

Survey of the Odonate Fauna in Caribou Mountains Wildland Park

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Alberta Natural Heritage Information Centre,
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Figure 1. Sherri Dunne searching for *Aeshna* at the southeast end of Wentzel Lake (photo by D. Macaulay)

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INTRODUCTION

In Alberta, the Subarctic Subregion is restricted to the tops of the Birch Mountains, the Caribou Mountains, and the Cameron Hills in the northern part of the province (Beckingham and Archibald 1996; Strong and Leggat 1992). These hill systems are erosional remnants that rise above the surrounding plain as flat-topped hills with escarpments that are dissected by numerous small streams (Alberta Community Development 2002).

An odonate survey was conducted in the summer of 2000 (Hornung 2001) in the Maybelle River, Marguerite River and Richardson River Dunes Wildland Parks. The latter two parks are located in the Central Mixedwood Subregion. Maybelle River WP is located in the Athabasca Plain Subregion. In the summers of 2001 and 2002, three wildland parks located in the Kazan Upland Subregion were surveyed (Macaulay 2002 & 2003), namely La Butte Creek (2001), Fidler-Greywillow (2001) and Colin-Cornwall (2002). These surveys were the first for all of these parks.

Caribou Mountains WP, within the Subarctic Subregion, was the focus of an odonate survey in the summer of 2003. The field camp was located on Wentzel Lake which is on the eastern side of the park. Wentzel Lake is about 120 km northeast of Fort Vermilion. The Subregion where this wildland park is located contains numerous muskeg ponds, streams and lake habitats. The purpose of the survey was to provide an annotated summary of some of the odonate species that occur in the park, including notes on such parameters as relative abundance, distribution patterns, range extensions and any other relevant biological or behavioral information. The information obtained contributes towards an increased understanding of the odonate fauna found within this wildland park but also within the broader context of Alberta.

METHODS

The odonate survey was conducted within Caribou Mountains WP during two time periods from June 8-18, and July 6-16, 2003. For the June survey, Gary Anweiler, Ted Johnson, Greg Pohl, Wayne Nordstrom and Chris Schmidt were involved. Carey Booth, Sherri Dunne, Gerald Hilchie, Jim Hilchie, Ted Johnson, and this author conducted the July survey.

Odonates were collected in a variety of ways. Adult specimens were netted with butterfly nets, collected out of pan or malaise traps and larval exuviae were gathered by hand. Photographs were taken of some species. Many of the collection sites were located near lake / pond shorelines or adjacent to creeks. Habitats from which specimens were collected included: lake shorelines (LS), riparian meadows along streams (RM), sedge meadows (SM), beaver ponds (BP), patterned fens (PF) and muskeg ponds (MP) (Table 1).

Collected specimens were inserted into glassine envelopes and labeled with locality, collector, date and GPS coordinates. Then they were placed in acetone

for approximately 2-3 hours to preserve their colors. Once they were removed from the acetone, specimens were dried and stored in a protective container. The primary sources used for identification of species and any associated biological information were Walker (1923), Walker (1953), Walker (1958), Walker and Corbet (1975), Acorn (1981), and Dunkle (2000). Common names are based on Cannings (2002).

Voucher specimens will be deposited at the University of Alberta's Strickland Museum in Edmonton.

Table 1: Habitats and locations of collection sites in Caribou Mountains Wildland Park (see Appendix 3 and 4 that show the mapped collection locations).

Site #	Habitat	Location	Coordinates
Caribou Mountains Wildland Park:			
1	LS	Wentzel Lake, base camp	59.05970° N 114.43195°W
2	MP	Wentzel Lake, bog pond SE of base camp	59.04745° N 114.41510°W
3	MP	Wentzel Lake, black spruce bog SE of base camp	59.05208° N 114.42628°W
4	RM	Wentzel Lake, SE inlet	58.98191°N 114.43212°W
5	MP	Wentzel Lake, black spruce bog SW end of lake	58.97067° N 114.48399°W
6	RM	Wentzel Lake, SW outlet	58.96956°N 114.49999°W
7	LS	Wentzel Lake, sand point	59.03598°N 114.45279°W
8	LS	Wentzel Lake, Fish & Wildlife cabin (clearing by lake)	59.01139° N 114.42639°W
9	LS	Wentzel Lake, small lake east of Fish & Wildlife cabin	59.01357°N 114.41890°W
10	MP	Wentzel Lake, bog on west side of lake	59.01430°N 114.51154°W
11a	RM	Wentzel River, streamside meadow	59.11092° N 114.49388°W
11b	BP	Wentzel River, beaver pond	59.11092° N 114.49388°W
11c	MP	Wentzel River, spruce bog	59.11092° N 114.49388°W
12	SM	Wentzel River, sedges by dry pond	59.11968° N 114.50899°W
13	RM	Wentzel River, by big pool	59.12385° N 114.50798°W
14	PF	Horseshoe Lake, treed fen east of lake	59.46817° N 115.72916°W
15	LS	Horseshoe Lake, shoreline south end of lake	59.44986°N 115.74898°W

