3	7				f
Morse	**13**	3.0	3.0	503	25.5	3.0							3	90	7					g
Nipawin	**14**	2.5	2.0	130	53.5	0.0	20	10		5				20	10	30	5			f
Nisbet Forest NW	**1**		1.0		0.0	7.3		50							50					p
Nisbet Forest West	**4**	0.5	0.5	100	4.0	6.0	5	5	10	20			10	35	5	10				f
Odessa	**5**	0.0	6.0	10	12.0	0.0				25	20	10	20		25					p
Outlook	**2**	3.0	2.6	70	4.0	0.4			10		5	5		35	5	35	5			p
Pierce Lake	**2**	0.5	0.5	110	4.5	0.0	10	45	20	10				10			5			g
Pike Lake	**41**	45.2	41.5	473	25.0	0.0														p
Prince Albert	**32**	12.2	7.3	418	23.0	2.0														p
Qu'Appelle	**1**		0.0		0.0	2.0														
Qu'Appelle Dam	**10**	10.0	11.8	511	15.5	5.0				30	9	1		3	33	17	7			p
Raymore	**2**	2.0	2.0	161	7.0	0.5				25				55	5	15				f
Regina	**35**	54.0	15.0	575	35.5	8.0				5	5			30	5	55				g
Rokeby	**9**	0.0	0.0	60	5.0	60.0														
Roscommon S.D.	**9**	0.5	1.0	90	4.0	21.0				30				60	10					p
Rouleau	**9**	0.0	0.0	200	9.0	3.0					5			80	5	10				p
Round Lake	**4**	0.5	0.5	173	5.0	6.5			25	25				20	15		15			p
Saltcoats	**4**	0.0	3.0	94	4.0	5.0														f
Sask. Landing P.P.	**4**	7.0	2.4	225	8.8	0.0				20		25	5	39	1			10		g
Sask. River Forks	**3**	4.5	2.5	80	4.0	0.0	15	20	20	15			5	15	5		5			p
Saskatoon	**117**	79.0	44.4	708	53.9	124		1		10		1	1	10	14	57	5	1		p
Sawyer Lake	**2**	0	2.0	48	6.5	0.0	60	25		15										p
Shamrock	**6**	3.0	4.0	248	11.0	1.0							10	85	5					
Snowden	**17**		3.5		3.0	3.5		10						30	50	10				f
Spinney Hill	**2**	2.0	1.0	143	5.3	0.0														p
Squaw Rapids	**2**	7.0	3.5	88	5.0	0.0		93						2			5			p
Swift Current	**22**	22.5	29.0	456	26.0	13.0								20	5	75				
Togo	**14**	3.0	2.0	60	2.0	6.0		15	15	30		10	10	20						f
Weyburn	**16**	2.0	1.0	421	11.0	0.0	2	1		1	1	5	2	73	5	8	2			p
White Bear	**5**	4.0	2.0	236	7.0	0.0						15	5	50	30					f
Whitewood	**22**	5.0	4.0	458	16.0	34.0				20				20	10	50				p
Wingard-Ft. Carlton	**4**	2.0	2.5	100	5.5	2.0		15	15	25				30	15					p
Yorkton	**21**	4.0	1.0	123	12.0	20.0				50						50				g

Table 3-1. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	1	2	3	4	5	6	7	8	9	10	11
	Archerwill 17 Dec 2012	Avonlea 20 Dec 2012	Balgonie 5 Jan 2013	Bangor 3 Jan 2013	Biggar 27 Dec 2012	Birch Hills 15 Dec 2012	Borden - Radisson 20 Dec 2012	Broadview 26 Dec 2012	Cabri 3 Jan 2013	Candle Lake 29 Dec 2012	Cater 1 Jan 2013
Mallard											
Common Goldeneye											
Gray Partridge			16		54						
Ring-necked Pheasant											
Ruffed Grouse	1			2		5	1	(1)		2	2
Sharp-tailed Grouse		8	27	3	36		3	8	12		(8)
Bald Eagle	(1)							1			
Northern Goshawk						(1)		(1)			
Golden Eagle					1						
Merlin											
Rock Pigeon		104	171	29	174	113	12	56	60		40
Eurasian Collared-Dove					33		3	1			
Great Horned Owl	(1)				1		2		1		
Snowy Owl			1		1	(1)	3		12		
Great Gray Owl	(1)									4	
Downy Woodpecker	2	(1)	7	9	5	5	2	3		2	4
Hairy Woodpecker	2	1		8	4	9	5	5		3	5
Northern Flicker					5						
Pileated Woodpecker											(2)
Northern Shrike					1		1	1			
Gray Jay	1									9	
Blue Jay	45	3			5		5	8		6	5
Black-billed Magpie	52	4	104	38	218	74	94	25	16	6	17
American Crow											
Common Raven	78	3	43	24	82	21	65	27	4	131	139
Horned Lark		2			17				10		
Black-capped Chickadee	29	2	52	65	42	44	32	32		35	51
Boreal Chickadee	2									21	1
Red-breasted Nuthatch	10		16		10	5	1	4		6	2
White-breasted Nuthatch	4	1	3	2	1			1	1	1	3
Brown Creeper					3						
American Robin		1									
Varied Thrush					1						
European Starling		(40)	3								
Bohemian Waxwing		(13)			186	2	36				
Lapland Longspur		1									
Snow Bunting	90		55	47	425	26	61	110	100		231
Dark-eyed Junco	1	(1)		1	3	1		(1)			
Pine Grosbeak	161		38	39	61	66	100	44		99	66
House Finch		6			48		3	8			
Red Crossbill		(1)	2					1			
White-winged Crossbill			21		6	16		14	5		
Common Redpoll	52	315	286	81	1956	435	155	160	21	20	16
Hoary Redpoll	18		1	48	5	3	2	8		1	
Pine Siskin											
American Goldfinch											
Evening Grosbeak	36							1		11	54
House Sparrow	(25)	101	237	96	305	96	103	178	174		29
Total Birds Count Day	584	554	1083	492	3689	921	689	699	416	358	665
Total Birds only in CP	30	58	0	0	0	2	0	4	0	0	10
Total Species Count Day	17	16	18	15	29	16	21	24	12	17	16
Total Species only in CP	6	6	0	0	0	2	0	4	0	0	2

Table 3-2. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	12	13	14	15	16	17	18	19	20	21	22
	Chatsworth S.D. 5 Jan 2013	Christopher Lake 3 Jan 2013	Churchbridge 14 Dec 2012	Clark's Crossing 15 Dec 2012	Codette Lake 26 Dec 2012	Craven 15 Dec 2012	Creighton 29 Dec 2012	Crooked Lake 21 Dec 2012	Crooked River 27 Dec 2012	Cypress Hills P.P. 28 Dec 2012	Denholm 25 Dec 2012
Mallard											
Common Goldeneye				9				12			
Gray Partridge				92	7	25		8	(7)		16
Ring-necked Pheasant						7					
Ruffed Grouse	3	(2)	1		1	2		2	3		(2)
Sharp-tailed Grouse	(7)		7	50		43	2	19		1	(10)
Bald Eagle	(1)					(1)		2			
Northern Goshawk				2	2			1			(1)
Golden Eagle						1					
Merlin				2							
Rock Pigeon	12			269	7	148	62	6		9	6
Eurasian Collared-Dove											
Great Horned Owl				6		1		1	(1)		(1)
Snowy Owl				5		1					1
Great Gray Owl									(1)		
Downy Woodpecker	6	(2)	19	26	2	26	3	1	5	2	2
Hairy Woodpecker	2	(1)	21	8	10	9	4	6	2	1	4
Northern Flicker				1		1					
Pileated Woodpecker		(1)			1						(1)
Northern Shrike				1	1	1	1	1			
Gray Jay					2		10				
Blue Jay	2	(3)	3	2	16	23		7	6		(1)
Black-billed Magpie	28		24	315	44	195	7	47	2	24	74
American Crow						2					
Common Raven	102	8	43	313	36	66	251	31	3	24	12
Horned Lark						1					
Black-capped Chickadee	58	42	45	176	33	170	25	107	27	46	12
Boreal Chickadee		2					3				
Red-breasted Nuthatch	2	(2)	13	49		12			3	33	1
White-breasted Nuthatch	8	3	5		1	19		5	2		
Brown Creeper				3		1					
American Robin				10		1		1			
Varied Thrush						1					
European Starling				201		32					3
Bohemian Waxwing			6	725		183	6				13
Lapland Longspur						1					
Snow Bunting	120			479	41				(65)		48
Dark-eyed Junco						9					
Pine Grosbeak	52	19	23	94	24	41	49	132	51	6	69
House Finch			15	42		11					
Red Crossbill						4					
White-winged Crossbill				34		16					
Common Redpoll	50	30	155	1896	65	321	76	204	16	58	313
Hoary Redpoll			15	11			11		4		4
Pine Siskin			10			(1)					
American Goldfinch				1		6					
Evening Grosbeak		(20)	12		11	1	21				
House Sparrow	69		130	973	6	372	16	61	30		63
Total Birds Count Day	514	104	562	5802	312	1759	571	662	154	204	642
Total Birds only in CP	8	31	0	0	0	2	1	0	74	0	17
Total Species Count Day	14	6	19	32	21	37	18	21	13	10	17
Total Species only in CP	2	7	0	0	0	2	1	0	4	0	7

Table 3-3. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	23	24	25	26	27	28	29	30	31	32	33
	Eastend 3 Jan 2013	Endeavour 24 Dec 2012	Estevan 31 Dec 2012	Estuary North 31 Dec 2012	Fenton 17 Dec 2012	Floral 20 Dec 2012	Fort Qu'appelle 21 Dec 2012	Gardiner Dam 17 Dec 2012	Good Spirit Lake 29 Dec 2012	Grandora 4 Jan 2013	Grasslands N.P. 14 Dec 2012
Mallard											
Common Goldeneye			9				4	52			
Gray Partridge	20		13			11	2	53		20	34
Ring-necked Pheasant	6		218	18							63
Ruffed Grouse							4		2		
Sharp-tailed Grouse	108		10	64			14	32			55
Bald Eagle	(1)		1				2	32	1		
Northern Goshawk			1	2					(1)		
Golden Eagle	4		(1)								1
Merlin											
Rock Pigeon	38	(3)	79		33	21	103	73			28
Eurasian Collared-Dove	16		99				5				
Great Horned Owl	2		1					4			1
Snowy Owl	(2)		4		1		1	3			2
Great Gray Owl		(1)									
Downy Woodpecker	9	1	4	3	5	10	12	5	11	1	
Hairy Woodpecker	7	1	2		5	4	3	2	4	1	
Northern Flicker	4		1	2							
Pileated Woodpecker		(1)		1					1		
Northern Shrike	2							1			
Gray Jay		(2)									
Blue Jay		6		11	9		12	16	29		
Black-billed Magpie	80	7	11	36	102	105	93	169	23	24	34
American Crow											
Common Raven	1	6	6		32	12	132	34	37	12	
Horned Lark	75		(15)	2				4			33
Black-capped Chickadee	29	20	14	17	53	49	133	35	50	2	
Boreal Chickadee											
Red-breasted Nuthatch	36		4	2	2	4	10	10	1		
White-breasted Nuthatch		4	3				9		2		
Brown Creeper	2		1					1			
American Robin	2		1					2			
Varied Thrush				1			1				
European Starling			3	200		14	25	24			
Bohemian Waxwing	297		230	500	20	180	17	9			
Lapland Longspur			(1)								
Snow Bunting	90	150	159	25	100	109	70	113	(30)	40	294
Dark-eyed Junco	(1)		41	3		2	6	5			
Pine Grosbeak		40	5	20	77	16	85	51	12	14	
House Finch	5		3								
Red Crossbill	20		1				8				
White-winged Crossbill	49		3		2	1	8	38			
Common Redpoll	511	50	80	235	84	136	162	555	12	16	20
Hoary Redpoll			(1)			4		3			
Pine Siskin			(2)				5				6
American Goldfinch	(1)										
Evening Grosbeak		45			19						
House Sparrow	193	35	253	22	10	335	77	666	11	10	49
Total Birds Count Day	1612	371	1749	1164	554	1014	1048	4232	196	140	630
Total Birds only in CP	6	9	23	0	0	0	0	0	31	0	0
Total Species Count Day	27	13	41	19	16	18	30	36	14	10	15
Total Species only in CP	5	6	6	0	0	0	0	0	2	0	0

Table 3-4. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	34	35	36	37	38	39	40	41	42	43	44
	Grayson 24 Dec 2012	Harris 19 Dec 2012	Hazlet 31 Dec 2012	Hudson Bay 26 Dec 2012	Indian Head 27 Dec 2012	Kenaston 30 Dec 2012	Kenosee Lake 16 Dec 2012	Ketchen 26 Dec 2012	Kilwinning 14 Dec 2012	Kindersley North 26 Dec 2012	Kinloch 15 Dec 2012
Mallard											
Common Goldeneye	9				11						
Gray Partridge	8	21	14		24	16				70	
Ring-necked Pheasant											
Ruffed Grouse					2			10	1		5
Sharp-tailed Grouse	5	13	7	8	13						
Bald Eagle	2	1			2						(1)
Northern Goshawk											(1)
Golden Eagle			2								
Merlin											
Rock Pigeon	28	40	11	30	113	58		(5)	2	52	4
Eurasian Collared-Dove		6									
Great Horned Owl	1	4	2	(1)	1	(1)	(1)	(1)		1	(1)
Snowy Owl		6	5		4	(1)			2	4	
Great Gray Owl				(3)							
Downy Woodpecker	3	3	1	8	38	1	1	3	3		3
Hairy Woodpecker	5	4		11	25	(2)	3	5	4		4
Northern Flicker					2						
Pileated Woodpecker				1							
Northern Shrike			1						1		
Gray Jay				6				2	1		4
Blue Jay	9			51	21		25	9	16	(1)	29
Black-billed Magpie	26	128	42	10	95	34	21	14	64	25	20
American Crow											
Common Raven	47	16	4	232	126	7	16	44	28	2	73
Horned Lark			18			3					
Black-capped Chickadee	46	33		62	268	9	107	10	54		39
Boreal Chickadee				1					2		
Red-breasted Nuthatch		4		9	39	2	12		2	1	2
White-breasted Nuthatch				6	19	1	5	2	1		6
Brown Creeper											
American Robin											
Varied Thrush											
European Starling											
Bohemian Waxwing		3			298					(3)	
Lapland Longspur			1								
Snow Bunting	100	7	3335	30	55	49	127	80	39	165	37
Dark-eyed Junco	1	4		1	22						
Pine Grosbeak	64	16		95	66	(1)	14	20	139	1	53
House Finch					2						
Red Crossbill					39		4			(4)	17
White-winged Crossbill		4		1			3		10		
Common Redpoll	21	678	949	92	190	13	165	42	52	(6)	31
Hoary Redpoll		4		4				6			
Pine Siskin					4				5		
American Goldfinch					1		1				
Evening Grosbeak				215			6	13	53		13
House Sparrow	59	390	154	(10)	610	68	75	26	93	70	2
Total Birds Count Day	441	1385	4548	874	2133	261	585	286	573	391	342
Total Birds only in CP	0	0	0	15	0	5	1	6	0	14	3
Total Species Count Day	19	21	17	21	30	12	16	15	22	10	17
Total Species only in CP	0	0	0	4	0	4	1	2	0	4	3

Table 3-5. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	45	46	47	48	49	50	51	52	53	54	55
	Kyle 20 Dec 2012	Lac La Plonge 30 Dec 2012	La Ronge 2 Jan 2013	LMLNWA-Nokomis 29 Dec 2012	Leader North 21 Dec 2012	Love-Torch River 26 Dec 2012	Luseland 4 Jan 2013	Macdowall 30 Dec 2012	Macnutt 5 Jan 2013	Meadow Lake 26 Dec 2012	Meadow Lake South 4 Jan 2013
Mallard											
Common Goldeneye											
Gray Partridge	67				20		23		(6)		
Ring-necked Pheasant					35						
Ruffed Grouse		1	1			3		3	2		
Sharp-tailed Grouse	45			16	12	(1)	2		13		
Bald Eagle											
Northern Goshawk	(1)					(1)		1		1	
Golden Eagle	(1)				1						
Merlin	1										
Rock Pigeon	161			45		17	44		50	47	
Eurasian Collared-Dove	21						8				
Great Horned Owl	7				1		2	1	(1)		
Snowy Owl	29			1	2		6	(1)			
Great Gray Owl		1	(1)			3					
Downy Woodpecker	3	(1)	5		2	16	1	6	7	1	1
Hairy Woodpecker	(1)		6	1		11		6	8	1	
Northern Flicker						(1)					
Pileated Woodpecker			(1)		1	(2)		(1)	(2)		
Northern Shrike	(1)				1	(1)			(1)		
Gray Jay		10	15			9		(1)		1	2
Blue Jay	3	1	4		1	21	(2)	15	12	2	2
Black-billed Magpie	97	14		21	22	119	59	70	19	14	5
American Crow											
Common Raven	18	97	392	5	2	342	4	17	21	47	15
Horned Lark	13			1							
Black-capped Chickadee	4	15	52	4	2	103	2	111	63	10	9
Boreal Chickadee		1	1			3		2			
Red-breasted Nuthatch	5		2	(2)		9	3	3	10	1	
White-breasted Nuthatch						8		9	7		
Brown Creeper	(1)			1				(1)			
American Robin	1								2		
Varied Thrush											
European Starling	30					48	15				
Bohemian Waxwing	43				35		52		28		
Lapland Longspur											
Snow Bunting	319			97		739	75	(30)	90		
Dark-eyed Junco	1						(4)		1		
Pine Grosbeak	(7)	16	39	3		169	3	101	47	14	3
House Finch	8						(6)				
Red Crossbill											
White-winged Crossbill	21			1			4				
Common Redpoll	758	4	8	62	6	482	49	40	87	33	
Hoary Redpoll	16	1						2			
Pine Siskin						2			(2)		
American Goldfinch											
Evening Grosbeak		6	10			253		31	(6)	8	
House Sparrow	1119			24	12	72	104	1	3	9	12
Total Birds Count Day	2793	170	536	282	155	2430	456	419	470	189	49
Total Birds only in CP	13	1	3	2	0	7	14	32	19	0	0
Total Species Count Day	27	13	13	14	16	21	18	17	18	14	8
Total Species only in CP	7	1	3	1	0	6	5	8	7	0	0

Table 3-6. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	56	57	58	59	60	61	62	63	64	65	66
	Moose Jaw 5 Jan 2013	Moose Mountain P.P. 3 Jan 2013	Morse 21 Dec 2012	Nipawin 28 Dec 2012	Nisbet Forest NW 5 Jan 2013	Nisbet Forest West 30 Dec 2012	Odessa	Outlook 26 Dec 2012	Pierce Lake 15 Dec 2012	Pike Lake 5 Jan 2013	Prince Albert 16 Dec 2012
Mallard											
Common Goldeneye								2	74	3	
Gray Partridge	8		173							11	
Ring-necked Pheasant			5				2				
Ruffed Grouse				2			4			3	3
Sharp-tailed Grouse	16	20	78				10	(8)		33	
Bald Eagle			1	2			4	2	1	2	
Northern Goshawk											1
Golden Eagle			1								
Merlin	2		1								2
Rock Pigeon	156	6	192	29			8	39		89	430
Eurasian Collared-Dove	14		28					2			
Great Horned Owl	2		10				2			5	
Snowy Owl	26		9				2				
Great Gray Owl											1
Downy Woodpecker	2	1		8	7	4	6		1	32	17
Hairy Woodpecker	4	1		9	12	4	2			26	21
Northern Flicker	6							1		1	
Pileated Woodpecker							2		1		2
Northern Shrike	1									1	1
Gray Jay				5		2			1		6
Blue Jay	1	5		11	4	10	2		3	25	20
Black-billed Magpie	37	30	41	34	1	7	50	12	10	157	164
American Crow	(1)	2	1								
Common Raven	26	28	13	189	5	23	30	8	30	80	327
Horned Lark			206								
Black-capped Chickadee	21	27		77	53	30	40	3	7	522	219
Boreal Chickadee									4		1
Red-breasted Nuthatch	13		6		9	1		1	1	5	3
White-breasted Nuthatch	6			(1)	12	5				19	18
Brown Creeper	3		2								
American Robin	1						8				
Varied Thrush							2				
European Starling	210		4	50							6
Bohemian Waxwing	372	3	(25)					300		101	1420
Lapland Longspur			4								
Snow Bunting	102	3	2699	34		42	20			568	125
Dark-eyed Junco	2		1			1					
Pine Grosbeak		18		103	15	58				522	202
House Finch	18		14							5	
Red Crossbill	1										
White-winged Crossbill	23	6	9					6	6	2	
Common Redpoll	19	70	559	403	24	93	6	716	5	683	417
Hoary Redpoll			1	(1)		1				12	3
Pine Siskin										2	8
American Goldfinch											
Evening Grosbeak				110		69				2	22
House Sparrow	426	51	1677	81			50	65		290	247
Total Birds Count Day	1530	271	5739	1148	142	350	254	1341	362	3204	3687
Total Birds only in CP	1	0	26	2	0	0	0	8	0	0	2
Total Species Count Day	30	15	28	17	10	15	20	14	16	30	27
Total Species only in CP	1	0	2	2	0	0	0	1	0	0	2

Table 3-7. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	67	68	69	70	71	72	73	74	75	76	77
	Qu'Appelle 5 Jan 2013	Qu'Appelle Dam 16 Dec 2012	Raymore 1 Jan 2013	Regina 29 Dec 2012	Rokeby 21 Dec 2012	Roscommon 31 Dec 2012	Rouleau 20 Dec 2012	Round Lake (Q.V.) 14 Dec 2012	Saltcoats 29 Dec 2012	Sask. Landing P.P. 28 Dec 2012	Sask. River Forks 14 Dec 2012
Mallard											
Common Goldeneye		17									
Gray Partridge		19		93	79	6	21			30	
Ring-necked Pheasant				7							
Ruffed Grouse					1	7					3
Sharp-tailed Grouse	4	171	7	15	17	1		4	3	53	
Bald Eagle		2			1			2		1	
Northern Goshawk				1							
Golden Eagle					1					2	
Merlin				3		(1)					
Rock Pigeon		64	71	969	183			12	35	40	2
Eurasian Collared-Dove		12		13							
Great Horned Owl		2		7	1	(1)	5			6	
Snowy Owl		4		33	1		25	1		(2)	
Great Gray Owl											
Downy Woodpecker	4	2	3	38	10	8		10	1	3	1
Hairy Woodpecker	3	3	(1)	3	11	12		8	1		1
Northern Flicker				4							
Pileated Woodpecker		(1)				(1)		1			
Northern Shrike		2		(1)				1		1	
Gray Jay											
Blue Jay		9	1	1	8	10		14	4	2	5
Black-billed Magpie	2	83	49	76	56	24	3	41	8	74	33
American Crow				2			1				
Common Raven	4	13	76	99	141	15	2	86	41	8	46
Horned Lark		1	9							61	
Black-capped Chickadee	10	52	17	97	61	50		82	10	14	22
Boreal Chickadee											2
Red-breasted Nuthatch		3	2	145	4	4		2	3	3	1
White-breasted Nuthatch		2		8	4	2		13	2		1
Brown Creeper		3		1							
American Robin				2				6			
Varied Thrush				(1)							
European Starling		24		56		24	30	1			
Bohemian Waxwing		19		528	6					132	
Lapland Longspur											
Snow Bunting		1190	630	200	115	1174	35		65	84	
Dark-eyed Junco		1		46		2			1		
Pine Grosbeak	2	76	67	57	112	58		22	24		85
House Finch				192							
Red Crossbill				22							
White-winged Crossbill		7	3	166				(2)			
Common Redpoll	21	174	373	318	441	180	4	49	53		33
Hoary Redpoll		4	2	1	23	6					
Pine Siskin				23	10		1	25			
American Goldfinch											
Evening Grosbeak											28
House Sparrow	10	521	412	1250	250	40	60	3	2	373	2
Total Birds Count Day	60	2533	1722	4504	1538	1623	187	385	253	889	265
Total Birds only in CP	0	1	1	5	0	3	0	2	0	2	0
Total Species Count Day	9	33	15	38	25	18	11	21	15	18	15
Total Species only in CP	0	1	1	5	0	3	0	1	0	1	0

Table 3-8. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	78	79	80	81	82	83	84	85	86	87	88
	Saskatoon 26 Dec 2012	Sawyer Lake 5 Jan 2013	Shamrock 2 Jan 2013	Snowden 5 Jan 2013	Spinney Hill 17 Dec 2012	Squaw Rapids 15 Dec 2012	Swift Current 29 Dec 2012	Togo 4 Jan 2013	Weyburn 15 Dec 2012	White Bear 30 Dec 2012	Whitewood 23 Dec 2012
Mallard											
Common Goldeneye	79					57					
Gray Partridge	12		172	23			28	10	3	68	
Ring-necked Pheasant			4				21		28	2	(1)
Ruffed Grouse	2	(8)				4		4			3
Sharp-tailed Grouse	7		21	6			25	14	44	49	22
Bald Eagle		(1)				4					(1)
Northern Goshawk	(1)	(1)									
Golden Eagle			3						1		
Merlin	5		2				5		2		(1)
Rock Pigeon	1823		187	2			883		162	182	263
Eurasian Collared-Dove	5						85		7		9
Great Horned Owl	3		8				4			5	1
Snowy Owl			9				6		9	16	(1)
Great Gray Owl		(2)		2							
Downy Woodpecker	44	(2)	2	17	2	2	5	15			24
Hairy Woodpecker	16	(1)		14		3	1	13	1		20
Northern Flicker	24				1		5				1
Pileated Woodpecker		(2)						2			(1)
Northern Shrike	1										1
Gray Jay		(4)		6		4		2			
Blue Jay	60	(3)		25	14	11	4	104			25
Black-billed Magpie	399	(33)	50	136	63	13	131	25	26	102	105
American Crow	1						2		6		
Common Raven	357	3	3	74	20	22	6	81	10	4	54
Horned Lark			48				4		20	14	
Black-capped Chickadee	747	4		61	50	16	10	69			135
Boreal Chickadee				4		5		2			
Red-breasted Nuthatch	215			9	1	1	48	2	10		30
White-breasted Nuthatch	4			4	2			26	2		15
Brown Creeper	6						1				(1)
American Robin	2						3				
Varied Thrush	1						(2)				
European Starling	207		3	16			6		4		
Bohemian Waxwing	2696						683		6		3
Lapland Longspur									300	2	
Snow Bunting	31	(64)	362	50	62	159	765	11	84	401	865
Dark-eyed Junco	21						10	1	43		(1)
Pine Grosbeak	271	6		128	29		3	79			26
House Finch	492						5		32		4
Red Crossbill	98						35	1			
White-winged Crossbill	559						69				39
Common Redpoll	1060	(4)	291	153	65	6	307	112	84	83	264
Hoary Redpoll	8				1		2			2	
Pine Siskin				14	3		6		3		(1)
American Goldfinch	2						1				
Evening Grosbeak		(6)		148	1			79			
House Sparrow	1617		755	30	275		1392	125	267	833	424
Total Birds Count Day	10949	13	1920	922	589	309	4566	778	1162	1765	2335
Total Birds only in CP	6	133	4	0	0	0	3	0	0	0	10
Total Species Count Day	42	3	16	21	15	16	36	22	26	16	24
Total Species only in CP	5	15	1	0	0	0	2	0	0	0	10

Table 3-9. Species found on 7 or more counts; ( ) = seen during Count Period (CP).

Map Number	89	90				
	Wingard-Fort Carlton 29 Dec 2012	Yorkton 20 Dec 2012	Totals Count Day	Totals only in Count Period	#Counts count day	# Counts only in count period
Mallard			2800	0	18	0
Common Goldeneye			338	0	13	0
Gray Partridge	(6)		1390	19	39	3
Ring-necked Pheasant			416	1	13	1
Ruffed Grouse	1		96	13	35	4
Sharp-tailed Grouse	10		1266	34	52	5
Bald Eagle	(1)		66	8	20	8
Northern Goshawk			12	9	9	9
Golden Eagle			18	2	11	2
Merlin			25	2	10	2
Rock Pigeon	6	110	8298	8	64	2
Eurasian Collared-Dove		10	377	0	19	0
Great Horned Owl			101	10	33	10
Snowy Owl	(1)		235	9	33	7
Great Gray Owl			11	9	5	6
Downy Woodpecker	1	17	585	6	77	4
Hairy Woodpecker	3	17	441	6	67	5
Northern Flicker			59	1	15	1
Pileated Woodpecker		1	14	16	11	12
Northern Shrike			23	4	21	4
Gray Jay			98	7	20	3
Blue Jay	11	28	857	10	63	5
Black-billed Magpie	8	41	5102	33	87	1
American Crow			17	1	8	1
Common Raven	27	222	5506	0	88	0
Horned Lark			542	15	20	1
Black-capped Chickadee	7	174	5217	0	81	0
Boreal Chickadee			57	0	17	0
Red-breasted Nuthatch		35	897	4	64	2
White-breasted Nuthatch	2	13	302	1	50	1
Brown Creeper		1	29	3	14	3
American Robin			43	0	15	0
Varied Thrush			7	3	6	2
European Starling			1239	40	26	1
Bohemian Waxwing		110	9248	41	35	3
Lapland Longspur			309	1	6	1
Snow Bunting	(50)	40	18243	234	66	5
Dark-eyed Junco		7	238	8	28	5
Pine Grosbeak	45	247	4672	8	71	2
House Finch		3	916	6	20	1
Red Crossbill		6	259	5	15	2
White-winged Crossbill		52	1204	2	33	1
Common Redpoll	10	138	19518	10	86	2
Hoary Redpoll		1	238	2	35	2
Pine Siskin		2	129	6	17	4
American Goldfinch			12	1	6	1
Evening Grosbeak	58	25	1361	32	30	3
House Sparrow	21	624	19776	35	78	2
Total Birds Count Day	213	1932	113354	708		
Total Birds only in CP	58	0	708			
Total Species Count Day	17	27				
Total Species only in CP	4	0				

Table 4-1 Species found in fewer than 7 counts.

Species	Locality and Number (*=Count Period)
Cackling Goose	Estevan (3*)
Canada Goose	Estevan (266), Fort Qu'Appelle (1), Gardiner Dam (70), Pierce Lake (2), Qu'Appelle Dam (1), Saskatoon (1)
Tundra Swan	Qu'Appelle Dam (1)
Gadwall	Estevan (1), Gardiner Dam (3)
Redhead	Estevan (2), Gardiner Dam (25)
Ring-necked Duck	Estevan (3), Gardiner Dam (1)
Lesser Scaup	Estevan (2), Gardiner Dam (21)
Bufflehead	Estevan (1), Gardiner Dam (7)
Hooded Merganser	Estevan (1), Squaw Rapids (1)
Common Merganser	Gardiner Dam (87), Indian Head (6), Pierce Lake (2), Qu'Appelle Dam (2), Round Lake (2), Saskatoon (2)
Ruddy Duck	Estevan (1)
Spruce Grouse	Hudson Bay (1), Love-Torch River (1), Sawyer Lake (1*)
Willow Ptarmigan	Creighton (22), Lac La Plonge (3)
American White Pelican	Gardiner Dam (1)
Turkey Vulture	Saskatoon (1*)
Northern Harrier	Archerwill (1*)
Sharp-shinned Hawk	Clark's Crossing (1), Moose Jaw (1), Regina (1), Saskatoon (2*)
Cooper's Hawk	Whitewood (1*)
Red-tailed Hawk	Regina (1*)
Rough-legged Hawk	Avonlea (1), MacNutt (1*), Rokeby (1)
American Kestrel	White Bear (1)
Gyrfalcon	Love-Torch River (1*), Morse (1)
Prairie Falcon	Grasslands N. P. (1), Hazlet (1), Kyle (1), White Bear (1)
American Coot	Estevan (28)
Mourning Dove	Broadview (2), Estevan (2), Saskatoon (1), Swift Current (3), Whitewood (2)
Northern Hawk Owl	Endeavour (1*), Hudson Bay (1*), MacDowall (1*), Prince Albert (1*), Saskatoon (1*), Wingard-Carlton (1)
Boreal Owl	Archerwill (1*)
Northern Saw-whet Owl	Eastend (1*), Endeavour (1*), Kyle (1), Luseland (1*)
American Three-toed Woodpecker	Creighton (1*), Kilwinning (1), MacDowall (1*), Squaw Rapids (1)
Black-backed Woodpecker	Candle Lake (1), Creighton (2), Nipawin (1), Saskatoon (1)
Golden-crowned Kinglet	Clark's Crossing (2), Codette Lake (1), Craven (1), Morse (2), Swift Current (1)
Townsend's Solitaire	Swift Current (1*)
Brown Thrasher	Regina (1*)

Table 4-2 Species found in fewer than 7 counts.

Species	Locality and Number (*=Count Period)
Cedar Waxwing	Churchbridge (15), Craven (5), Fort Qu'Appelle (34), Odessa (4), Pike Lake (1), Saskatoon (11)
Eastern Towhee	Floral (1)
American Tree Sparrow	Eastend (2), Grasslands NP (9), Hazlet (1), Kyle (1*), Wingard-Fort Carlton (1)
Savannah Sparrow	Denholm (1)
Song Sparrow	Saskatoon (1)
Lincoln's Sparrow	Codette Lake (1), Morse (1*)
White-throated Sparrow	Grayson (1), Regina (4), Saskatoon (2)
Harris's Sparrow	Broadview (1*), Morse (1)
White-crowned Sparrow	Denholm (1*), Saskatoon (1*)
Northern Cardinal	Prince Albert (1*), Togo (1)
Red-winged Blackbird	Avonlea (2*), Broadview (1), Indian Head (2), Rokeby (1), Shamrock (4*), Whitewood (1)
Western Meadowlark	Luseland (1*), Pike Lake (1)
Rusty Blackbird	La Ronge (1*), Regina (1*), Sawyer Lake (1*)
Brewer's Blackbird	Endeavour (6), Yorkton (2)
Common Grackle	Kyle (1), Pike Lake (1), Regina (7), Weyburn (6), Whitewood (1*)
Gray-crowned Rosy-Finch	Qu'Appelle Dam (1), Yorkton (1)
Purple Finch	Regina (7), Whitewood (1), Yorkton (5)

Table 5. Birds not identified to species.

Category	Locality and Number (*=Count Period)
Eagle sp.	Avonlea (1)
Haemorhous sp.	Wingard-Carlton (1)
Crossbill sp.	MacDowall (1*)

Table 6. New (in bold and italics) and tying high counts for individual species 2012.

LOCATION	2012 COUNT	SPECIES	PREVIOUS HIGH	LOCATION, YEAR
White Bear	1	American Kestrel	1	North to Saskatoon
Swift Current	3	Mourning Dove	3	Round Lake (Qu'Appelle Valley), 1975
Archerwill (count period)	1	Boreal Owl	1	South to Indian Head
Odessa, Swift Current (count period)	2	Varied Thrush	2	Saskatoon, Dec. 2000)
Regina	1	Brown Thrasher	1	North to Snowden
Floral	1	Eastern Towhee	1	Regina, 2005; Candle Lake, 2008; Rouleau 2009
Codette Lake; Morse (count period)	1	Lincoln's Sparrow	1	North to Gardiner Dam and Raymore
Pike Lake	***522***	***Pine Grosbeak***	***422***	***Saskatoon, 1969***
Saskatoon	***559***	***White-winged Crossbill***	***447***	***Saskatoon, 1995***

Figure 1. Location of 2012 counts (numbers correspond to those in text under Count areas and participants).

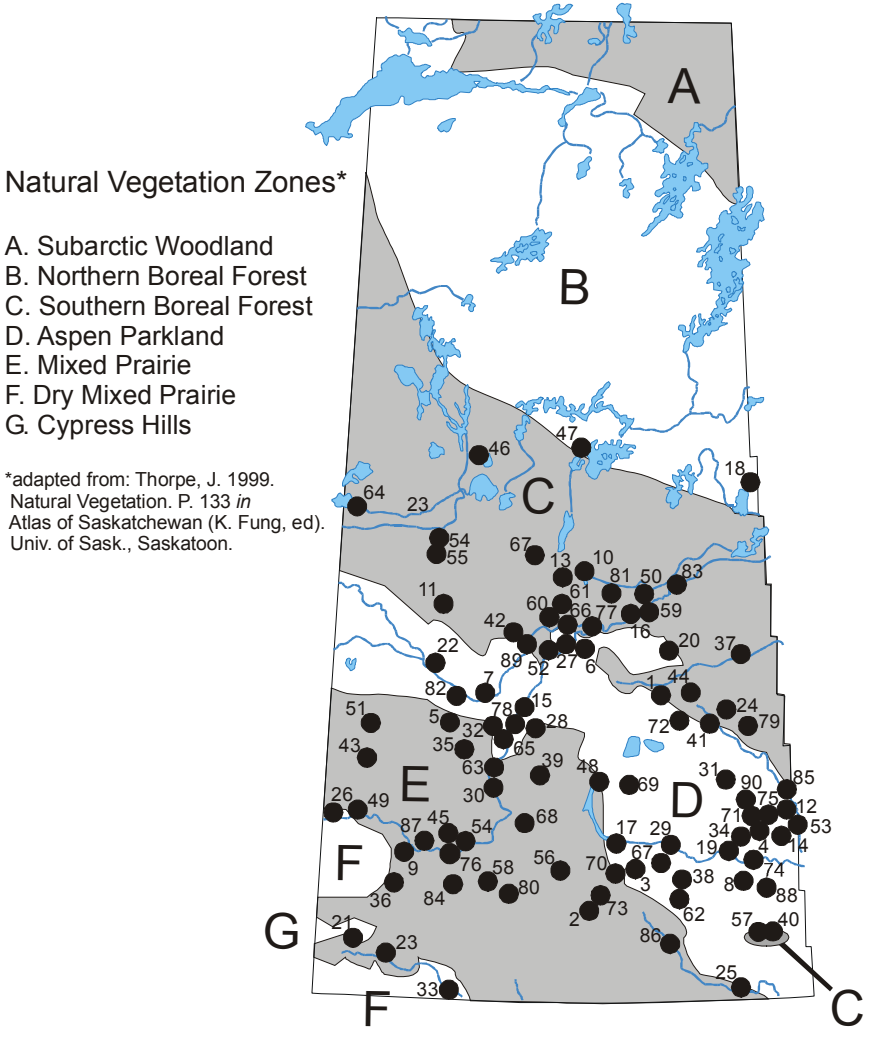


Table 7. Population changes in numbers of selected species in 2012* compared to 2011 and the average for 5 years (2007-2011), based on the number of birds per party hour. A minus sign indicates a decrease from previous years.