RESULTS

A total of 165 odonate specimens, belonging to five families and twenty-one species, were collected in Caribou Mountains WP. Of the twenty-one species, seven were from the Suborder Zygoptera (damselflies) and fourteen from the Suborder Anisoptera (dragonflies) (Appendix I). A species list and collection summary appears in Appendix 1; full collection data appears in Appendix 2. Appendix 3 & 4 illustrates the collection sites in map form.

Table 2 indicates that La Butte Creek had about one-third and Colin-Cornwall had about two-thirds of the number of specimens that were collected in the Caribou Mountains. In addition, twenty-one species were found in the Caribou Mountains while only nineteen and seventeen were found in La Butte and Colin-

Cornwall Wildland Parks, respectively. Only three unique species were found in the Caribou Mountains when compared to the other two parks, namely: *Somatochlora forcipata*, *S. franklini* and *Leucorrhinia patricia*. Unique species, in this case, refers to those species that were found only in one of the three parks but not in the other two.

Table 2. Comparison of numbers of specimens collected and numbers of species found within Caribou Mountains, Colin-Cornwall and La Butte Creek Wildland Parks.

Wildland Park	# of Specimens	# of Species	# Unique Species
Caribou Mountains	165	21	(<i>Somatochlora forcipata</i> , <i>S. franklini</i> and <i>Leucorrhinia patricia</i>)
Colin-Cornwall	107	17	(<i>Somatochlora albicincta</i> & <i>Leucorrhinia intacta</i>)
La Butte Creek	54	19	(<i>Aeshna canadensis</i> , <i>Somatochlora prb. cingulata</i> , <i>Sympetrum danae</i> , <i>S. internum</i> , & <i>S. obtrusum</i>)



Figure 2. Open meadow area beside the Wentzel River.

DISCUSSION

I. Factors affecting the Survey

Most odonate species are active all summer either as adults or naiads (Dunkle 2000). Therefore a complete survey of adults, naiads and their exuviae would require regular collecting (approximately every month) throughout the entire season, from May to the end of September. As well, species are often localized in particular micro-habitats, some of which were not accessible on this survey.

The number of species collected in Caribou Mountains WP was slightly higher (21 vs. 19) than for La Butte Creek WP (Table 2) and had four more species than found in Colin-Cornwall WP. This may have been the result of a wider diversity of riparian habitats such as creeks, rivers, lakes and peatlands located in the park. The area collected in the other two parks consisted mostly of lake and stream habitats but did not have as much peatland habitat as was present in the Caribou Mountains WP. The species count in Caribou Mountains WP could probably have reached twenty-five or higher if intensive collecting was done in late June and early August. The genera *Sympetrum* and *Lestes*, for example, were not found in the Caribou Mountains but according to Dunkle (2000) should be present starting in late July and into September. If more time was spent collecting at beaver ponds, peatlands and at the Wentzel River rapids located at the southwest end of Wentzel Lake, species numbers would likely have been higher.



Figure 3. Opening in a lodgepole pine stand just north of the base camp on the east side of Wentzel Lake.

II. Distribution patterns and taxa

The following is an annotated list of the species that were collected in Caribou Mountains WP. For each species, notes are included for any significant range extensions, the collection location, relative abundance and any other relevant biological or behavioral information. The list is arranged according to the Suborders Zygoptera and Anisoptera.

Suborder Zygoptera (Damselflies)

Family Calopterygidae (range information is based on Walker (1953))

- *Calopteryx aequabilis* 'River Jewelwing' – An uncommon species and a rare find in Alberta. It was collected at Fort McMurray, Chinchaga River to the west of High Level, Maybelle River, La Butte Creek and Colin-Cornwall Wildland Parks. Many were observed along the slow-moving Wentzel River at the northwest end of Wentzel Lake. It may occur elsewhere in the park where suitable habitat occurs. The three specimens collected were found along the Wentzel River and represent one of the most northern populations in Alberta and Canada. The specimens were collected at sites 11a and 13 (Appendix 1).