Species	% change from 2011	% change from 2007-2011		% change from 2011	% change from 2007-2011
Canada Goose	-99	-98	Common Raven	-8	15
Mallard	-78	-70	Horned Lark	51	-84
Common Goldeneye	-64	-58	Black-capped Chickadee	10	8
Gray Partridge	161	-25	Boreal Chickadee	-77	-60
Ring-necked Pheasant	66	11	Red-breasted Nuthatch	185	67
Ruffed Grouse	5	-13	White-breasted Nuthatch	23	10
Sharp-tailed Grouse	43	-2	Brown Creeper	87	154
Bald Eagle	-50	-20	American Robin	14	-71
Northern Goshawk	9	-24	European Starling	-57	-2
Golden Eagle	-42	-22	Bohemian Waxwing	102	63
Merlin	-13	39	Cedar Waxwing	-4	-71
Rock Pigeon	-10	-10	Snow Bunting	12	-41
Eurasian Collared-Dove	2	67	Dark-eyed Junco	71	115
Great Horned Owl	-21	-21	Pine Grosbeak	108	178
Snowy Owl	-9	119	House Finch	6	0
Downy Woodpecker	58	27	White-winged Crossbill	1182	573
Hairy Woodpecker	34	7	Common Redpoll	16	151
Northern Flicker	44	33	Hoary Redpoll	96	103
Pileated Woodpecker	-42	-48	Pine Siskin	13	-71
Northern Shrike	4	-11	American Goldfinch	117	-70
Gray Jay	-22	-11	Evening Grosbeak	3	-3
Blue Jay	5	14	House Sparrow	-8	-9
Black-billed Magpie	9	28			

**As tremendous changes can occur in small sample sizes only those species recorded on an annual average of six or more counts are included.*

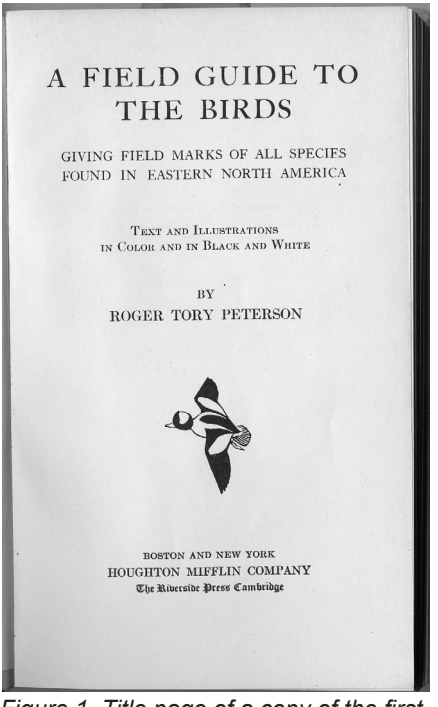
A FIRST-EDITION COPY OF ROGER TORY PETERSON'S A FIELD GUIDE TO THE BIRDS, ARCHIVED AT THE UNIVERSITY OF MANITOBA, AND A NOTE ON PETERSON'S CONNECTION TO SASKATCHEWAN

SPENCER G. SEALY, Department of Biological Sciences, University of Manitoba, Winnipeg, MB R3T 2N2

Bird watching changed forever in North America with the publication, in 1934, of Roger Tory Peterson's *A Field Guide to the Birds: Giving All Species Found in Eastern North America*.[1] Several keys and books designed to aid identification of birds in the field were already available, and bird watching was becoming a popular pursuit,[2] but Peterson used schematic drawings to depict each species in similar poses, initially, most in black and white but some in colour, of males and females, where their plumages differed. He omitted confusing details to show the bird as it appears to the eye in the field with critical distinctive points emphasized, in some species guided by arrows. Armed by that time with better binoculars, identification of birds in the field became easier, and even more popular.[3,4,5] Many printings and new editions of the field guide followed and, in 1941, the geographical scope of the book was expanded, focusing on birds found in western North America, which now included all of the species expected to occur in Saskatchewan. The number of subject areas covered by field guides in the "Peterson" series increased in ensuing years and other groups of animals, as well as plants, rocks and celestial features, were treated. Many competing guides, also covering birds in North America, but also in most other regions of the world, have appeared on the market in recent years. This is a testament to the sustained interest in bird identification and other studies of nature by people around the world.

First Edition of *A Field Guide to the Birds*

Numerous authors have assessed Peterson's accomplishments, as ornithologist, teacher, wildlife painter, and conservationist.[6,7,8] The purpose of this article, however, is to examine a rare copy of the first edition of Peterson's field guide (Fig. 1), with its surviving, albeit slightly tattered, dust jacket (Fig. 2), and to add another slant to Peterson's early connection to Saskatchewan. The book is housed in the rare book room of the Archives and Special Collections, Dafoe Library, at the University of Manitoba (catalogued QL 681 P48 1934), and was among a large collection of books and manuscripts donated, in 1995, by Walter R. Henson, a former director of the Natural Resources Institute at the University of Manitoba.[9,10] Henson received the copy of Peterson's book, and many others, from his uncle, Robert Owen Merriman (1894–1934), a professor of economics at Queen's University and an ardent naturalist. Merriman's bookplate appears on the front end-paper, but the book bears the signature of his sister, Ida Merriman, on a fly-leaf and, below it, an inscription written by Peterson: "For Ida Merriman with my best regards. Roger Tory Peterson" (Fig. 3). Ida Merriman also wrote, on page viii, that "This book is one



A FIELD GUIDE TO THE BIRDS

GIVING FIELD MARKS OF ALL SPECIES FOUND IN EASTERN NORTH AMERICA

TEXT AND ILLUSTRATIONS IN COLOR AND IN BLACK AND WHITE

BY
ROGER TORY PETERSON

BOSTON AND NEW YORK
HOUGHTON MIFFLIN COMPANY
The Riverside Press Cambridge

Figure 1. Title page of a copy of the first edition, second state, of Roger Tory Peterson's A Field Guide to the Birds. *Reproduced with permission from a copy (QL 681 P48 1934) in the rare book room of the Archives and Special Collections, University of Manitoba.*

of the first 2000 [copies] printed in the first-edition. See 'Whistling Swan [facing] page 18, the neck is grey – a printer's error, [which] was corrected after 2000 had been printed. Mr. Peterson told me this himself Jan[uary] 25 – 1951." Owen Merriman is especially remembered for initiating what turned out to be a long-term banding program on Chimney Swifts (*Chaetura peligica*) in the Hamilton and Kingston regions, Ontario;[11,12,13,14] indeed, their banding success was enhanced using a trap Merriman designed to catch the swifts.[11] Ida Merriman provided assistance and encouragement during later years of the banding.[11]

Ida Merriman was impressed by the rarity of her copy of Peterson's book, because on a separate sheet, dated O ctober 1966, inserted into the book, she re-iterated "This book – "A Field Guide to the Birds" is very valuable because it is of the first thousand [stated as 2000 copies above] printed in the first edition. A correction was made in the "setting" before any more were printed. The correction … the Whistling Swan has a grey neck. This should be white – the correction was made after the first thousand were printed. This and the fact that the book has the original jacket

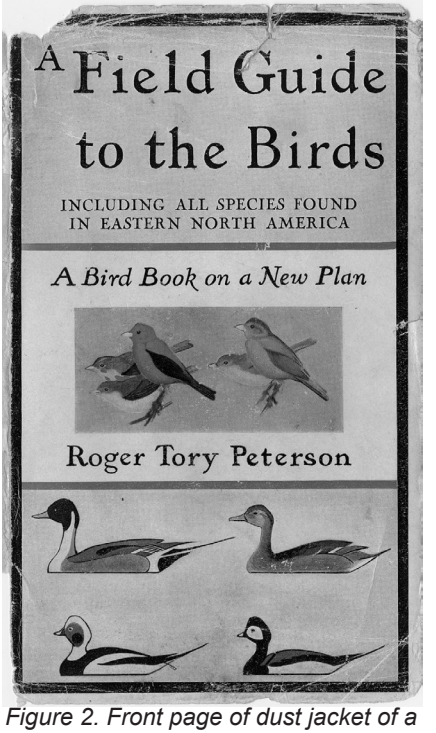


Figure 2. Front page of dust jacket of a copy of the first edition of Peterson's A Field Guide to the Birds. *Reproduced with permission from a copy (QL 681 P48 1934) in the rare book room of the Archives and Special Collections, University of Manitoba.*

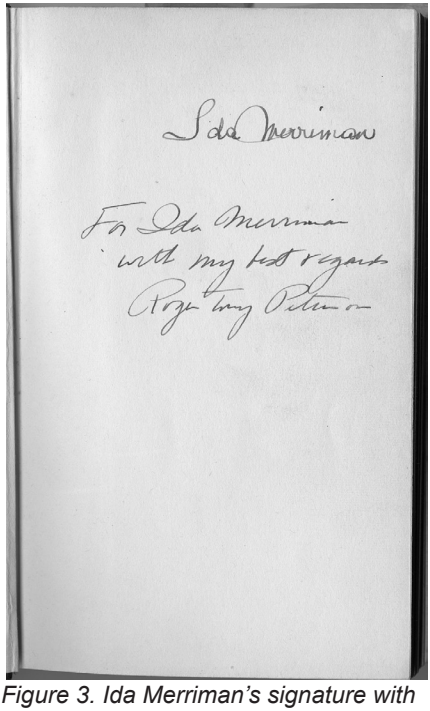


Figure 3. Ida Merriman's signature with Roger Tory Peterson's inscription below.

makes [*sic*] it very rare." The first edition of Peterson's field guide actually was printed four times, or in four states, or "issues" (each printing had minor corrections), between 1934 and 1939, the year when the second edition was published. Runs of 2000 and 3000 copies were printed for the first and second states, respectively, but the number of copies printed for each of the third and fourth states apparently was not recorded.[15] The shading on the Tundra [Whistling] Swan's neck (*Cygnus columbianus*), to which Merriman referred, as well as shading on two species of egrets (facing page 12), persisted through the first two states, but had been corrected by the third printing. (Peterson later confirmed this on page 68 of John Devlin and Grace Naismith's authorized biography *The World of Roger Tory Peterson*.[6]) The copy of Peterson's field guide examined here (Fig. 1) can be confirmed as being among the second state on the basis of two changes that were implemented between the first and second states: (1) the year 1934 no longer appears on the title page of the second state (Fig. 1), as it did in the first state, and (2) the corrected "Bog-pumper," denoting the American Bittern (*Botaurus lentiginosus*), instead of "Bob-pumper," was inserted in its place in the index of the second state, on page 155. Otherwise the two states are identical. The dirty gray plates were corrected before the third printing and the tissue guards that covered the color plates persisted through the first three states, but were replaced with standard paper in the fourth state. All of these errors were corrected when the first revised edition was published in 1939, and the geographical scope of the book was extended westward to the Rockies, so that it passed through Saskatchewan.[16,17] Details of other variations within editions, states, and printings of Peterson's field guides are available in an online article from the Roger Tory Peterson Institute of Natural History.[15]

Peterson's Connection to Saskatchewan

Roger Tory Peterson (1908–1996) attended the 77th Stated Meeting of the American Ornithologists' Union that was held in Regina, Saskatchewan, August 25-30, 1959.[18] Peterson's attendance at the meeting, not surprisingly, was one of the highlights for many people, as C. Stuart Houston recounted in Elizabeth J. Rosenthal's *Birdwatcher: The Life of Roger Tory Peterson*.[8] During the opening day of the meeting, Peterson and his long-time field companion, well-known British

ornithologist, James Fisher (1912–1970), accompanied by Walter J. Breckenridge (1903–2003) of Minnesota, travelled to Old Wives Lake southwest of Moose Jaw where Peterson believed they would have a good chance of finding a few species of birds that were missing from Fisher's life list. Among the seven species they especially hoped to see that day were Greater Prairie-Chicken (*Tympanachus cupido*), then usually known as Pinnated Grouse, and Sharp-tailed Grouse (*T. phasianellus*). Peterson was confident that they would find a Sharp-tailed Grouse but, instead, they were surprised to flush a Greater Prairie-Chicken, about 1 km from the eastern shore of Old Wives Lake.[19] They never did see a Sharp-tailed Grouse that day!

Peterson and Fisher had met in 1950; their friendship saw them take a 100-day, 30,000 mile odyssey around the periphery of North America, in 1953, from Newfoundland to Alaska by way of Mexico.[7] They published accounts of their observations, not only of birds and other animals, but also of plants, in *Wild America*[20], which was reviewed in *Blue Jay* by Frank Brazier.[21] Their attendance at the A.O.U. meeting in 1959, however, was their first visit to Saskatchewan. The highlight at the end of the meeting was the trip to the north end of Last Mountain Lake, where thousands of Sandhill Cranes (*Grus canadensis*) were viewed as they stopped over during their southward migration. It was not all bird watching that day, however, as Peterson and Fisher relaxed in the shade before lunch in the company of Alexander Wetmore (1886–1978), a former Secretary of the Smithsonian Institution in Washington, D.C. (Fig. 4).

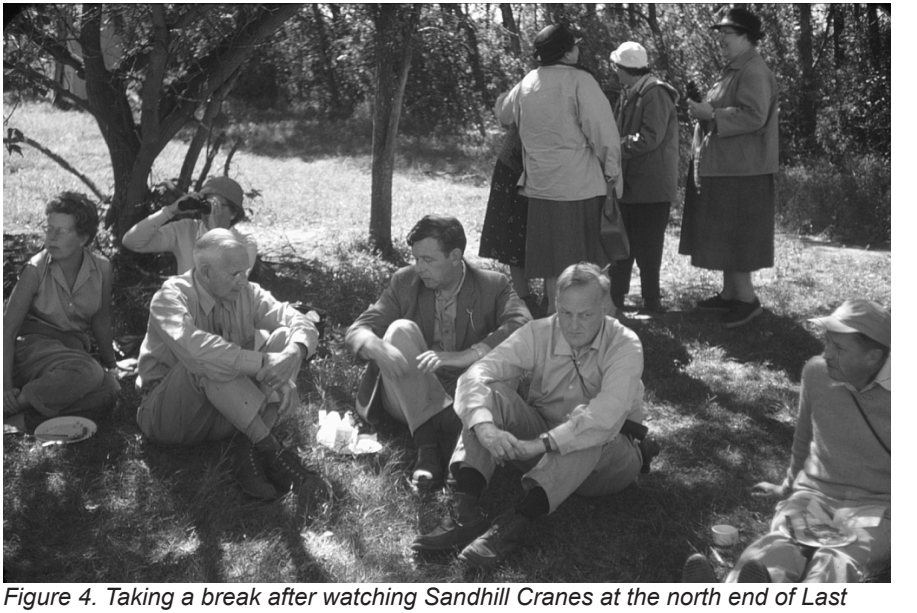


Figure 4. Taking a break after watching Sandhill Cranes at the north end of Last Mountain Lake, Saskatchewan: Alexander Wetmore (seated on the ground at left), James Fisher (centre), and Roger Tory Peterson (immediately to Fisher's right). The identities of the other people in the photograph are not known, 29 August 1959 (photograph by S.G. Sealy).

Fisher was in awe of the number of cranes seen that day, as elegantly expressed later by John A. Livingston:

> James Fisher lay on his back in the golden stubble, binoculars trained skyward, and murmured, 'This alone was worth coming 4.500 miles to see.' Above him, slowly and grandly ascending the invisible spiral staircase beneath each puffy cloud, were hundreds of Sandhill Cranes, great wings set as they soared higher and higher toward the altitude they sought for migration southward.[22]

In an editorial published in *Blue Jay*, Robert W. Nero was reminded of Fisher's statement that few people ever have the pleasure of viewing so many cranes at one time, thus alluding to another, less tangible but important value of wildlife.[23]

Acknowledgements

I thank Brian Hubner, Shelley Sweeney and staff for facilitating examinations of the copies of the first and revised editions of Peterson's field guide housed in the Archives and Special Collections at the University of Manitoba. Dr. Sweeney also discussed aspects of the provenance of this and other related books in the collection. Tyyne Petrowski provided the scans from the first edition used to prepare Figures 1, 2 and 3. Daria Wingreen-Mason checked the indices of states of the first edition of the field guide, housed in the Library of Natural History, Smithsonian Institution, Washington, D.C. Mitchell Toda facilitated deposition of the photograph, which comprises figure 4, in the Smithsonian Institution Archives (SIA Accession 13-099). Martin K. McNicholl commented on an early draft of the manuscript and reviewer, Philip S. Taylor, pointed out an important reference. Glen A. Fox provided companionship at the A.O.U. meeting in Regina and C. Stuart Houston and Robert W. Nero took time from their busy schedules during the meeting to answer our questions. Several young would-be ornithologists attended that meeting amid a welcoming atmosphere. Viewing cranes at Last Mountain Lake and attendance at the A.O.U. meeting count among my earliest and most memorable moments in ornithology.

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"Birding, after all, is just a game. Going beyond that is what is important."
- Roger Tory Peterson

MAMMALS

40th ANNUAL SASKATCHEWAN CHRISTMAS MAMMAL COUNT - 2012

ALAN R. SMITH, Box 154, Avonlea, SK, S0H 0C0, Email: *alanrandi@sasktel.net*

It is hard to believe that 40 years has passed since the late Wayne Harris had the brilliant idea of adding a Christmas Mammal Count (CMC) to the Christmas Bird Count. A wealth of data has since been acquired with little added effort. This winter's 85 Christmas Mammal Counts brings the all-time total of CMCs conducted to 2756 and the number of mammals counted to over 94,000!