Family Coenagrionidae (range information is based on Walker (1953) & Cannings (2002))

- *Nehalennia irene* 'Sedge Sprite' - A common species found in localized populations. This species is only found in areas that have dense shoreline grasses or sedges. In this Wildland Park, three specimens were collected, two at the southeast inlet along a small creek and the other in a shoreline meadow along Wentzel River. The specimens were collected at sites 4 & 11a (Appendix 1).
- *Coenagrion interrogatum* 'Subarctic Bluet' – A common species found throughout the boreal forest in wetlands containing floating aquatic vegetation. It is one of the most northern species because it can tolerate the cool waters of boreal lakes and streams. This species is found across Canada including records from Northwest Territories and the Yukon. The one specimen in this survey was collected along the Wentzel River in a streamside meadow. The specimen was collected at site 11a (Appendix 1).
- *Coenagrion resolutum* 'Taiga Bluet'- An abundant species found throughout the boreal forest in still marshy waters. This species is found across Canada including records from Fort Chipewyan, La Butte Creek Wildland Park, and the Great Slave Lake region of the Northwest Territories. The forty-two specimens collected around Wentzel Lake represent one of the most northern populations known in Alberta. The specimens were collected at sites # 1, 4, 6, 8, 11a & 12 (Appendix 1).



Figure 4. *Enallagma* sp. at Wentzel Lake (Photo by C. Schmidt)

- *Enallagma cyathigerum* 'Northern Bluet' - An common species found throughout the boreal forest in the cool marshy waters and peatlands. This species is found across Canada including records from the Athabasca delta, Maybelle River, Colin-Cornwall and Marguerite River Wildland Parks of Alberta north to the Great Slave Lake region of the Northwest Territories. The eleven specimens collected around Wentzel Lake represent one of the most northern populations known in Alberta. The specimens were collected at sites 1, 2, 3, 6, 9 & 11a (Appendix 1).
- *Enallagma ebrium* 'Marsh Bluet' - An uncommon species that inhabits marshy lakes, ponds and streams. This is the second most northern record for the province besides La Butte Creek WP. The specimen was collected at site 11a (Appendix 1).
- *Enallagma boreale* 'Boreal Bluet' - An abundant species found in many of the wetlands throughout the boreal forest, including collapse scar areas in bogs such as illustrated in Figure 6. This species is found across Canada including records from Colin-Cornwall, La Butte Creek, Maybelle River and Marguerite River WPs. The twenty-seven specimens collected at Wentzel Lake are the most northern populations known in Alberta. They were collected at sites 2, 4, 8, 9 & 11a (Appendix 1).

Suborder Anisoptera (Dragonflies)

Family Aeshnidae (range and biological information from Dunkle (2000), Walker (1958) and Cannings (1996 and 2002))

- *Aeshna eremita* 'Lake Darner' - An abundant boreal species that prefers deep lakes with little vegetation. This species was previously collected in Colin-Cornwall, Marguerite River, La Butte Creek and Fidler-Gerywillow Wildland Parks as well as Fort Smith, NWT. The two specimens collected around the Wentzel Lake base camp represent one of the most northern populations known in Alberta. The specimens were collected at site 1 (Appendix 1).
- *Aeshna interrupta* 'Variable Darner' (Figure 5) - A common species that is found in the shallow marshy bays, boggy ponds and slow streams with abundant emergent vegetation. The thirteen specimens collected around Wentzel Lake represent one of the most northern populations known in Alberta. Other locations in this region include La Butte Creek and Colin-Cornwall WPs. The specimens were collected at sites 1, 4, 9 & 13 (Appendix 1).



Figure 5. *Aeshna interrupta* perched on lodgepole pine just north of base camp.

- *Aeshna juncea* 'Sedge Darner' - A common species that exists in peatlands that contain an extensive cover of sedges and other peatland vegetation. The three Wentzel Lake specimens represent one of the most northern populations known in Alberta though it was also found in Colin-Cornwall, La Butte Creek and Fidler-Greywillow WPs. The specimens were collected at sites 1, 3 & 6 (Appendix 1).