The 3406 mammals seen or heard this winter were about average but much higher than last year's 2384. Most of this was due to the doubling of the White-tailed Deer count from 767 in 2011 to 1421. As with the birds, the average number of mammal species per count set a new record at 4.4. No new species were, however, added to the all-time total of 49 species.

Bison numbers at Grasslands National Park continue to increase from 24 in 2008 to 42 in 2011 to a new record high of 77 this past winter. The 4 Northern Flying Squirrels at Togo tied the previous high also set at Togo in January of 2002 and 2003. Other noteworthy records were an American Marten during the count period south of its usual range at Saskatoon and 31 Pronghorn north of their usual range at Denholm.

For information on participants, weather, coverage and location of CMCs see the CBC summary in this issue.

Explanation of entries in Table 1.

The number of mammals actually seen or heard on count day is treated separately from those recorded by other means, or those recorded during count period (14 December to 5 January) but not on count day. Numbers of individuals seen or heard are given in Table 1 and are tallied in the first line of totals at the bottom of the table. The number of species they represent is given in the second line.

For species only detected by tracks or by other means, or that are seen or heard only in the count period but not on count day, no numbers of individuals is given in Table 1. Species detected only by tracks are indicated by 't' in the table; those detected only by other means (dead animals 'm', more clearly identifiable chewing or digging 'd', dens or lodges 'L' (including Muskrat push-ups) and by smell 's.' Species detected by any means during the count period, but not on count day are indicated by 'c' in the table. These additional species are tallied in lines 3, 4 and 5 at the bottom of the table. If a mammal is reported as member of a species group (i.e. mouse species, deer species), it is counted as a species only if no other species in this group has been definitely recorded. The columns at the end of the table, give totals for each species.

Table 1-1. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	1	2	3	4	5	6	7	8	9	10	11	12
	Archerwill, 17 Dec 2012	Avonlea, 20 Dec 2012	Balgonie, 5 Jan 2013	Bangor , 3 Jan 2013	Biggar, 27 Dec 2012	Birch Hills, 15 Dec 2012	Borden-Radisson, 20 Dec 2012	Broadview, 26 Dec 2012	Cabri, 3 Jan 2013	Candle Lake, 29 Dec 2012	Cater, 1 Jan 2013	Chatsworth S.D., 5 Jan '13
Masked Shrew												
Shrew species										t		
Eastern Cottontail												
Nuttall's Cottontail									1			
Snowshoe Hare	1		t			t	t	t		t	1	6
White-tailed Jack Rabbit			t		t			t				c
Richardson's Ground Squirrel												
Eastern Grey Squirrel												
Eastern Fox Squirrel		1	3					3				
American Red Squirrel	c		1			1	2	5		6	c	1
Northern Flying-Squirrel												
American Beaver								L		L		
Deer Mouse								t		t		
Muskrat					L	L	L	L				
Gapper's Red-Backed Vole												
Meadow Vole												1
Vole species					t		t	t		t		
House Mouse												
Mouse species		1				t						
American Porcupine				1			3	1			c	1
Coyote	c	2	5	3	6	2		4	t	1	1	c
Gray Wolf												
Red Fox			1					2		t	c	
Raccoon						t		t			c	
American Marten												
Fisher										t		
Ermine						t						
Long-tailed Weasel										t		c
Least Weasel						t						
Weasel species	c				t							
American Mink	c									t		
American Badger												6
Striped Skunk				2							m	
River Otter						1				t		
Mountain Lion	c											
Canada Lynx										t		
Mule Deer		4			30		4	10	1			
White-tailed Deer	10	33	22	64	24		3	12	15	10	14	39
Deer species						t						
Moose	c	1		2				9		t	c	
Elk	c							t				
Pronghorn												
American Bison												
Totals seen/heard on count day	11	42	32	72	60	4	12	46	17	17	16	54
Total species seen/heard	2	6	5	5	3	3	4	8	3	3	3	6
Total species recorded by tracks	0	0	2	0	3	6	2	6	1	11	0	0
Total species otherwise recorded	0	0	0	0	1	1	1	2	0	1	1	0
Species recorded count period	7	0	0	0	0	0	0	0	0	0	5	3
Total species count period and day	9	6	7	5	7	10	7	16	4	15	9	9

Table 1-2. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	13	14	15	16	17	18	19	20	21	22	23	24
	Christopher Lake, 3 Jan 2013	Churchbridge, 14 Dec 2012	Clark's Crossing, 15 Dec 2012	Codette Lake, 26 Dec 2012	Craven, 15 Dec 2012	Creighton, 29 Dec 2012	Crooked Lake, 21 Dec 2012	Crooked River, 27 Dec 2012	Cypress Hills P.P., 28 Dec 2012	Denholm, 25 Dec 2012	Eastend, 3 Jan 2013	Endeavour, 24 Dec 2012
Masked Shrew					1							
Shrew species												c
Eastern Cottontail												
Nuttall's Cottontail									t			
Snowshoe Hare	c	t	3	t	t	t	t	m		t		t
White-tailed Jack Rabbit			1				t		1	1	m	
Richardson's Ground Squirrel												
Eastern Grey Squirrel					1							
Eastern Fox Squirrel					5							
American Red Squirrel	c	2	4	1	5	3	5	4	8	c		
Northern Flying-Squirrel	c									1		
American Beaver		L					L					
Deer Mouse				t			t			c		
Muskrat		L					L					
Gapper's Red-Backed Vole										c		
Meadow Vole	4											
Vole species				t	t	t						
House Mouse												
Mouse species			t		t							
American Porcupine			d		1		1			c	1	c
Coyote			11	t	2		4		1	2	c	t
Gray Wolf												
Red Fox	c			1	2	t				t		
Raccoon			t									
American Marten	1											
Fisher												
Ermine					2							
Long-tailed Weasel			t		t			c	t			
Least Weasel				t	t							
Weasel species		t										t
American Mink							2				1	
American Badger				L	1							
Striped Skunk		c				1						
River Otter												
Mountain Lion									t			
Canada Lynx						t						
Mule Deer					30		7			1	29	c
White-tailed Deer	c	9	4	t	31		32	2	20	24	37	2
Deer species												
Moose		t		t			t		t		c	t
Elk				t								
Pronghorn										31		
American Bison												
Totals seen/heard on count day	5	11	23	2	81	4	51	6	30	60	68	2
Total species seen/heard	2	2	5	2	11	2	6	2	4	6	4	1
Total species recorded by tracks	0	3	3	8	4	4	4	0	4	2	0	4
Total species otherwise recorded	0	2	1	1	0	0	2	1	0	0	1	0
Species recorded count period	5	1	0	0	0	0	0	1	0	4	2	3
Total species count period and day	7	8	9	11	15	6	12	4	8	12	7	8

Table 1-3. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	25	26	27	28	29	30	31	32	33	35	36	38
	Estevan, 31 Dec 2012	Estuary North, 31 Dec 2012	Fenton, 17 Dec 2012	Floral, 20 Dec 2012	Fort Qu'appelle, 21 Dec 2012	Gardiner Dam, 17 Dec 2012	Good Spirit Lake, 29 Dec 2012	Grandora, 4 Jan 2013	Grasslands N.P., 14 Dec 2012	Harris, 19 Dec 2012	Hazlet, 31 Dec 2012	Indian Head, 27 Dec 2012
Masked Shrew												
Shrew species								m				
Eastern Cottontail	2											
Nuttall's Cottontail		3				1					1	
Snowshoe Hare				1	2	t	t			1		t
White-tailed Jack Rabbit	1	5	t	t		t			t	t	t	1
Richardson's Ground Squirrel												
Eastern Grey Squirrel												
Eastern Fox Squirrel	3											5
American Red Squirrel			11		8		3					19
Northern Flying-Squirrel												
American Beaver			L				L					
Deer Mouse			t									
Muskrat	L		L				L			L		
Gapper's Red-Backed Vole												
Meadow Vole												
Vole species	t			t		t				t		1
House Mouse												
Mouse species						t	t	t			t	
American Porcupine					1	2				1		1
Coyote	4	1	t	3	8	6	1	m	9	3	1	6
Gray Wolf												
Red Fox							t	1			t	1
Raccoon					1							
American Marten												
Fisher												
Ermine			t									
Long-tailed Weasel												
Least Weasel			t							t		
Weasel species				t			t					3
American Mink												
American Badger			d						1		d	
Striped Skunk			t						s			
River Otter												
Mountain Lion												
Canada Lynx												
Mule Deer	34	10			2	25			95	19		11
White-tailed Deer		43	5	9	36	46	10	m	23	83		29
Deer species											t	
Moose		3					c					3
Elk												
Pronghorn		6								46		
American Bison									77			
Totals seen/heard on count day	44	71	16	13	58	80	14	1	205	153	2	80
Total species seen/heard	5	7	2	3	7	5	3	1	5	6	2	11
Total species recorded by tracks	1	0	6	3	0	3	4	1	1	3	4	1
Total species otherwise recorded	1	0	3	0	0	0	2	3	1	1	1	0
Species recorded count period	0	0	0	0	0	0	1	0	0	0	0	0
Total species count period and day	7	7	11	6	7	8	10	5	7	10	7	12

Table 1-4. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	39	40	41	42	43	44	45	48	49	50	51	52
	Kenaston, 30 Dec 2012	Kenosee Lake, 16 Dec 2012	Ketchen, 26 Dec 2012	Kilwinning, 14 Dec 2012	Kindersley North, 26 Dec 2012	Kinloch, 15 Dec 2012	Kyle, 20 Dec 2012	LMLNWA, 29 Dec 2012	Leader North, 21 Dec 2012	Love-Torch River, 26 Dec 2012	Luseland, 4 Jan 2012	Macdowall, 30 Dec 2012
Masked Shrew												
Shrew species				t				1				
Eastern Cottontail		t										
Nuttall's Cottontail							4					
Snowshoe Hare		t				1				t		1
White-tailed Jack Rabbit	1			t	1		3	c	2		c	
Richardson's Ground Squirrel												
Eastern Grey Squirrel												
Eastern Fox Squirrel								1				
American Red Squirrel		1	1	3		4				4		5
Northern Flying-Squirrel												
American Beaver		L	L			L						
Deer Mouse											c	
Muskrat		L	L									
Gapper's Red-Backed Vole												
Meadow Vole												
Vole species												
House Mouse												
Mouse species							t		2			
American Porcupine				t			t		1	t	c	1
Coyote	1	2		1	1	t	3	1	2	1	c	
Gray Wolf												
Red Fox	t	1		1							c	
Raccoon	t											
American Marten												
Fisher												
Ermine												
Long-tailed Weasel	t						1					
Least Weasel												
Weasel species						t						
American Mink						t						
American Badger							d					
Striped Skunk		s										
River Otter												
Mountain Lion												
Canada Lynx						t						
Mule Deer	8				15		8	17	15		18	
White-tailed Deer	16	8	3	4		13	29	29	22	26	1	3
Deer species												
Moose	2	1	4		c	2	3				c	
Elk			t			8				t		
Pronghorn					10		106					
American Bison												
Totals seen/heard on count day	28	13	8	9	27	28	157	49	44	31	19	10
Total species seen/heard	5	5	3	4	4	5	8	5	6	3	2	4
Total species recorded by tracks	3	2	1	3	0	4	2	0	0	3	0	0
Total species otherwise recorded	0	3	2	0	0	1	1	0	0	0	0	0
Species recorded count period	0	0	0	0	1	0	0	1	0	0	6	0
Total species count period and day	8	10	6	7	5	10	11	6	6	6	8	4

Table 1-5. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	53	54	55	56	57	58	59	60	61	62	63	64
	MacNutt, 5 Jan 2013	Meadow Lake, 26 Dec 2010	Meadow Lake South, 4 Jan 2013	Moose Jaw, 5 Jan 2013	Moose Mtn P.P., 3 Jan 2013	Morse, 21 Dec 2012	Nipawin, 28 Dec 2012	Nisbet Forest NW, 5 Jan 2013	Nisbet Forest W, 30 Dec 2012	Odessa	Outlook, 26 Dec 2012	Pierce Lake, 15 Dec 2012
Masked Shrew												
Shrew species												
Eastern Cottontail												
Nuttall's Cottontail												
Snowshoe Hare			t				t					
White-tailed Jack Rabbit					t	1	t			4		
Richardson's Ground Squirrel								t				
Eastern Grey Squirrel										2		
Eastern Fox Squirrel				14						3		
American Red Squirrel	2	1	t		1		4		1			1
Northern Flying-Squirrel												
American Beaver												
Deer Mouse												
Muskrat						1						1
Gapper's Red-Backed Vole												
Meadow Vole			t									
Vole species					1							
House Mouse												
Mouse species						t						
American Porcupine		1						d		2		
Coyote	c	1	t	1		4	1	t		6		
Gray Wolf												
Red Fox				1		1		t	2	2		
Raccoon										4		
American Marten												
Fisher			t									
Ermine												
Long-tailed Weasel						t						
Least Weasel												
Weasel species												
American Mink												
American Badger				1		1				1		
Striped Skunk	1					s				1		
River Otter												t
Mountain Lion												
Canada Lynx												
Mule Deer			1	10		15				8	2	
White-tailed Deer	9	43	14			123	22	t		10	7	28
Deer species												
Moose						1				2		4
Elk												
Pronghorn						43						
American Bison												
Totals seen/heard on count day	12	46	15	27	2	190	27	0	3	45	9	34
Total species seen/heard	3	4	2	5	2	9	3	0	2	12	2	4
Total species recorded by tracks	0	0	5	0	1	2	2	4	0	0	0	1
Total species otherwise recorded	0	0	0	0	0	1	0	1	0	0	0	0
Species recorded count period	1	0	0	0	0	0	0	0	0	0	0	0
Total species count period and day	4	4	7	5	3	12	5	5	2	12	2	5

Table 1-6. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	65	66	67	68	69	70	72	73	74	75	76	77
	Pike Lake, 5 Jan 2013	Prince Albert, 16 Dec 2012	Qu'Appelle, 5 Jan 2013	Qu'Appelle Dam, 16 Dec 2012	Raymore, 1 Jan 2013	Regina, 29 Dec 2012	Roscommon S.D, 31 Dec 2012	Rouleau, 20 Dec 2012	Round Lake (Q.V.), 14 Dec 2012	Saltcoats, 29 Dec 2012	Sask. Landing P.P., 28 Dec 2012	Sask. River Forks, 14 Dec 2012
Masked Shrew												
Shrew species		t										t
Eastern Cottontail												
Nuttall's Cottontail				1							7	
Snowshoe Hare	t	t			c	t	t		t			t
White-tailed Jack Rabbit	t	1			c	13		3				
Richardson's Ground Squirrel												
Eastern Grey Squirrel						12		c				
Eastern Fox Squirrel			2	2		43						
American Red Squirrel	17	8			1	1			1	1		3
Northern Flying-Squirrel												
American Beaver		L							L			
Deer Mouse		t				t						t
Muskrat		L							L			L
Gapper's Red-Backed Vole												
Meadow Vole												
Vole species				1	c						1	t
House Mouse						3						
Mouse species	t				c		t				t	
American Porcupine	1				1	3				2	1	
Coyote	5	3		13	t	10	t	c	2	2	7	t
Gray Wolf												t
Red Fox	t	1				4	1	3	1		1	1
Raccoon									1			
American Marten												
Fisher												t
Ermine		t			c							t
Long-tailed Weasel	1			t								
Least Weasel					c							
Weasel species						t	t					
American Mink												
American Badger					c		d	c				
Striped Skunk		2										t
River Otter												
Mountain Lion												
Canada Lynx												t
Mule Deer	4			24			t		3		42	
White-tailed Deer	9	8		3	8	7	30		18	39	18	5
Deer species												
Moose				3	t		c	c	1		c	
Elk							c					t
Pronghorn												
American Bison												
Totals seen/heard on count day	37	23	2	47	10	96	31	6	27	44	77	9
Total species seen/heard	6	6	1	7	3	9	2	2	7	4	7	3
Total species recorded by tracks	4	4	0	1	2	3	5	0	1	0	1	11
Total species otherwise recorded	0	2	0	0	0	0	1	0	2	0	0	1
Species recorded count period	0	0	0	0	6	0	2	4	0	0	1	0
Total species count period and day	10	12	1	8	11	12	10	6	10	4	8	15

Table 1-7. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	78	79	80	81	82	83	84	85	86	87	88	89
	Saskatoon, 26 Dec 2012	Sawyer Lake, 5 Jan 2013	Shamrock, 2 Jan 2013	Snowden, 5 Jan 2013	Spinney Hill, 17 Dec 2012	Squaw Rapids, 15 Dec 2012	Swift Current, 29 Dec 2012	Togo, 4 Jan 2013	Weyburn, 15 Dec 2012	White Bear, 30 Dec 2012	Whitewood, 23 Dec 2012	Wingard-Ft Carlton, 29 Dec 2012
Masked Shrew												
Shrew species		t										
Eastern Cottontail												
Nuttall's Cottontail							2			2		
Snowshoe Hare	t	t		t		t		2			t	
White-tailed Jack Rabbit	7	t	4		t		1		t	2	c	
Richardson's Ground Squirrel												
Eastern Grey Squirrel							22					
Eastern Fox Squirrel									22		1	
American Red Squirrel	13	4		12	2	6		6			2	1
Northern Flying-Squirrel		c						4				
American Beaver											L	
Deer Mouse		t			t							
Muskrat		c									L	
Gapper's Red-Backed Vole												
Meadow Vole												
Vole species												
House Mouse	1											
Mouse species				t		t				t		
American Porcupine	1						2	1		1		c
Coyote	7	t	16		1	1	2	3	1	1	6	
Gray Wolf		t						1				
Red Fox	1	t	t	1			t			2	t	
Raccoon		c										
American Marten	c											
Fisher		t										
Ermine		t		t								
Long-tailed Weasel												
Least Weasel		c										
Weasel species					t	t						
American Mink		c				1	t					
American Badger											d	
Striped Skunk							s				s	
River Otter		c				7						
Mountain Lion												
Canada Lynx												
Mule Deer	5		97		1		66					1
White-tailed Deer	31	t	10	6	15		34	13	10	20	36	c
Deer species						t						
Moose	1	2		1				3			7	
Elk		t						6			4	c
Pronghorn							3			154		
American Bison												
Totals seen/heard on count day	67	6	127	20	19	15	132	39	33	182	56	2
Total species seen/heard	9	2	4	4	4	4	8	9	3	7	6	2
Total species recorded by tracks	1	11	1	3	3	4	2	0	1	1	2	0
Total species otherwise recorded	0	0	0	0	0	0	1	0	0	0	4	0
Species recorded count period	1	6	0	0	0	0	0	0	0	0	1	3
Total species count period and day	11	19	5	7	7	8	11	9	4	8	13	5

Table 1-8. 40th Saskatchewan Christmas Mammal Count-2012.