Family Corduliidae (range and biological information from Dunkle (2000), Walker (1925), Walker and Corbet (1975), Cannings et al. (1991) and Cannings (2002))

- *Cordulia shurtleffii* 'American Emerald' - An abundant species found in quiet boreal streams, ponds and lakes across Canada. The species was also collected at Fort Chipewyan, and at Colin-Cornwall, La Butte Creek, Fidler-Greywillow, Maybelle River and Marguerite River WPs. Records are known from Fort Smith, NWT. The seven specimens from Wentzel Lake represent one of the most northern populations in Alberta. The specimens were collected at sites 3, 5, 8, 10, 11a and 12 (Appendix 1).
- *Somatochlora hudsonica* 'Hudsonian Emerald' – This common species exists in deep sedge-bordered lakes, ponds and peatlands. It ranges across Canada west of Hudson bay. The fifteen specimens collected at Wentzel Lake represent one of the most northern populations along with the La Butte Creek specimens. The specimens in this survey were collected at sites 1, 2, 3, 4, 11a, & 12 (Appendix 1).
- *Somatochlora forcipata* 'Forcipate Emerald' – This rare species is found in small, boggy spring fed streams and swamps in the boreal forest. The female collected at Wentzel Lake is a substantial range extension; the only other record is from Simpson's Pass near the British Columbia border. Gerald Hilchie netted the specimen flying beside Wentzel Lake at site 1 (Appendix 1).
- *Somatochlora franklini* 'Delicate Emerald' - This rare species is found in bogs and fens that have areas of open water. The female collected was found at Wentzel Lake and is a substantial range extension from central Alberta. The specimen was collected at site 7 (Appendix 1).
- *Somatochlora minor* 'Ocellated Emerald'- This uncommon species exists in slow-moving, clear-water streams. Four specimens were collected along Wentzel River (Figure 2) that were perching on trees and shrubs. These records along with the Colin-Cornwall specimens are the most northern records for the province. Both localities are substantial range extensions since the only other population known is from Nordegg. The specimens were collected at sites 11a, 11c and 13 (Appendix 1).

Family Libellulidae (range and biological information from Dunkle (2000), Walker and Corbet (1975) and Cannings (2002))

- *Libellula quadrimaculata* 'Four-spotted Skimmer' – An abundant species that inhabits boggy and marshy waters across Canada. It was also found in Colin-Cornwall, La Butte Creek, Fidler-Greywillow, Maybelle River and Marguerite River WPs as well as Fort Smith, NWT. Two specimens were collected beside a beaver pond and the other along a stream to the southeast end of Wentzel Lake. The specimens were collected at sites 4 & 11b (Appendix 1).

- *Libellula julia* 'Chalk-fronted Corporal' – An uncommon boreal species that prefers boggy ponds that contain slightly acidic water. Chris Schmidt observed many adults patrolling beside a boggy pond near Wentzel Lake. Because of unmistakable white markings and the habitat they were observed in, I have added it to the species list. This would make it the most northern population in Alberta. The only other two localities for northern Alberta are from Maybelle River and Marguerite River WPs. This species was observed at site #2. (Appendix 1).
- *Leucorrhinia hudsonica* 'Hudsonian Whiteface' - A common boreal forest species that prefers the cool waters of boggy ponds. It was found in Colin-Cornwall, La Butte Creek, Fidler-Greywillow, Maybelle River and Marguerite River WPs as well as at Fort Smith, NWT. Seven specimens were collected in the park from habitats as shown in Figure 6 from the Horseshoe Lake area, Wentzel Lake and Wentzel River areas. These represent some of the most northerly populations known for Alberta. They were collected at sites 9, 11a, 14 & 15 (Appendix 1).



Figure 6. A collapse scar bog at Horseshoe Lake showing an area of melted permafrost (photo by C. Booth)

- *Leucorrhinia proxima* 'Red-waisted Whiteface' - A common species that inhabits marshy areas of the boreal forest. It is found throughout central Alberta and southern Northwest Territories as well as at Colin-Cornwall and La Butte Creek WP. The eighteen specimens collected at Wentzel Lake represent one of the most northern populations known from Alberta. They were collected at sites 2, 9, 11a & 11b (Appendix 1).
- *Leucorrhinia borealis* 'Red-waisted Whiteface' – A common species that inhabits lakes, ponds and slow streams across the boreal forest. The two specimens collected along Wentzel River represent one of the most northern Alberta populations along with specimens collected at Colin-Cornwall, La Butte Creek, Fidler-Greywillow, Maybelle River and Marguerite River WPs. They were collected at site 11a (Appendix 1).
- *Leucorrhinia patricia* 'Canada Whiteface' – A new record for Alberta that prefers bogs, ponds and lakes that contain mats of floating moss. The one specimen collected was found near an inlet located at the southeast end of Wentzel Lake. The specimen was collected at site 4 (Appendix 1).

SUMMARY AND CONCLUSIONS

A total of twenty-one Odonata species were collected or observed during the survey of 2003 at Caribou Mountains WP. This represents fourteen species from the Suborder Anisoptera and seven from the Suborder Zygoptera. Though most species collected are common across Canada, four of them (*Calopteryx aequabilis*, *Enallagma ebrium*, *Somatochlora minor*, and *Libellula julia*) are uncommon and three (*Somatochlora forcipata*, *S. franklini* and *Leucorrhinia patricia*) are rare in Alberta. *Calopteryx aequabilis* is an uncommon species that inhabits the boreal forest, and *Enallagma ebrium* represents a range extension from central Alberta. *Somatochlora hudsonica*, and *S. minor* are uncommon records for the boreal forest. *S. forcipata* and *S. franklini* are substantial range extensions and *Leucorrhinia patricia* is a new record for the province. With further sampling it is expected that several more riparian, peatland and river specialists could be found.

ACKNOWLEDGEMENTS

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The opportunity to inventory the odonates was made possible through an invitation to the members of the Alberta Lepidopterists' Guild from the Alberta Natural Heritage Information Centre of the Parks and Protected Areas Division. In addition, park's staff of the Lac La Biche District made this project feasible by providing logistic support, including transportation, field camps and food. Without the efforts of Ted Johnson and the rest of the park's staff along with the field camp crew, this project would not have been possible.

LITERATURE CITED

- Alberta Community Development. "Sub-Arctic Subregion." 9 Oct. 2002.
<<http://www.cd.gov.ab.ca/preserving/parks/anhic/subarctic.asp?print=true>.
- Acorn, H.H. 1981. *Key to the Odonata of Alberta*. Unpublished document.
- Beckingham, J. D. and J. H. Archibald. 1996. *Field Guide To Ecosites of Northern Alberta*. Natural Resources Canada, Canadian Forest Service, Northwest Region, Northern Forestry Centre, Edmonton, Alberta. Special Report 5. 371 pp.
- Cannings, R. A. 1996. *The Blue Darners, Dragonflies of the genus Aeshna in British Columbia*. Cordillera 3(1):28-38.
- Cannings, R. A. 2002. *Introducing the Dragonflies of British Columbia and the Yukon*. Royal British Columbia Museum, Victoria, B.C. 96pp.
- Cannings, S. G., R. A. Cannings and R. J. Cannings. 1991. *Distribution of Dragonflies (Insecta: Odonata) of the Yukon Territory, Canada with Notes on Ecology and Behavior*. Contributions to Natural Science 13:1-27.
- Dunkle, S.W. 2000. *Dragonflies through Binoculars*. Oxford University Press, New York. 266pp.
- Hornung, J.H. 2001. *Species Inventory of the Order Odonata (Dragonflies and Damselflies) for the Shield Inventory Project*. Unpubl. Report, Alberta Natural Heritage Information Centre, Parks and Protected Areas Division, Alberta Community Development, Edmonton, AB.
- Macaulay, D.A. 2002. *Survey of Odonata in the Canadian Shield Natural Region of Northeastern Alberta. II. 2001 Survey of the La Butte Creek and Fidler-Greywillow Wildland Parks*. Unpubl. Report, Alberta Natural Heritage Information Centre, Parks and Protected Areas Division, Alberta Community Development, Edmonton, AB.
- Macaulay, D.A. 2003. *Survey of Odonata in the Canadian Shield Natural Region of Northeastern Alberta. II. 2001 Survey of Colin-Cornwall Wildland Parks*. Unpubl. Report, Alberta Natural Heritage Information Centre, Parks and Protected Areas Division, Alberta Community Development, Edmonton, AB.
- Strong, W. and K.R. Leggat 1992. *Ecoregions of Alberta*. Alberta Forestry, Lands, and Wildlife, Edmonton, AB. 59pp.
- Walker, E.M. 1925. *The North American Dragonflies of the Genus Somatochlora*. University of Toronto Press, Toronto. 202 pp.

Walker, E.M. 1953. *The Odonata of Canada and Alaska*. V. 1. University of Toronto Press, Toronto. 292 pp.

Walker, E.M. 1958. *The Odonata of Canada and Alaska*. V. 2. University of Toronto Press, Toronto. 318 pp.

Walker, E.M. and P.S. Corbet. 1975. *The Odonata of Canada and Alaska*. V. 3. University of Toronto Press, Toronto. 307 pp.