CBC number	90								
	Yorkton, 20 Dec 2012	# individuals seen/heard count	# Counts seen/heard	# Counts recorded as tracks	# Counts recorded as other	# Counts, count period	# Counts, count period & coun	High count	% Counts seen/heard
Masked Shrew		1	1	0	0	0	1	1	1.0
Shrew species		1	1	5	1	1	8	1	1.0
Eastern Cottontail		2	1	1	0	0	2	2	1.0
Nuttall's Cottontail		22	9	1	0	0	10	7	9.4
Snowshoe Hare		19	10	30	1	2	43	6	10.5
White-tailed Jack Rabbit		53	19	17	1	5	42	13	19.9
Richardson's Ground Squirrel		0	0	1	0	0	1	0	0.0
Eastern Grey Squirrel		37	4	0	0	1	5	22	4.2
Eastern Fox Squirrel		108	14	0	0	0	14	43	14.7
American Red Squirrel	3	198	46	1	0	4	51	19	48.3
Northern Flying-Squirrel		5	2	0	0	2	4	4	2.1
American Beaver		0	0	0	12	0	12	0	0.0
Deer Mouse		0	0	10	0	2	12	0	0.0
Muskrat		2	2	0	16	1	19	1	2.1
Gapper's Red-Backed Vole		0	0	0	0	1	1	0	0.0
Meadow Vole		5	2	1	0	0	3	4	2.1
Vole species		4	4	12	0	1	17	1	4.2
House Mouse		4	2	0	0	0	2	3	2.1
Mouse species		3	2	15	0	1	18	2	2.1
American Porcupine		32	24	3	2	5	34	3	25.2
Coyote		191	52	11	1	6	70	16	54.6
Gray Wolf		1	1	2	0	0	3	1	1.0
Red Fox		32	22	12	0	3	37	4	23.1
Raccoon		6	3	4	0	2	9	4	3.1
American Marten		1	1	0	0	1	2	1	1.0
Fisher		0	0	4	0	0	4	0	0.0
Ermine		2	1	6	0	1	8	2	1.0
Long-tailed Weasel		2	2	7	0	2	11	1	2.1
Least Weasel		0	0	5	0	2	7	0	0.0
Weasel species		3	1	10	0	1	12	3	1.0
American Mink		4	3	3	0	2	8	2	3.1
American Badger		11	6	0	6	2	14	6	6.3
Striped Skunk		7	5	2	6	1	14	2	5.2
River Otter		8	2	2	0	1	5	7	2.1
Mountain Lion		0	0	1	0	1	2	0	0.0
Canada Lynx		0	0	4	0	0	4	0	0.0
Mule Deer		672	36	1	0	1	38	97	37.8
White-tailed Deer		1421	67	3	1	2	73	123	70.3
Deer species		0	0	3	0	0	3	0	0.0
Moose		55	20	7	0	9	36	9	21.0
Elk		18	3	6	0	3	12	8	3.1
Pronghorn		399	8	0	0	0	8	154	8.4
American Bison		77	1	0	0	0	1	77	1.0
Totals seen/heard on count day	3	3406							
Total species seen/heard	1		30						
Total species recorded by tracks	0			27					
Total species otherwise recorded	0				10				
Species recorded count period	0					26			
Total species count period and day	1						38		

Amphibians

FURTHER OBSERVATIONS OF BLUE-SPOTTED SALAMANDERS NEAR PINAWA, MANITOBA

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The blue-spotted salamander (*Ambystoma laterale*), a small salamander with a maximum length of about 14 cm (Figures 1 and 2), approaches its northwestern range limit in southeastern Manitoba.[1-5] Seasonal movements of this species between 2008 and 2010 in and near "Cameron woods", a 28-hectare patch of mixed-wood forest bounded by streets and roads at Pinawa, Manitoba, were described previously.[4] Some features of these movements were surprising, especially the predominance of late-summer and fall observations, apparently involving all age classes (based on relative sizes) but with recent metamorphs predominating. Spring movements were sparse, with only eight of 194 salamanders being found in April or May. This contrasted with studies elsewhere, in which spring migration of adults to and from breeding ponds dominated the observed movements.[6,7] It is therefore important to know whether the movements observed at Cameron woods are representative of Manitoba populations or (as seems more likely) specific to the site and/or the abnormally wet conditions during the study period.

On 19 April 2011, I found seven blue-spotted salamanders crossing a paved road in a forested area about 12 km west of Pinawa. This immediately suggested a comparative study with the opportunity to sample spring movements in a less disturbed setting than Cameron woods. This article presents the results of nocturnal surveys at this new location in 2011 and 2012, with emphasis on distinguishing the movements of three age classes: metamorphs (young of the year), yearlings (second calendar year, sometimes called juveniles), and adults (third or later calendar year). Some new, comparative data are also presented for the Cameron woods study area in 2011 and 2012.

Figure 1: Large adult blue-spotted salamander (TL = 14.0 cm), Pinawa MB, 9 May 2011 (as found on road). -P. Taylor

Figure 2: Blue-spotted salamander metamorphs (TL about 7 cm), Pinawa MB, 24 August 2009 (temporarily captive). In comparison with Figure 1, note the proportionately larger head and smaller tail, prominent neck, and more extensive blue or grey spots.

Study area

The study area (Figure 3) is a stretch of Ara Mooradian Way between 1.1 and 2.5 km north of Provincial Road 211, just east of the Winnipeg River and 12 km west of Pinawa, and centred at 50.160°N, 96.049°W. The approximate limits of the observed salamander movements have the following Universal Transverse Mercator coordinates (North American Datum 1983, Zone 14): southern limit 710790E, 5559800N; northern limit 710740E, 5561200N.

Ara Mooradian Way has a paved surface 6 m wide and gravel shoulders about 1.5 m wide. The road bed within the study area is slightly raised above the surrounding area, with ditches about 2 m below the road surface. Habitat on the west side (adjoining the Winnipeg River) is moist, mature deciduous forest (primarily poplar, *Populus sp*.) with a sparse understory and low, herbaceous ground-cover on leaf litter. This area provides habitat for several amphibian species including blue-spotted salamanders, but it lacks breeding pools, and the ditch on the west side of the road is mostly dry year-round. Immediately east of the road is a ditch that normally contains standing water, at least in spring. East of this ditch is an electrical transmission-line corridor, approximately 40 m wide, with dense grassy and herbaceous ground-cover and some marshy patches. The width of the combined road and transmission-line corridor is 70 m, representing a significant barrier to salamanders that typically migrate and disperse over distances of a few hundred metres.[1] The area east of the transmission-line corridor is also mostly poplar-dominated forest, but has several small pools with beaver (*Castor canadensis*) activity, numerous dead trees, and some small cattail (*Typha sp.*) stands. The pools feed a stream that flows under the road to the Winnipeg River through a small ravine at the northern boundary of the study area. Farther south, the forest on the west side is reduced to a narrow strip as the road approaches the river.

The woodland pools and surroundings provide breeding habitat for many amphibians, as indicated by abundant calling wood frog (*Lithobates sylvaticus*), boreal chorus frog (*Pseudacris maculata*), spring peeper (*P. crucifer*), and gray treefrog (*Hyla versicolor*), with smaller numbers of northern leopard frog (*L.*

Figure 3: Study area, looking north along Ara Mooradian Way on 3 September 2012; from left to right are non-breeding forest habitat, road, power-line right-of-way, and presumed breeding forest habitat. *-P. Taylor*

pipiens) and American toad (*Anaxyrus americana*). Boreal chorus frogs also breed at low-lying spots within the transmission corridor, and wood frogs are active in the east-side ditch, at least in wet springs. There are thus several potential breeding locations for salamanders east of the road, though breeding can only be inferred from the seasonal movements described below.

Survey methods

Blue-spotted salamanders were detected on the road surface when driving at about 20 km/h with high-beam headlights. This was feasible because night traffic was minimal, with only three other vehicles being encountered in 53 surveys. Most surveys were conducted 1–4 h after sunset (20:30 h to 01:00 h) on evenings with light winds and temperatures above 5°C. Periods immediately after substantial rainfall were selected where possible, but prevailing conditions in 2011–2012 were much drier than in 2008–2010, especially in early spring 2012 and late summer in both years. Round-trip surveys lasted between 10 and 50 minutes, depending on the number of salamanders found (up to 24).

When a salamander was seen the vehicle was stopped, and when possible the unrestrained animal's total length (TL) was measured using a ruler. The accuracy of these measurements was limited by low lighting, parallax effects, and the movement or curved posture of some salamanders. Estimated uncertainties were ± 0.2 cm for stationary salamanders and up to ± 0.5 cm for moving ones. For surveys after 30 April 2011, when two-way movement was first noted, salamanders' orientation when first seen was also recorded. Most were oriented approximately perpendicular to the road direction. After measurement, salamanders were transferred gently to the grassy edge of the roadside shoulder in the direction they were facing when first seen.

Surveys were limited to the spring and late-summer/fall periods when maximum activity was expected, based on the Cameron woods study and research elsewhere.[4,6,7] Extreme survey dates were 19 April – 2 June and 16 August – 13 October 2011, and 18 March – 22 May and 1 September – 17 October 2012.

Results and Discussion

Population demographics are difficult to establish for such inconspicuous species as small salamanders, and potential bias of sampling methods is always a concern.[8] Passive, opportunistic studies of the type described here sample only the portion of the population that is on the move on a given night. Thus, they provide some insight into differential movement patterns among age classes, but they cannot yield relative populations of the age classes. Night-to-night fluctuations in numbers are at least partly weather-related, as described previously.[4] Weather conditions may affect the amount of time individuals remain exposed on a road surface, as well as the number of animals on the move. The following discussion therefore emphasizes broad seasonal trends, using size distributions as a tool for comparison. Numerical results of the surveys are summarized in Table 1, and size/date information is presented in Figure 4. Altogether 268 salamanders were recorded along Ara Mooradian Way in 2011-2012, with at least one salamander recorded in 33 of 53 surveys (62%; see Table 1), compared with 195 salamanders in 45 of 75 surveys (60%) at Cameron woods in 2008-2010.[4] Usable TL measurements for inclusion in size analysis (see below) were obtained for 238 individuals. This total excludes four (1.7%) with obviously damaged tails and 26 that were not measured for various reasons.

Movements were distributed along a 1.4-km stretch of road, with a broad peak in the central section but no hint of any narrow migration corridors. In spring surveys, larger numbers were observed in this study than at Cameron woods in 2008-2010: 75% of 32 surveys, with 8.8 salamanders per non-zero survey (NZS), compared with 38% of 13 surveys and 1.6 salamanders per NZS, respectively (Table 1).[4] There were fewer non-zero surveys in late-summer and fall, but with comparable numbers between the two studies: 41% of 17 surveys with 6.8 salamanders per NZS in this study, compared with 73% of 49 surveys and 4.9 salamanders per NZS at Cameron woods.[4]

Measurements and inferences about age classes (see below) are consistent with previously published snout-to-vent length (SVL) measurements.[1] Assuming that SVL is about 57% of TL on average,[4] published SVL measurements yield estimated TL ranges of 4.2–6.7 cm for metamorphs, 7.4–12.3 cm for adult males, and 8.9–13.5 cm for adult females.[1] The overall size range for this study and Ref. 4 combined (5.0–14.0 cm) agrees reasonably well with these estimates (4.2–13.5 cm).

No published measurements appear to exist for yearlings, other than those inferred in Ref. 4, but blue-spotted salamanders are believed to reach sexual maturity in the second year after hatching.[1] Five individuals recorded in spring over the two studies with TL between 6.0 and 7.5 cm were assumed to be yearlings. Allowing for summer growth, it is likely that late-summer and fall individuals with TL around 8–10 cm (near the lower end of the adult size range) are also yearlings. A comparable size-based classification into three age classes (young of the year, juveniles, and adults) has been adopted for red-backed salamanders (*Plethodon cinereus*).[8] In addition to small overall size, blue-spotted salamander metamorphs are distinguished from adults by their proportions and markings, as described in the caption to Figure 2.

Table 1: Summary of survey results in two Pinawa-area studies (Ref. 4, Cameron woods, 2008-2010; this study, Ara Mooradian Way, 2011-2012). Figures in parentheses in the second and third columns are the numbers of non-zero surveys.

Month	Number of Surveys	Maximum Count	Total Count			
	Ref. 4	This Study	Ref. 4	This Study	Ref. 4	This Study
March	2 (0)	5 (4)	0	23	0	38
April	7 (4)	16 (12)	3	24	7	127
May	4 (1)	11 (8)	1	15	1	47
June	5 (1)	2 (0)	2	0	2	0
July	3 (2)	0 (0)	1	--	2	--
August	13 (10)	2 (2)	8	4	31	6
September	17 (15)	12 (5)	21	13	128	42
October	19 (11)	5 (2)	5	6	19	8
November	5 (1)	0 (0)	5	--	5	--
TOTAL	75 (45)	53 (33)	--	--	195	268

Percentage of surveys with non-zero counts, March to May	38	75
Percentage of surveys with non-zero counts, August to October	73	47
Number of salamanders per non-zero survey, March to May	1.6	8.8
Number of salamanders per non-zero survey, August to October	4.9	6.2
Average number of salamanders, all surveys, March to May	0.6	6.6
Average number of salamanders, all surveys, August to October	3.6	2.9

Spring sightings almost exclusively involved adults, with the exceptions noted above. Excluding the presumed yearlings, TL measurements ranged from 9.0 to 14.0 cm and closely approximated a Gaussian distribution with a mean of 11.2 cm and a population standard deviation of 0.9 cm. Results in 2011 and 2012 were virtually identical, and a combined distribution is shown in Figure 5, together with the late-summer/fall distribution of 2009-2010 data from the Cameron woods study.[4] Males and females were not distinguished in the field, and there is no indication of separate peaks by gender in the size distribution. Instead, there is probably some peak broadening due to overlapping male and female size ranges. Fall sightings involved both metamorphs and adults, but few if any yearlings, as indicated by a bimodal size distribution with peaks at TL = 6 and 11-12 cm and a minimum at TL = 9 cm (Figure 6). This distribution is also evident in the clustering of late-summer/fall TL data into two size groups (right side of Figure 4). It differs markedly from the skewed distribution found at Cameron woods, extending from TL = 5 to 13 cm, with a single peak at 6-7 cm (Figure 5).[4]

Data from Figures 5 and 6 were reduced to three age-class groups (5 to 7 cm, 8 to 10 cm, and 11 to 14 cm) for a test to demonstrate that the large differences among the three size distributions are statistically significant (chi-squared test, $\chi^2 > 100$, df = 2, $P << 0.1$).

Initial spring movements, commencing in April 2011 and March 2012, were almost

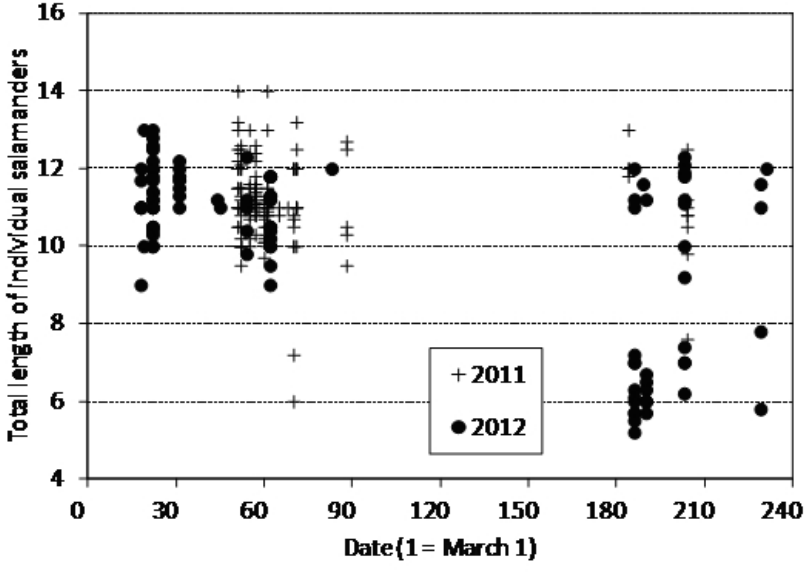

Figure 4:Sizes (total length) and dates of individual salamanders observed along Ara Mooradian Way, 2011 and 2012.

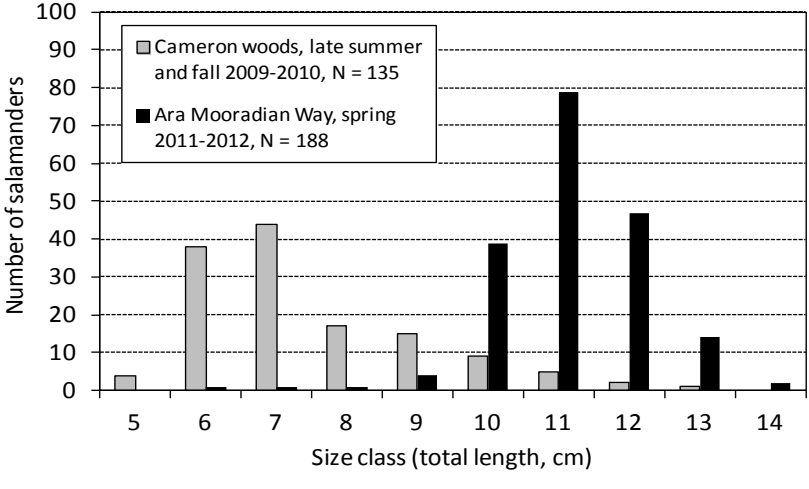

Figure 5: Size distributions of salamanders observed in spring along Ara Mooradian Way, 2011–2012, compared with late summer and fall at Cameron woods, 2009–2010. Size classes are based on uniform 1.0-cm intervals in TL, e.g., the value 9 represents TL values between 8.5 and 9.5 cm.