Appendix 1.: List of species found in Caribou Mountains Wildland Park

				Collection Sites																	
Abn.	Sp. No.	Family	Genus species subspecies	1	2	3	4	5	6	7	8	9	10	11a	11b	11c	12	13	14	15	TT
Suborder Anisoptera (dragonflies)																					
C	1	AESHNIDAE	Aeshna eremita Scudder	2																	2
C	2	AESHNIDAE	Aeshna juncea (Linnaeus)	1		1			1												3
A	3	AESHNIDAE	Aeshna interrupta Scudder	9			2					1						1			13
C	4	CORDULIIDAE	Cordulia shurtleffii Scudder			1		1			1		1	1			2				7
U	5	CORDULIIDAE	Somatochlora minor (Calvert)											2		1		1			4
C	6	CORDULIIDAE	Somatochlora hudsonica (Selys)	1	1	3	6							2			2				15
R	7	CORDULIIDAE	Somatochlora forcipata (Scudder)!	1																	1
R	8	CORDULIIDAE	Somatochlora franklini (de Selys)							1											1
A	9	LIBELLULIDAE	Leucorrhinia proxima Calvert		6							1		9	2						18
R	10	LIBELLULIDAE	Leucorrhinia patricia Walker				1														1
C	11	LIBELLULIDAE	Leucorrhinia hudsonica Hagen									1		3					2	1	7
C	12	LIBELLULIDAE	Leucorrhinia borealis Hagen											2							2
U	13	LIBELLULIDAE	Libellula julia Uhler*		1*																0
C	14	LIBELLULIDAE	Libellula quadrimaculata Linnaeus				1								2						3
Subtotal				14	7	5	10	1	1	1	1	3	1	19	4	1	4	2	2	1	77
Suborder Zygoptera (damselflies)																					
U	15	CALOPTERYGIDAE	Calopteryx aequabilis Say											1				2			3
C	16	COENAGRIONIDAE	Coenagrion interrogatum (Hagen)											1							1
A	17	COENAGRIONIDAE	Coenagrion resolutum (Hagen)	4			8		2		1			25			2				42
C	18	COENAGRIONIDAE	Enallagma boreale Selys		5		1				1	1		19							27
C	19	COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	2	2	2			1			3		1							11
U	20	COENAGRIONIDAE	Enallagma ebrium (Hagen)											1							1
C	21	COENAGRIONIDAE	Nehalennia irene (Hagen)				2							1							3
Subtotal				6	7	2	11	0	3	0	2	4	0	49	0	0	2	2	0	0	88
Total				20	14	7	21	1	4	1	3	7	1	68	4	1	6	4	2	1	165
Final Total				165																	165

* No specimen, identified in field. The green highlighted boxes indicate visual observations

Appendix 2: Complete Data for specimens collected in Caribou Mountains Wildland Park									
Family	Genus species subspecies	Date	Locality	Site #	Dec. Lat.	Dec. Long.	Collector	Sex	Life Stage
AESHNIDAE	Aeshna eremita Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna eremita Scudder	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	M	nymph
AESHNIDAE	Aeshna interrupta Scudder	07-Jul-03	Wentzel River, by big pool	13	59.12385	114.50798	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna interrupta Scudder	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna interrupta Scudder	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	M	adult
AESHNIDAE	Aeshna interrupta Scudder	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna juncea (Linnaeus)	08-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna juncea (Linnaeus)	10-Jul-03	Wentzel Lake, SW outlet	6	58.96956	114.49999	Macaulay, D; Dunne, S.	F	adult
AESHNIDAE	Aeshna juncea (Linnaeus)	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
CALOPTERYGIDAE	Calopteryx aequabilis Say	07-Jul-03	Wentzel River, by big pool	13	59.12385	114.50798	Macaulay, D; Dunne, S.	F	adult
CALOPTERYGIDAE	Calopteryx aequabilis Say	07-Jul-03	Wentzel River, by big pool	13	59.12385	114.50798	Macaulay, D; Dunne, S.	M	adult
CALOPTERYGIDAE	Calopteryx aequabilis Say	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion interrogatum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult

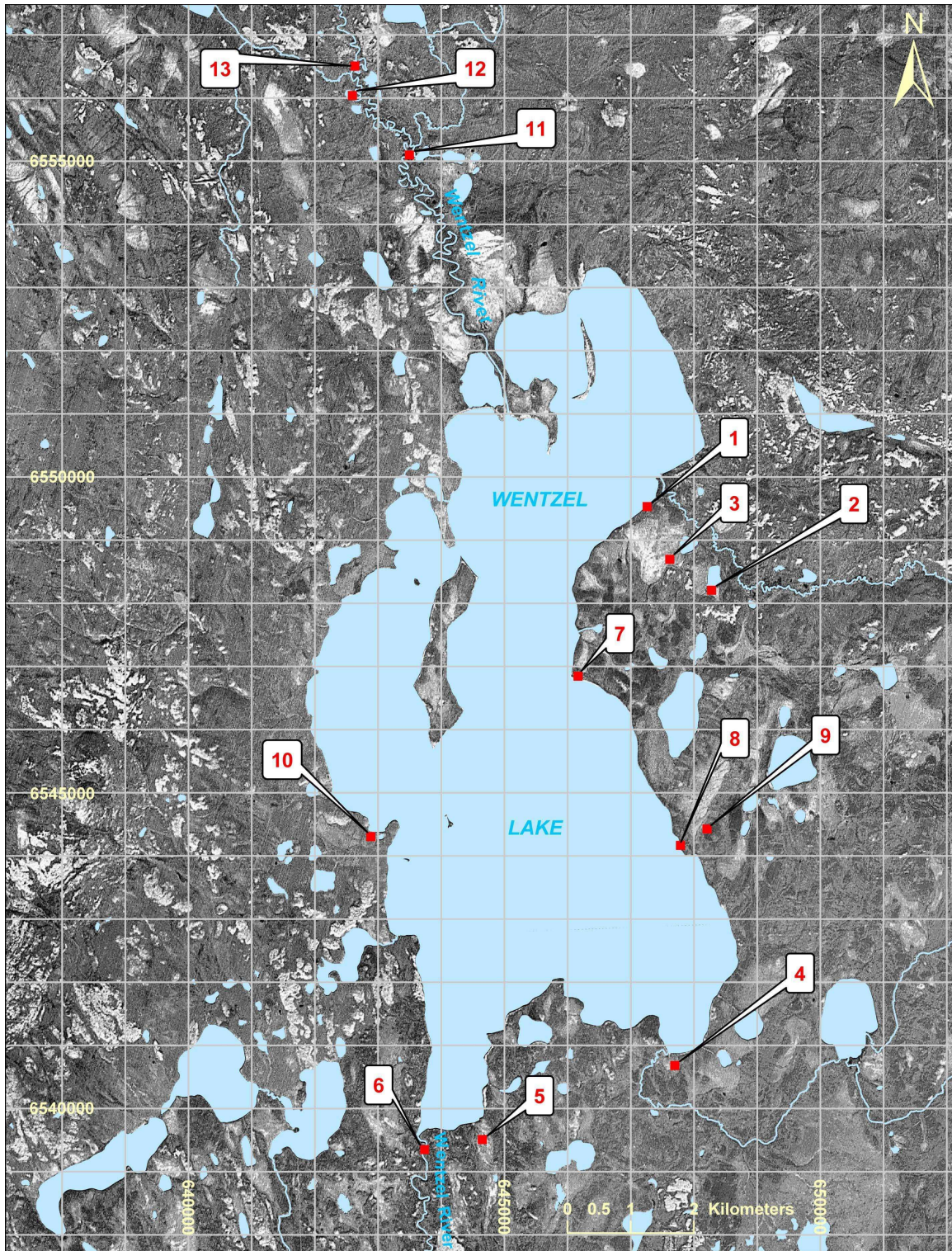
Family	Genus species subspecies	Date	Locality	Site #	Dec. Lat.	Dec. Long.	Collector	Sex	Life Stage
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Johnson, T.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Johnson, T.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel Lake, Fish & Wildlife cabin (clearing by lake)	8	59.01139	114.42639	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	09-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SW outlet	6	58.96956	114.49999	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel Lake, SW outlet	6	58.96956	114.49999	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Coenagrion resolutum (Hagen)	10-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	08-Jul-03	Wentzel Lake, Fish & Wildlife cabin (clearing by lake)	8	59.01139	114.42639	Johnson, T.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	09-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	09-Jul-03	Wentzel Lake, bog on west side of lake	10	59.01430	114.51154	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Cordulia shurtleffii Scudder	10-Jul-03	Wentzel Lake, black spruce bog SW end of lake	5	58.97067	114.48399	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult