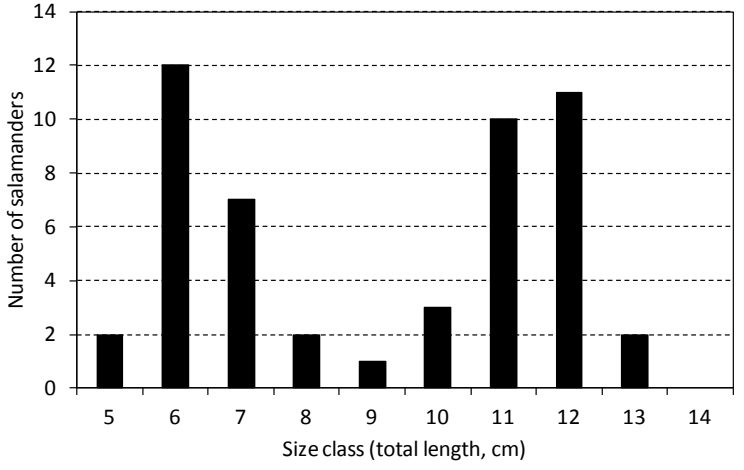

Figure 6: Size distribution of salamanders observed along Ara Mooradian Way in late summer and fall (31 August to 17 October) 2011 and 2012 (N = 50).

exclusively eastbound, i.e., towards the presumed breeding areas. Westbound, return movements were first noted on 30 April 2011 and 1 May 2012, and continued through May along with some eastbound salamanders. Fall movements of adults were bidirectional, but with roughly twice as many westbound as eastbound animals. Juvenile movements, observed mostly in 2012, were almost exclusively westbound, i.e., away from the presumed breeding habitat. The spring movements are similar to those observed by Regosin et al. in a two-year study at a breeding pond in Massachusetts, but they noted minimal fall movements of blue-spotted salamanders (unlike three other amphibian species in their study).[6] Salamander movements near Cameron woods were much reduced in 2011-2012, compared with the numbers found in 2008-2010 (Ref. 4), presumably because of the drier conditions, and possibly also because of ongoing low-density residential development. In 2011-2012, only nine salamanders were observed in 15 walking surveys of the kind described in Ref. 4. Three such surveys were run on the same nights as three of the highest September counts along Ara Mooradian Way (on 2, 6 and 19 September 2012); the three-night grand totals were one salamander near Cameron woods and 32 along Ara Mooradian Way. It is unfortunate that the Ara Mooradian Way site was discovered after the Cameron woods study was complete, limiting the direct comparisons.[4]

Incidental observations

Some of the spring salamander movements on Ara Mooradian Way coincided with similar migrations of other amphibians, especially wood frogs. Only a few other amphibians, mostly northern leopard frogs and American toads, were noted during late summer and fall surveys in both studies. Early emergence in 2012 was linked to an early thaw and mid-March heat wave that prompted record-early emergence of many amphibian and reptile species across southern Manitoba.[5] For example, locally record-early wood frogs and blue-spotted salamanders were observed on 18 March 2012, and boreal chorus frogs were detected the following day.

While evenings immediately after significant rainfall (at least a few mm)

were generally most productive, this was not a necessary condition for amphibian movements, as noted previously.[4] In spring, it appeared to be sufficient for the habitat to be saturated by recent snow-melt. With one exception, salamanders appeared to be migrating or dispersing rather than hunting or feeding. On 1 May 2012, I found one salamander and one wood frog with half-swallowed earthworms. This was an evening with strong westward (post-breeding) movements of both species, as well as earthworm movement onto the wet road, suggesting opportunistic feeding by a few individual amphibians rather than deliberate hunting on the road surface.

Road mortality appeared to be low, consistent with light traffic, but three of six salamanders found on 15 October 2012 were dead. The small number of salamanders with obviously damaged tails (1.7% of those measured) indicates low rates of conspecific aggression or predation, at least after metamorphosis, when compared with reported rates of 0 to 35% of red-backed salamanders with cut tails at various forest sites in Quebec.[8,9]

Conclusions

Different size distributions of salamanders observed in the two studies can be related to differing conditions at the two sites. Data from Cameron woods in 2008-2010 appear to represent mostly late-summer and fall dispersal movements near a partly isolated forest fragment, presumably during a period of high breeding success and elevated population density associated with exceptionally wet conditions.[4] In contrast, the 2011-2012 data from Ara Mooradian Way reveal two-way spring migrations and fall dispersal movements in relatively dry years between non-breeding and breeding habitats in a forested area bisected by a road. These movements resemble those in studies elsewhere.[1,6,7] It is possible that reports of blue-spotted salamander migration as late as June in northerly parts of their range refer to return movements from breeding pools.[1]

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5. The Manitoba Herps Atlas, *http://www.naturenorth.com/Herps/Manitoba_Herps_Atlas.html*.

6. Regosin JV, Windmiller BS, Homan RN, Reed JM (2005) Variation in terrestrial habitat use by four pool-breeding amphibian species. *Journal of Wildlife Management* 69:1481-1493.

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Plants

HORSETAILS AND SCOURING-RUSHES (*EQUISETUM* SPP.) IN MANITOBA

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Nine species of *Equisetum* occur in Manitoba,[1,2,3,4] where they were first all recorded together as long ago as 1943.[5] Even so, there are still no detailed, current maps of their provincial distributions; a necessity if we are to monitor fluctuations which may occur as a result of future environmental changes. This is the third of four articles on the distributions, abundances and habitats of lycopods, ferns and their relatives in Manitoba;[6,7] plants that have received only limited study in the province.

Once thought to be a distinct Division (the traditional botanical equivalent of "Phylum") in its own right, the horsetails are now believed to have descended from an early off-shoot of the fern Division, the Pteridophyta.[8,9] The horsetail group was once an important and diverse component of the flora of Paleozoic forests but it has since dwindled down to only 15 extant species of a single contemporary genus, *Equisetum*, nine of which we can find in the ditches and wet woodlands of Manitoba as well as in the other prairie provinces; Horsetails and Scouring-rushes are real "living fossils"![10] Living and fossil horsetails are peculiar plants! Their stems are regularly segmented, furthermore branches and leaves are arranged into whorls, i.e. clusters which are attached and radiate from single points on the stem.[3,11,12] Horsetails fall naturally into two subgenera. Those that usually have a whorl of branches at each node (i.e. joint) on the main shoot are the Horsetails (Genus *Equisetum*, Subgenus *Equisetum*), and those which are not branched are the Scouring-rushes (Genus *Equisetum*, Subgenus *Hypochaete*).[11] These subgenera were intensively studied by R. Hauke in 1963 and 1978.[13,14] All species have whorls of leaves, albeit these are very much diminished in size and fused into sheaths that surround the stem (Figure 1).

Materials and Methods

During 2011 and 2012, I examined all 1,324 specimens of horsetails and scouring-rushes that had been collected in Manitoba and now housed in Manitoba herbaria; the Manitoba Museum (MMMN), Universities of Manitoba (WIN) and Winnipeg (UWPG), and in my own, non-registered collection ("RS"). The identity of each specimen was checked using identification keys from the Flora of North America.[11] Specimens were annotated if necessary. Table 1 lists the specimens. Information from the herbarium labels (such as collection numbers, locations, habitats, dates) was copied into an Excel spreadsheet.

Unless the location given on the herbarium label was too vague, it was converted to a latitude-longitude value using the Manitoba Gazetteer.[15] All lat-long values were then converted to Universal Transverse Mercator (North America Datum 1983) values using a latitude-longitude converter.[16] A distribution map was made for each species, in which each dot on the map indicated that at least one specimen had been collected from that particular 50 x

50 km U.T.M. square. There were 291 50 x 50 km UTM squares recognized in the maps. This procedure parallels the traditional method of mapping organisms in Europe. [17]

It was necessary to lump certain habitat, soil and moisture categories into broad classes and also to combine categories that were more or less synonymous, for example "beach" and "shore". Habitat types that were recognized in this study were; a) forest (including; coniferous, mixed,ff deciduous), b) wetland (including; pond, lake, river, ditch, stream, shore, beach, bank, bog, fen, swamp, marsh), c) grassland (including; prairie, meadow, field, clearing), d) disturbed (including; quarry, pit, roadside, railway, abandoned or old field), e) other (including; rock outcrop, sand dunes, eskers). The soil types that I recognized were: a) gravel (including; pebbles, boulders, rocks), b) sand, c) clay (including; silt), d) organic (including; peat) and e) other (including; ash, moss, crevices in rock). The moisture levels that I recognized were; a) standing water (including; emergent), b) wet (including; very wet), c) moist (including; damp, mesic) and d) dry (including xeric). These categories were then summarized for each species. The percentages of specimens in each environment type were then calculated for habitat, soil type and moisture level.

Results and Discussion

Nine species of *Equisetum* (horsetails and scouring-rushes) and four hybrids were identified as occurring within the boundaries of the Province of Manitoba (Table 1). The same species also occur in Saskatchewan and Alberta.[3,11,19] For the most part, all species are common and widespread. None can be considered to be "at risk" (Table 1). The smooth scouring-rush is the least common and most locally distributed of all our species but even so it does form extensive colonies, for instance on the north side of Hwy 304 between Stead and Powerview, MB. Several species, including the "Common" (= Field), Marsh, Meadow and Woodland horsetails as well as "Scouring-rush", have been listed under the Noxious Weeds Act of Manitoba; however a new act, which is presently being formulated (2012), excludes any reference to these plants. No *Equisetum* species are listed in the present Weed Control Act of Saskatchewan (2010) or the Weed Control Act of Alberta (2010).

Habitat, soil type and moisture level information was derived from herbarium sheet labels, except for that of the Smooth scouring-rush and hybrid taxa for which there were too few specimens. On average, 85.5% (80-91% depending on species) of the herbarium sheet labels gave usable habitat information. The values for soil type and moisture levels were much lower at 37.4% (23-48%) and 44.5% (32-55%), respectively. Table 2 provides the percentages of specimens for each species and for each of the environmental factors. Specific attributes are discussed under the species entries in the annotated species list given below.

Key to the species of horsetails and Scouring-rushes found in Manitoba.

Hybrid taxa have been found in Manitoba. These have characteristics that are either mixes of those of both parent species, or are intermediate between them. When present, their cones have white, misshapen, sterile spores; whereas non-hybrids have green, spherical spores.[11,12,19] The hybrids are not included in the identification key, below, but discussed in the Annotated checklist and illustrated in Figure 10.

1a. Stems pale brown, fleshy, all cone-bearing but withering quickly after the spores are shed in early spring; sheaths ± inflated, blackish..……..……*Equisetum arvense.*

1b. Stems green or pale-coloured, herbaceous or perennial, those that are cone-bearing do not wither immediately after the spores are shed; sheaths appressed to stem..... 2.

2a. Stems delicate, annual, (usually) with whorls of branches; mature cones have long peduncles, and are rounded at tip.……..……..……...3.

2b. Stems stiff, usually evergreen, unbranched; mature cones are sessile or short-peduncled and are pointed at tip.....…..7.

3a. Sheaths on main stem green at base, coppery-brown above; sheath teeth joined into groups; branches themselves branched.....…….....… *Equisetum sylvaticum.*

3b. Sheaths on main stem pale green; sheath teeth blackish, often white with margins, separate or joined; branches (if present) rarely branched.....……..…..4.

4a. Main stem and any branches with large central cavities, soft, easily flattened with fingers; grows in shallow water or at water's edge ....….....*Equisetum fluviatile.*

4b. Main stem and branches with small central cavities, firm and not easily compressed; plants terrestrial.……..……..…..... 5.

5a. Lowest internode of each branch much shorter than the length of the adjacent sheath on the main stem ...…….…….…… *Equisetum palustre.*

5b. Lowest internode of each branch equal or longer than the length of the adjacent sheath on the main stem. ……..……..…… 6.

6a. Internodes of upper stem rough to touch; teeth on sheaths of main stem separate, narrow, tapering gradually to points, pale with thin dark centres; branch teeth incurved, broadly triangular; cone-bearing shoots soon develop green branches. …….....
.....*Equisetum pratense.*

6b. Internodes of upper stem more or less smooth; teeth on sheaths of main stem often coherent into groups, broadly triangular, dark, sometimes with narrow pale margins; branch teeth curving outwards; cone-bearing shoots not green, soon wither…….....*Equisetum arvense.*

7a. Stems with solid centres, 6 stem ridges, coiled and twisted; sheaths with 3 teeth; cone 2-5 mm long with 2-3 whorls of 3 sporangiophores each ..... *Equisetum scirpoides.*

7b. Stems possess central cavities, stem ridges same number as sheath teeth; more or less straight and erect; sheaths with 3-32 teeth; cone longer than 5mm and with 3 or more whorls of 6 or more sporangiophores each. ……..…….....…….. 8.

8a. Stems 5-10 ridged; sheaths with persistent variegated (black and white) teeth; cones 5-10 mm long at maturity with 3-5 whorls of 6 sporangiophores each..……. .....*Equisetum variegatum.*

8b. Stems 14-40 ridged; sheaths with deciduous teeth; cones 10-20 mm long at maturity with more than 10 whorls of more than 6 sporangiophores each.....…....…. 9.

9a. Stems smooth to touch; sheaths gradually widening towards tip, longer than wide, green with black tip..…….....…….. *Equisetum laevigatum.*

9b. Stems rough to touch; sheaths nearly cylindrical, as wide or wider than long, ash-grey with basal and terminal black bands. ...…… *Equisetum hyemale.*

Descriptive checklist of Horsetails and Scouring-rushes found in Manitoba

1. Field horsetail, *Equisetum arvense* L. (Figure 1.)
This is the most abundant horsetail and one of the most widespread plants in the Prairie Provinces. Most specimens had been collected from wet and moist woodlands, from wetlands and disturbed ground where they grew on a variety of soil types. Plants were especially common on road edges and in roadside ditches. In shady woodlands plants tend to have long, horizontal branches; whereas those from open, sunny sites have dense, short, erect branches and appear to be quite different. In southern Manitoba, distinctive fertile shoots appear from late April to early May. These shed their spores, disintegrate and have become replaced by vegetative shoots by early June. Specimens that have branches that are themselves branched are very rare but do occur. Northern plants growing near Hudson Bay often have unusual growth forms; including multi-stemmed shoots, vegetative shoots with small terminal cones, and normal fertile shoots that develop late in summer after the vegetative shoots have matured. Richard Hauke studied these and other variations throughout the range of the species and concluded that none were worthy of taxonomic status.[20] The Field horsetail is found throughout all of Manitoba, Saskatchewan and Alberta. [3,11,12]

2. Water horsetail, *Equisetum fluviatile* L. (Figure 2.)
This is an emergent aquatic plant of ponds and slow rivers but also occurs wherever the terrain is very moist, such as bogs, fens and roadside ditches. It has erect, aerial shoots to 120 cm in height which later produce whorls of branches. A distinctive characteristic is that the stems are soft and easily crushed between thumb and index finger. The leaf sheaths have 12-24 teeth which are far more than for any other horsetail. Its distribution includes all of Manitoba, and all except the southern portions of Saskatchewan and Alberta. [3,11,12]

3. Marsh horsetail, *Equisetum palustre* L. (Figure 3.)
The Marsh horsetail is the least common, least conspicuous and most challenging of

any of the horsetails to find. Specimens have been collected from wetlands or beside ditches but always on wet or moist soils. Identification is somewhat tricky because the aerial shoots are quite variable; some may be unbranched, others have irregular to regular whorls of branches. Cones are born at the tips of normal green shoots. This species occurs at scattered locations throughout Manitoba except for the far north. In Saskatchewan, it is rare outside of the central region and it is of local distribution in Alberta. [3,11,12]

4. Meadow horsetail, *Equisetum pratense* Ehrh. (Figure 4.)
The Meadow horsetail looks like a delicate version of the Field horsetail with which it sometimes coexists. Despite its name, this species is uncommon in meadows in Manitoba and is usually more common in damp deciduous or mixed woodlands. The Meadow horsetail develops pale pinkish fertile shoots in May or June which soon grow green branches that persist for the remainder of the growing season. It is best distinguished from the Field horsetail by the fineness of its branches and distinctively patterned sheath teeth. With the exception of the extreme north, Meadow horsetails are found throughout Manitoba wherever suitable habitats exist. This species is rare outside of the southern boreal forest region in Saskatchewan and it is found throughout Alberta, except for the south. [3,11,12]

5. Woodland horsetail, *Equisetum sylvaticum* L. (Figure 5.)
The Woodland horsetail with its fine lacy, compound branches and gracefully arching stems is probably the most attractive of all of the horsetails. Its large green and chestnut-brown sheath and teeth are distinct from other species, as are its regularly branched branches. In common with the Field and Meadow horsetails, this species has separate fertile and vegetative shoots and like the Meadow horsetail, the fertile shoots which first appear in late April and May, produce green branches while the cones are developing. This species grows on moist organic and sandy soils in boreal and mixed mossy woodlands throughout Manitoba, Saskatchewan and Alberta. [3,11,12]

6. Common scouring-rush, *Equisetum hyemale* L. (Figure 6.)
Growing to 1.5m in height, this is the tallest and coarsest of the scouring-rushes in Manitoba. It often forms large stands, tens or even hundreds of metres across. Its dark-green stems are evergreen throughout the winter. The wide but short leaf sheaths are made distinctive by their (usual) lack of teeth and ash-grey coloration which is bordered above and below by black bands. It inhabits sandy and peaty areas in a variety of habitats. At first sight such habitats may appear to be dry, but closer inspection usually reveals that the soils are damp or even wet at root depth. It is common throughout the southern half of Manitoba, Saskatchewan and Alberta with isolated colonies northwards. [3,11,12] Prairie plants belong to subspecies *affine* Calder & Taylor.[11]

7. Smooth scouring-rush, *Equisetum laevigatum* A. Br. (Figure 7.)
The stems of the Smooth scouring-rush feel smooth to touch when compared to those of the similar Common scouring-rush. The Smooth scouring-rush has stems which are semi-deciduous, i.e. each autumn; they turn yellow and then die down to just above the ground surface. The sheaths of this species are distinctive in that they lose their teeth when young, leaving black upper margins to the otherwise green sheaths. This is the least common scouring-rush in Manitoba. It is found on moist but well-drained, sandy soils in open grassy places in the southern third of the province, with the exception of

a disjunct colony at the north end of Lake Winnipeg. There are colonies throughout southern Saskatchewan and also in southern Alberta. [3,11,12]

8. Dwarf scouring-rush, *Equisetum scirpoides* Michx. (Figure 8.)
The Dwarf scouring-rush is the smallest of all scouring-rushes. This species is more or less restricted to wet or moist organic soils of boreal or mixed forests. Tufts of its wiry and contorted, evergreen shoots appear among mosses on the forest floor. Tiny cones appear in mid-summer, but usually remain hidden by sheath teeth at the stem tips until they elongate during following spring. They are the smallest cones of any *Equisetum* species; each cone possesses only 2-3 whorls of sporangiophores. The dwarf scouring-rush is common wherever there are suitable forests throughout Manitoba. The same is true for its occurrence in both Saskatchewan and Alberta. [3,11,12]

9. Variegated scouring-rush, *Equisetum variegatum* Schleich. ex Weber & Mohr (Figure 9.)
The leaf sheaths of the Variegated scouring-rush are strikingly patterned with black and white bands and other markings, making it the daintiest member of its group. This species often forms dense colonies in wet, roadside ditches. Its lower stems are often submerged with its roots embedded in calcareous clay and tangled amongst aquatic mosses. The species is found throughout boreal regions in all three Prairie Provinces and occasionally southwards into the aspen parkland ecozone. [3,11,12] Plants found in the Prairie Provinces belong to subspecies variegatum.[11]

10. Hybrids (Figure 10.)
A few specimens of Manitoba scouring-rushes (1:27) and even fewer of Manitoba horsetails (1:200) appeared to be hybrids. They had stem and leaf sheath characteristics that did not match those of the recognized species, and they also bore sterile, white, misshapen spores. These hybrids were: 1) Shore horsetail, *Equisetum x litorale* Kuehl.; the hybrid between the Field horsetail (*E. arvense*) and the Water horsetail (*E. fluviatile*). 2) Ferriss' scouring-rush, *Equisetum* x *ferrissii* Clute; which is the hybrid between the Common scouring-rush (*E. hyemale*) and the Smooth scouring-rush (*E. laevigatum*). 3) Mackay's scouring-rush, *Equisetum x mackaii* A.Braun; the hybrid between the Common scouring-rush (*E.hyemale*) and the Variegated scouring-rush (*E. variegatum*). 4) Nelson's scouring-rush, *Equisetum* x *nelsonii* (A.A.Eat.) Schaffn.; the hybrid between Smooth scouring-rush and Variegated scouring-rush (*E. laevigatum* × *E. variegatum*). Three of the same hybrids have been recorded from Saskatchewan [20] and one, the Nelson's scouring-rush, occurs in Minnesota.[25] Other hybrids have been reported elsewhere, especially from Europe that involve species that are also found in Manitoba and these could possibly occur here.[21,22,23,24]

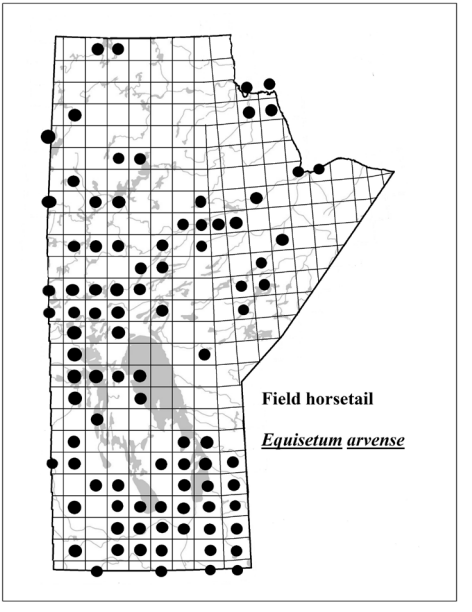
The hybrid specimens had been usually collected from sites where two parent species overlapped. Roadside ditches were the most frequent habitat for hybrids. Presumably, the more hydric/ aquatic parent species (e.g. Water horsetail, Variegated scouring-rush) occurred at the bottom of the ditch, whereas the more mesic parent species (e.g. Field horsetail, Smooth scouring-rush, Common scouring-rush) occurred on the roadside or bank. Hybrid specimens were to be found in the zone of overlap part way up the bank.

Table 1. Numbers of specimens of horsetails and scouring-rushes in Manitoba herbaria (MMMN, UWPG, WIN and the author's collection), numbers of UTM squares in which the specimens were collected out of 6068 squares (10 x 10 km) and out of 291 squares (50 x 50 km), and rankings according to NatureServe Canada.[26] NatureServe Conservation Status Ranks are: G=Global. S=Subnational (i.e. Province of Manitoba), 1 =Very rare, 2=Rare, 3=Uncommon, 4=Abundant with possible known threats, 5=Abundant and secure, NA=taxon not ranked.

Common name	Scientific name	Herbarium specimens examined	10 x 10 km UTM squares occupied	50 x 50 km UTM squares occupied	Conservation Status Rank
Horsetails:					
Field horsetail	*Equisetum arvense*	391	226	92	G5 S5
Water horsetail	*E. fluviatile*	190	132	74	G5 S5
Marsh horsetail	*E. palustre*	62	42	30	G5 S4S5
Meadow horsetail	*E. pratense*	89	72	42	G5 S4S5
Woodland horsetail	*E. sylvaticum*	249	145	78	G5 S5
Shore horsetail	*E.* x *litorale*	3	3	3	GNA SNA
Scouring-rushes:					
Common scouring-rush	*E. hyemale*	122	88	40	G5 S5
Smooth scouring-rush	*E. laevigatum*	28	19	16	G5 S3S4
Dwarf scouring-rush	*E. scirpoides*	103	81	56	G5 S5
Variegated scouring-rush	*E. variegatum*	76	55	39	G5 S5
Ferriss' scouring-rush	*E.* x *ferrissii*	7	6	6	GNA SNA
MacKay's scouring-rush	*E.* x *mackaii*	1	1	1	GNA SNA

Table 2. Habitat, soil type and moisture content of sites from which specimens of Horsetails and Scouring-rushes had been collected, as given by herbarium labels. Values are percentages of specimens per category. Values of 25% and greater are highlighted for clarity.

Species	Habitat					Soil type				Moisture level				No. of specimens
	Forest	Wetland	Grassland	Disturbed land	Other	Gravel	Sand	Clay	Other	Standing	Wet	Moist	Dry	
Horsetails:														
Field horsetail	35	30	8	23	4	15	27	26	1	3	39	5		383
Water horsetail	14	78	1	8	0	3	11	38	7	53	6	1		190
Marsh horsetail	22	49	2	27	0	25	20	34	0	21	31	0		61
Meadow horsetail	77	10	1	10	1	0	11	12	0	0	62	7		89
Woodland horsetail	56	22	3	17	3	9	25	24	6	0	58	2		249
Scouring-rushes:														
Common scouring-rush	29	24	16	26	5	12	70	6	4	5	47	20		122
Smooth scouring –rush	Insufficient data					Insufficient data				Insufficient data				28
Dwarf scouring-rush	70	21	4	4	1	4	13	13	0	0	56	6		103
Variegated scouring-rush	21	46	0	32	0	26	15	43	0	14	16	14		76



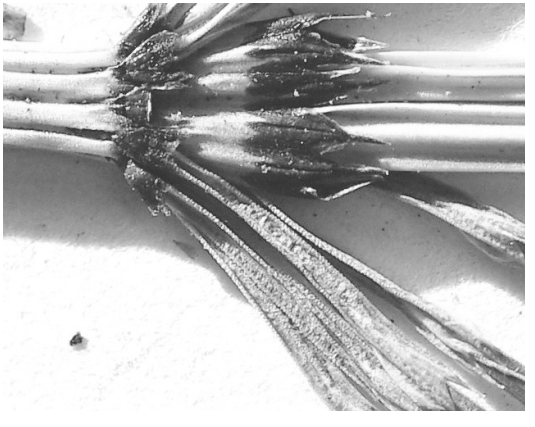
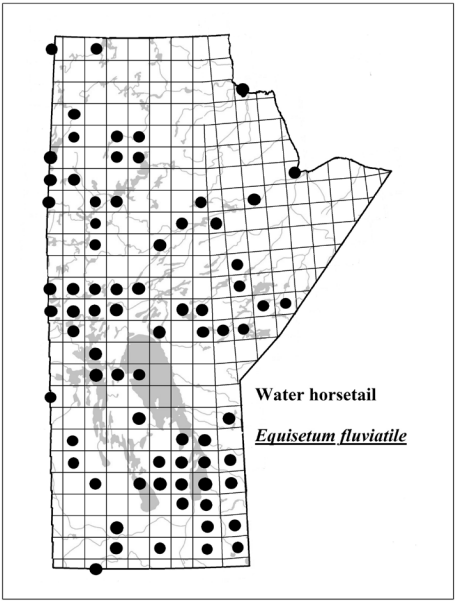


Figure 1. Field horsetail, Equisetum arvense*. Abundant, throughout MB. Fertile shoots are distinct from the vegetative shoots and appear first, in April-May. The sheath teeth are dark and often grouped in 2-3s. The whorls simple branches have the first internodes longer than the adjacent sheaths on the main stem.*



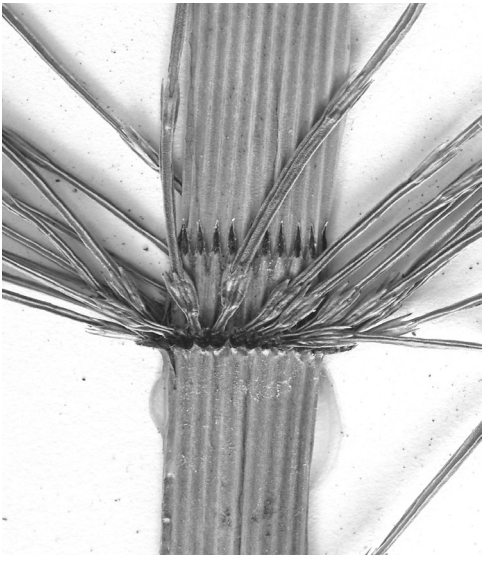


Figure 2. Water horsetail, Equisetum fluviatile. *Common aquatic plant found throughout MB. Stems maybe branched with simple branches, or unbranched. First internodes of branches are shorter than the stem sheath. Sheaths possess 12-24 teeth. Stems are very soft due to large central cavities.*

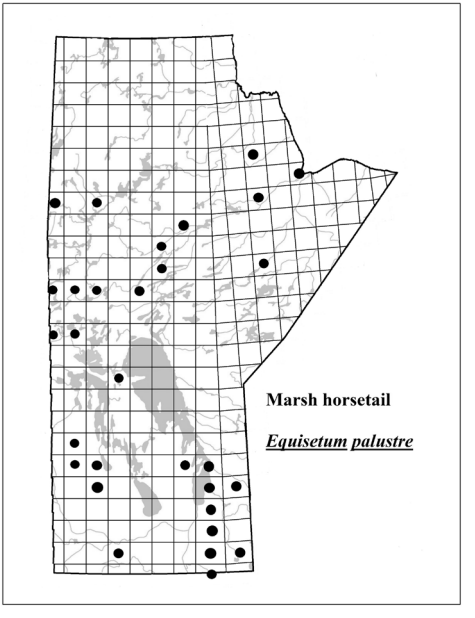
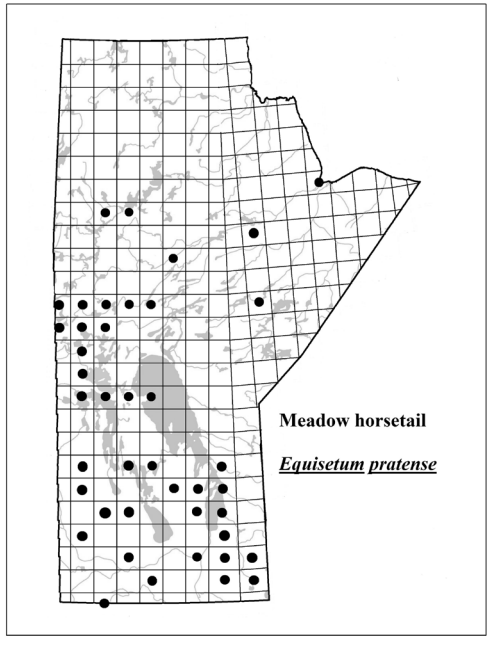


Figure 3. Marsh horsetail, Equisetum palustre. *Uncommon and local. Mostly found in central MB. Stems maybe branched or not. First internodes of branches are shorter than the stem sheath. Sheaths have 5-10 teeth. Stems are firm.*



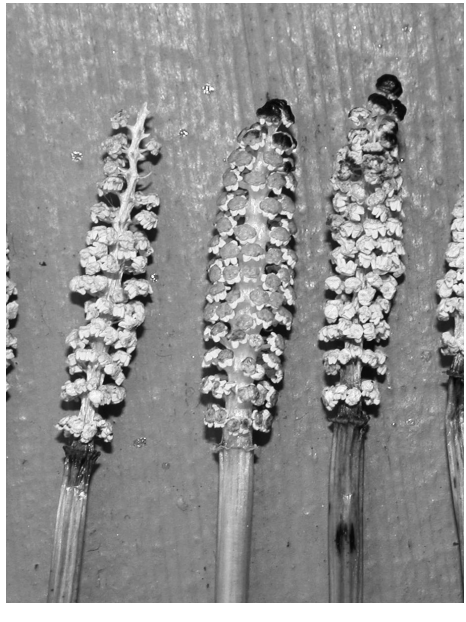


Figure 4. Meadow horsetail, Equisetum pratense. *Common, absent from the N and SW MB. Fertile shoots become vegetative in early summer. Stems have whorls of delicate, simple branches. First internodes of branches are equal or longer than stem sheath. Sheath teeth 8-18 and narrow.*

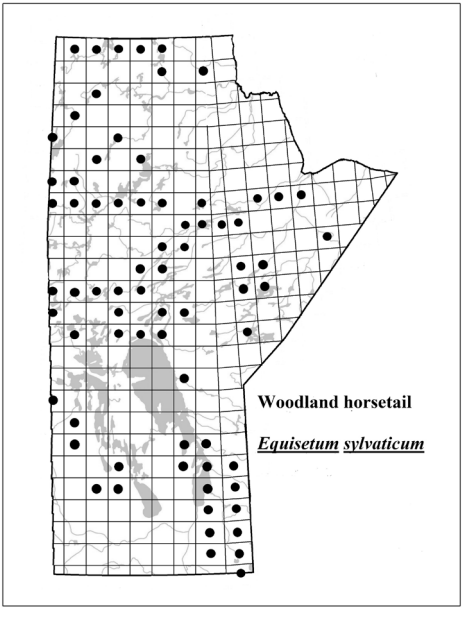
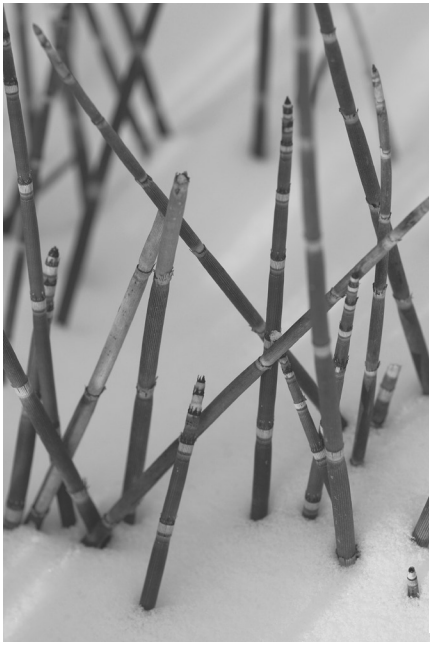
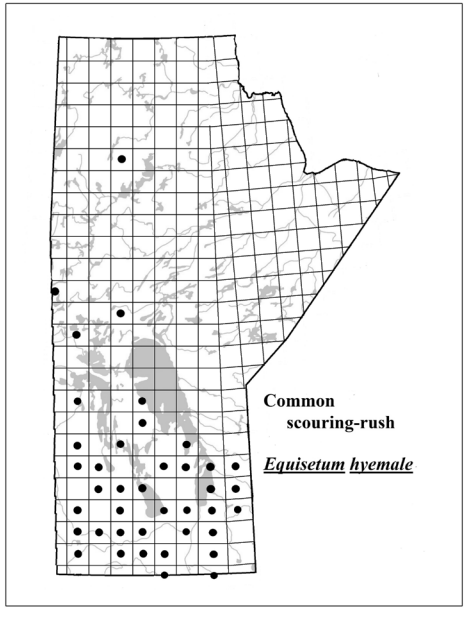
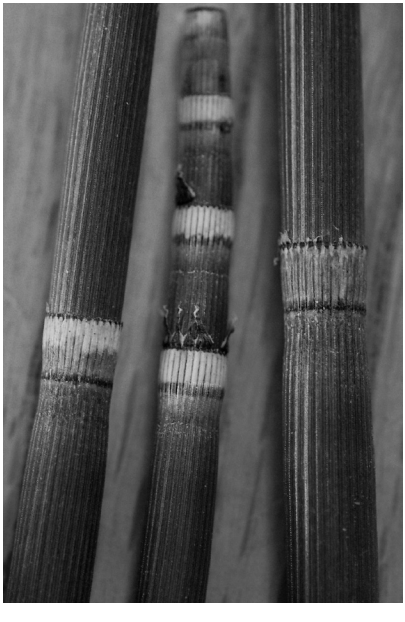


Figure 5. Woodland horsetail, Equisetum sylvaticum. *Common, absent from the N and SW MB. Fertile shoots become vegetative in summer. Stems have whorls of compounded branches. Leaf sheaths have large, brown teeth which are grouped in 2-3s.*







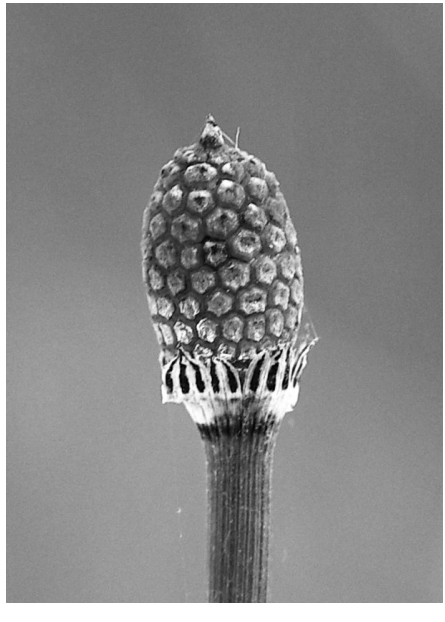


Figure 6. Common scouring-rush, Equisetum hyemale*. Common on sandy soils, absent from N MB. Stems are unbranched, very firm and rough to touch. Sheaths are short with black terminal and basal bands which separate gray mid-portions. The stem teeth are soon lost.*

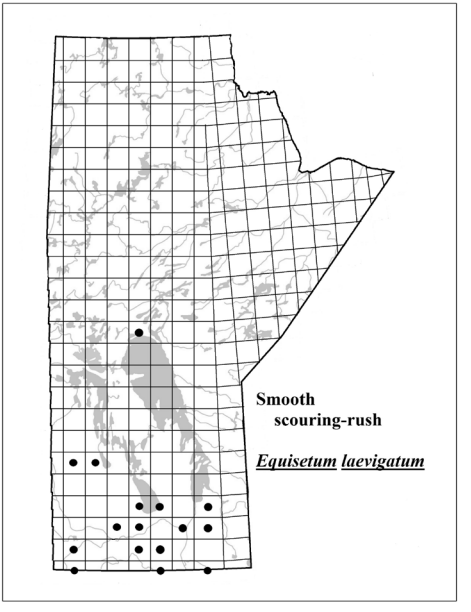
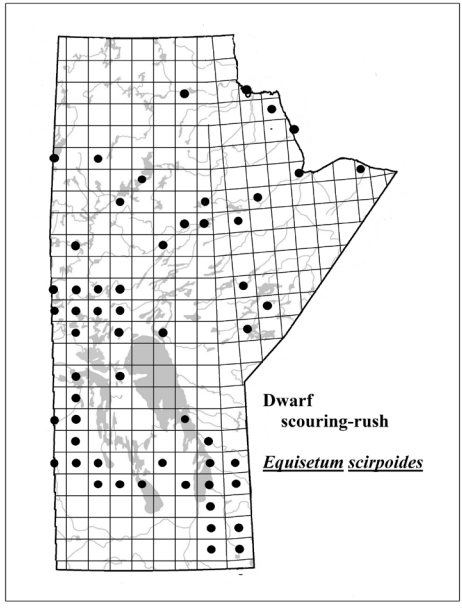