Family	Genus species subspecies	Date	Locality	Site #	Dec. Lat.	Dec. Long.	Collector	Sex	Life Stage
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	08-Jul-03	Wentzel Lake, Fish & Wildlife cabin (clearing by lake)	8	59.01139	114.42639	Hilchie G.; Hilchie, J.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	09-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Hilchie G.; Hilchie, J.	F	adult
COENAGRIONIDAE	Enallagma boreale Selys	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma boreale Selys	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	M	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	M	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Johnson, T.	M	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	08-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Johnson, T.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	09-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	09-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	10-Jul-03	Wentzel Lake, SW outlet	6	58.96956	114.49999	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Enallagma cyathigerum (Charp.)	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult

Family	Genus species subspecies	Date	Locality	Site #	Dec. Lat.	Dec. Long.	Collector	Sex	Life Stage
COENAGRIONIDAE	Enallagma ebrium (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
LIBELLULIDAE	Leucorrhinia borealis Hagen	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	F	adult
LIBELLULIDAE	Leucorrhinia borealis Hagen	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	M	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	08-Jul-03	Horseshoe Lake, shoreline south end of lake	15	59.44986	115.74898	Hilchie G.; Hilchie, J.	M	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	F	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	11-Jul-03	Horseshoe Lake, treed fen east of lake	14	59.46817	115.72916	Macaulay, D; Dunne, S.	F	adult
LIBELLULIDAE	Leucorrhinia hudsonica Hagen	11-Jul-03	Horseshoe Lake, treed fen east of lake	14	59.46817	115.72916	Macaulay, D; Dunne, S.	F	adult
LIBELLULIDAE	Leucorrhinia patricia Walker	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Hilchie G.; Hilchie, J.	F	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	11-Jun-03	Wentzel Lake, small lake east of Fish & Wildlife cabin	9	59.01357	114.41890	Nordstrom, W.	F	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, beaver pond	11b	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	07-Jul-03	Wentzel River, beaver pond	11b	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Booth, C.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Leucorrhinia proxima Calvert	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Libellula julia Uhler	8-18-Jun-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	C. Schmidt	?	adult
LIBELLULIDAE	Libellula quadrimaculata Linne	07-Jul-03	Wentzel River, beaver pond	11b	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Libellula quadrimaculata Linne	07-Jul-03	Wentzel River, beaver pond	11b	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
LIBELLULIDAE	Libellula quadrimaculata Linne	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
COENAGRIONIDAE	Nehalennia irene (Hagen)	08-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Hilchie G.; Hilchie, J.	M	adult
COENAGRIONIDAE	Nehalennia irene (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
COENAGRIONIDAE	Nehalennia irene (Hagen)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
CORDULIDAE	Somatochlora forcipata (Scudder)	13-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Hilchie G.; Hilchie, J.	F	adult
CORDULIDAE	Somatochlora franklini (de Selys)	08-Jul-03	Wentzel Lake, sand point	7	59.03598	114.45279	Hilchie G.; Hilchie, J.	F	adult
CORDULIDAE	Somatochlora hudsonica (Selys)	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	M	adult

Family	Genus species subspecies	Date	Locality	Site #	Dec. Lat.	Dec. Long.	Collector	Sex	Life Stage
CORDULIIDAE	Somatochlora hudsonica (Selys)	07-Jul-03	Wentzel River, sedges by dry pond	12	59.11968	114.50899	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	08-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Johnson, T.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	09-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, black spruce bog SE of base camp	3	59.05208	114.42628	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Booth, C.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Booth, C.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	10-Jul-03	Wentzel Lake, SE inlet	4	58.98191	114.43212	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	12-Jul-03	Wentzel Lake, base camp	1	59.05970	114.43195	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora hudsonica (Selys)	12-Jul-03	Wentzel Lake, bog pond SE of base camp	2	59.04745	114.41510	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora minor (Calvert)	07-Jul-03	Wentzel River, by big pool	13	59.12385	114.50798	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora minor (Calvert)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	M	adult
CORDULIIDAE	Somatochlora minor (Calvert)	07-Jul-03	Wentzel River, streamside meadow	11a	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult
CORDULIIDAE	Somatochlora minor (Calvert)	07-Jul-03	Wentzel River, spruce bog	11c	59.11092	114.49388	Macaulay, D; Dunne, S.	F	adult

Appendix 3. Wentzel Lake collection sites within Caribou Mountains Wildland Park; the distance between the vertical and horizontal lines on the topographic map is 1 km.



Appendix 4. Horseshoe Lake collection sites within Caribou Mountains Wildland Park; the distance between the vertical and horizontal lines on the topographic map is 1 km.