Figure 7. Smooth scouring-rush, Equisetum laevigatum. *Scarce, only found in S MB. Stems are unbranched. Sheaths are long, green and widen toward the top which has a thin black band. The stem teeth are soon lost.*



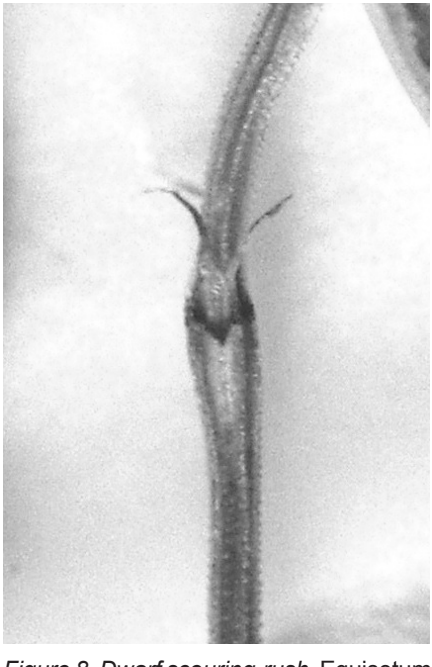
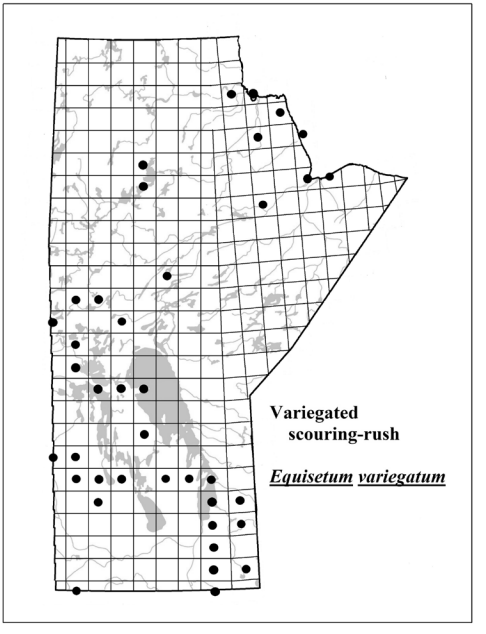
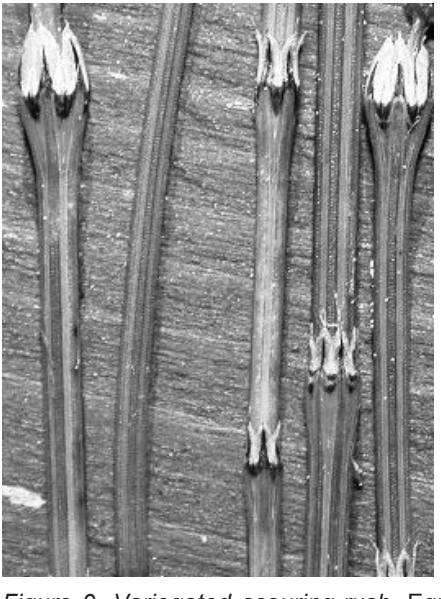


Figure 8. Dwarf scouring-rush, Equisetum scirpoides. *Common throughout MB, absent in the SW. The clumped stems are unbranched, tiny, and curled. Teeth are in 3s. Cones are tiny 5-10 mm long with 2-3 whorls.*





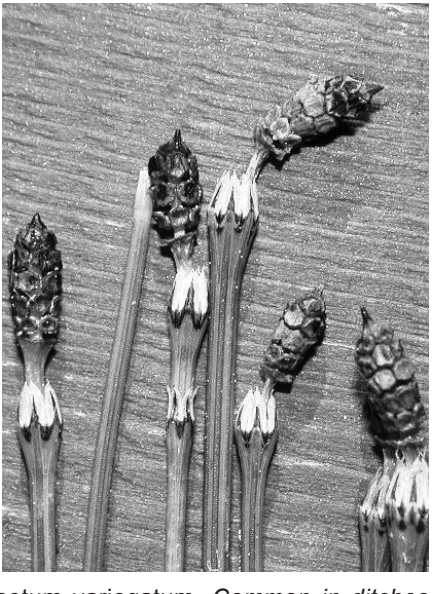


Figure 9. Variegated scouring-rush, Equisetum variegatum*. Common in ditches throughout MB, but absent in the SW. Stems are unbranched, straight. The 3-12 sheath teeth have striking black centres and white margins. Cones are 10-20 mm long, with 3 or more whorls.*

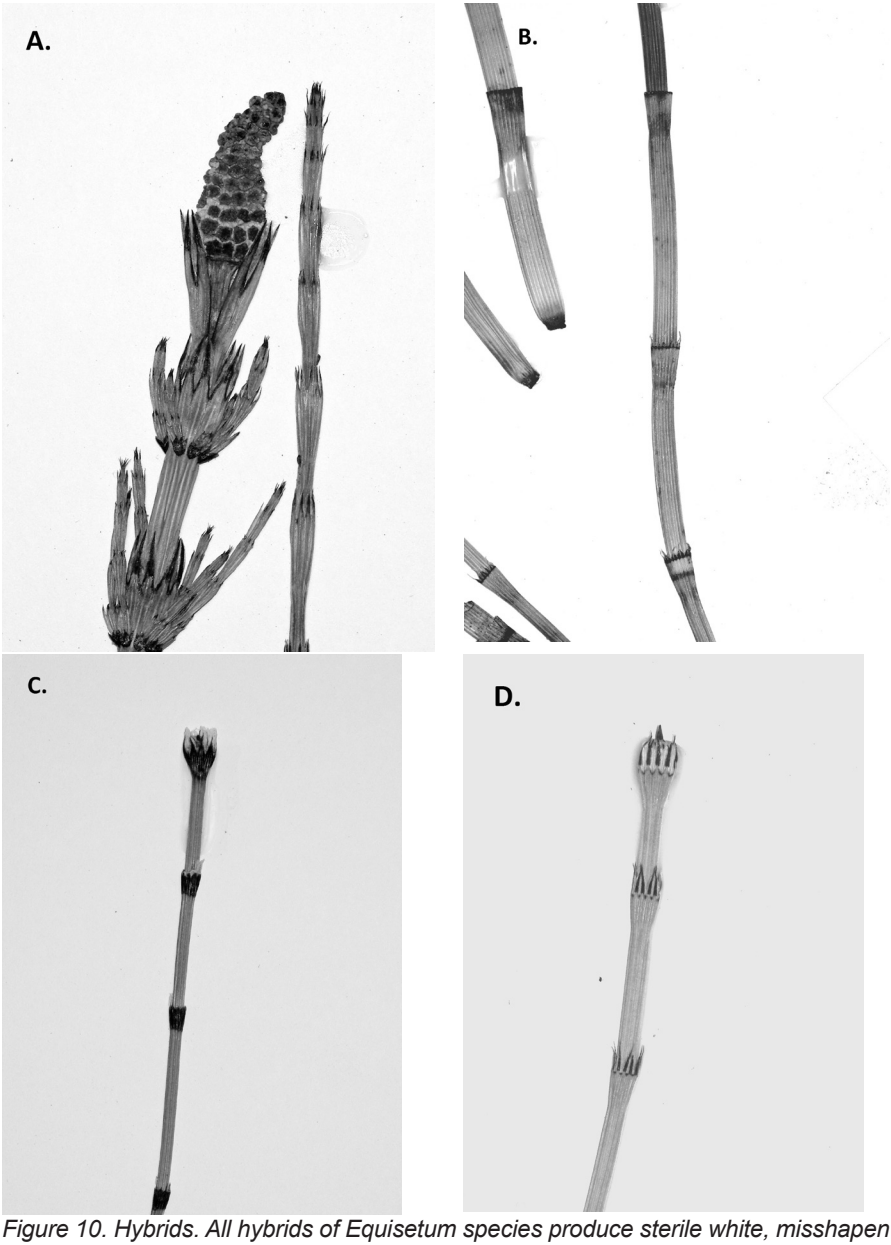


Figure 10. Hybrids. All hybrids of Equisetum species produce sterile white, misshapen spores; whereas the fertile spores of non-hybrids are green and spherical. Other distinctive hybrid features include unusual shapes, patterns and colouring of the sheaths and sheath teeth, shown here. Upper left: A. Shore horsetail, Equisetum x litorale *is the hybrid of Field and Water horsetails. Upper right: B. Ferriss' scouring-rush,* Equisetum x ferrissii *is the hybrid of the Common and Smooth scouring-rushes. Lower left: C. Mackay's scouring-rush,* Equisetum x mackaii *is the hybrid of the Common and Variegated scouring-rushes. Lower right: D. Nelson's scouring-rush,* Equisetum x nelsonii *is the hybrid of the Smooth and Variegated scouring-rushes.*

Acknowledgements

I am grateful to Diana Bizecki Robson and Janis Klapecki (The Manitoba Museum), Bruce Ford and Elizabeth Punter (The University of Manitoba) and German Avila-Sakar (The University of Winnipeg) for their encouragement and access to the plant collections. Christopher Friesen and staff at the Manitoba Conservation Data Centre provided the Conservation Status Ranks of various species shown in Table 1 and records of the fern finds. Jessica Elliott of Parks Branch, Manitoba Conservation facilitated collection permits for Provincial Parks. Dan Brunton provided valuable comments regarding hybrids. Kerry Hecker and Vernon Harms shared their valuable skills and experiences during their reviews of this article. Finally, thanks to my wife, Diana Staniforth, for her patience when "holidays" became a synonym for "fern collecting trips", and also for retrieving me when I was hopelessly lost in the bush.

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Brewer's Blackbird nestling *- Lowell Strauss*

PHOTO NOTES

BREWER'S BLACKBIRDS USE ARTIFICIAL NEST SITE

LORNE SCOTT, Box 995, Indian Head, SK S0G 2K0

For the past several years, a few pairs of Brewer's Blackbirds *Euphagus cyanocephalus* have nested in my yard on old machinery that is not in use. Snowberry and tall grass are usually growing among the equipment. Often the nests are located under an overhang that helps to keep rain off the nest

Early in the spring of 2012 I built a shelf about eight inches square with a roof and placed it under the eve of a wooden grain bin, thinking I might attract robins to nest.

On 30 June 2012, I observed a female Brewer's Blackbird sitting on a loosely constructed nest of plant material in the open-ended shelf on the grain bin. When I checked the contents in the nest in mid July there were four young. I banded the young on July 18, 2012 and they fledged successfully.

I have found that Brewer's Blackbirds will sometimes return to the same nest site in following years, so it will be interesting to see if they will use the artificial nest site in 2013.

MALE VARIED THRUSH AT MORSE, SK.

JOEL PRIEBE, Morse, SK.

I photographed a male Varied Thrush (*Ixoreus naevius*) at Morse, Saskatchewan on April 22, 2012, at 5:20pm. This is a shy member of the Thrush family that strays off course during migration in small numbers every year within SK. It also over winters in many lager cities and small towns in SK as well. (See inside front cover for colour photo)

Male Varied Thrush -Joel Priebe

A WINTER SIGHTING OF CINNAMON TEAL IN ALBERTA

GUSTAVE J. YAKI, 420 Brunswick Av SW, Calgary, AB, T2S 1N8

Email *gyaki@calcna.ab.ca*

The purpose of this note is to report on an unseasonable sighting of a male cinnamon teal (*Anas cyanoptera*) during the winter months in Calgary, Alberta.

Cinnamon teal breed in S British Columbia, S Alberta and SW Saskatchewan. They winter from central California, S Nevada, central Utah, SE Arizona, S New Mexico and central Texas, southward though Middle America to Colombia, N Venezuela and N Ecuador.[1]

In 2005, a flood severely eroded the banks of the Bow River within Calgary, AB. To protect the shoreline from further erosion, metre square-sized boulders were deposited along a 200 m stretch on the E side of the river in the Hull's Woods section of Fish Creek Provincial Park (FCPP), which is wholly located within the city limits.

The morning of Monday 9 January 2012, was a calm, sunny, day, with temperatures of 1 - 10°C. While conducting a birding class along the W side of the river in FCPP, my assistant, Andrew Stiles, noted a male cinnamon teal in full breeding plumage on the opposite side.

The teal appeared to be frantically searching for food amidst the shoreline boulders. He swam amongst them, rapidly pecking along their sides at the waterline. He would disappear behind one and then only seconds later, reappear often some 5 to 10 m further along. At times, he was in such a hurry that he would actually run over a boulder to get to its opposite side.

The next day, 10 January 2012, was cloudy with a NW wind of 20 kph and the air temperature of -3°C. We again saw the bird at the same site, behaving in the same apparently frantic feeding manner.

No visit was made on 11 January 2012. However, a sudden drop in temperature

left a ledge of ice jutting into the river for one meter or more. We returned again on Thursday12 January 2012, when it was cloudy, calm, and a cold -11°C. On this day, however, there was no sign of the teal.

It was subsequently learned that two local amateur birders, walking along the river about 2 km south of Hull's Woods, in the Lafarge Meadows area of FCPP on Christmas Day 2011, met an unidentified observer who reported that he had just seen a male cinnamon teal. Since they were unaware of its rarity during the winter months, there was no follow up until after our report became public. It is likely that this was the same bird that we subsequently observed.

There had been one previous winter report of a cinnamon teal in Calgary - some 52 years earlier. Ian Halladay, the dean of Calgary birders, supplied the following details. "As I recall, the male Cinnamon Teal was found wounded in a ditch west of Calgary in the autumn of 1959. The bird was taken to the Inglewood Bird Sanctuary and released into the lagoon where it remained into the new year. The observers who covered Inglewood on the Christmas Bird Count that year, 03 January 1960, were Paul Anderson and myself. The teal was in relatively good shape as it was with the Mallards that were being fed regularly by the members of the Sarcee Fish and Game Association. The CBC compiler was Derek Beacham and his inquiries with the National Audubon Society resulted in us being able to count the teal."

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Winter sighting of a cinnamon teal in Calgary, Alberta *Photo by John Anderson*

SERIES: LEARN YOUR LICHENS

BERNARD DE VRIES

Common Name: Boreal oak moss, Spruce moss.
Scientific Name: *Evernia mesomorpha Nyl*.
Description: A semi erect lichen with tufted or pendent, pliable, irregular but abundantly divided ridged yellow-green branches with marginal yellowish to greyish vegetative reproduction bodies (soridae).
Habitat: Open mixed boreal forest on coniferous and deciduous tree branches.
Growth form: Pendent.
Provincial Status: Common and wide spread throughout the boreal_ forest and occasionally in the Aspen Parkland.
Comments: This lichen is often confused with Usnea species (Beard lichens) which has a similar colour and habitat. However, Beard lichens have a solid central cord which is lacking in Boreal oak moss.

[Editor's note: this series will be running for the next few issues of Blue Jay. Enjoy!]

MYSTERY PHOTO

Blue Jay reader Gord Hammell submitted this issue's Mystery photo. He writes: This area of greeny-black gelatinous patches (~3mx1m) has persisted for years. When I cut the driveway edge with the lawnmower, I have slipped several times at this location and always wondered, "What is this stuff??" My wife thinks that it does not look nice...she is not a biologist!!! The location is under overhanging spruce boughs (~1.5m from the ground) and thus is in acidic conditions with lots of shade, but it is not particularly wet. The soil beside the driveway where it is located may be poor, i.e., gravelly. Hence the grass does not grow well here, and some mosses also grow with it. It must be tough stuff because it gets snowplowed many times over the winter. It is not found on the lawn in full sunlight and I can't recall seeing it anywhere else on the farm.

If you think you know what this strange life-form might be, please submit your guesses to the Blue Jay Editors at *bluejay@naturesask.ca*

- see back inside cover for a colour photo.

The lucky NS member who correctly identified the December Mystery Photo is Melanie Dubois, who will receive a prize from Nature Sask. Thanks to all who sent in answers for the mystery photo

Response to "Mystery" Photo published in Blue Jay 70(4):279, 2012.

SPENCER G. SEALY, Department of Biological Sciences, University of Manitoba, Winnipeg MB R3T 2N2

Swainson's Hawk (*Buteo swainsoni*) is one of the most abundant species of diurnal raptor breeding on the Great Plains of south-central Saskatchewan. It is an opportunistic predator that takes a variety of prey during the breeding season, depending on their availability, including vertebrates (small mammals such as voles and ground squirrels, birds and reptiles), and invertebrates (especially grasshoppers and dragonflies) where most individuals overwinter, in South America.[1] Swainson's Hawks hunt while perched on the ground or on a post or branch but they also have the agility to capture flying insects.[1] The adult Swainson's Hawk featured in the photo essay[2] and in the "mystery" photograph (Blue Jay 70(4):279) is holding **a freshly dead or killed northern pocket gopher (*Thomomys talpoides*)**, the only species in the rodent family Geomyidae that occurs in Saskatchewan.[3] The freshness of the pocket gopher suggests it had been captured by the hawk, but we cannot rule out the possibility that the hawk had scavenged an already-dead pocket gopher, although this is less likely. Swainson's Hawks generally forage by day, regularly taking Richardson's ground squirrels (*Urocitellus richardsonii*) in Saskatchewan, but the nocturnally active pocket gopher may be considered unusual prey. Northern pocket gophers, which are generally solitary except during the mating season[6], comprise a regular part of the diet elsewhere in the hawk's

range.[1] Pocket gophers are active in their burrows during the day[6], however, and by perching on the ground near the push-ups, Swainson's Hawks capture them as they push fresh soil to the surface.[1,4,5]

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Common and scientific (Latin) names are used for all species. Common bird names follow the Checklist of North American birds by the American Ornithologists' Union (7th edition, 1998); mammal names: Mammal Species of the World by Wilson & Reeder; butterfly names: The Butterflies of Canada by Layberry et al.;and names of reptiles and amphibians follow Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with comments Regarding Confidence in our Understanding, Sixth Edition, by The Committee on Standard English and Scientific Names (Brian I. Crother, Chair) (2008).

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* ***Do you know*** of any person interested in natural history and conservation who does not receive the Blue Jay? Please send their name and address and we will send a sample Blue Jay and an invitation to join our Society.

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