Chapter 10
Annotated Checklist of Braconidae (Hymenoptera) in the Canadian Prairies Ecozone

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Abstract. With more than 19,000 described species worldwide, parasitic wasps in the family Braconidae are the second largest group of Hymenoptera next to its sister lineage, Ichneumonidae. Despite their abundance and economic importance as potential biological control agents of forest and agricultural pests, little is known about the biodiversity of braconids in the Prairies Ecozone of Canada. The checklist of Braconidae was compiled by cross-referencing specimen localities with published records of braconid species found in the Prairie Provinces and supplemented with databased specimens from the Wallis-Roughley Museum of Entomology at the University of Manitoba. This checklist consists of 251 species, representing 22 different subfamilies, and includes14 new species records. Braconids in subfamilies such as Microgastrinae, Agathidinae, and Aphidiinae have a relatively large number of known species because of past research attention. Other subfamilies with fewer known species are undoubtedly more speciose than currently known, but are more difficult to identify because of a lack of taxonomic research and resources. It is hoped that this checklist serves as a baseline that will facilitate future biodiversity studies, conservation programs, and biological control research on Braconidae in the Prairies Ecozone of Canada.

Résumé. Comptant plus de 19 000 espèces décrites à travers le monde, les guêpes parasites de la famille des Braconidae forment le deuxième groupe d'hyménoptères le plus important après sa lignée sœur, les Ichneumonidae. En dépit de leur abondance et de leur importance économique comme agents possibles de lutte biologique contre les ravageurs des forêts et des cultures, on connaît peu de choses sur leur biodiversité dans l'écozone des prairies du Canada. La liste des Braconidae a été établie par recoupements des données sur les lieux de capture et des mentions publiées d'espèces recensées dans les provinces des Prairies, ainsi qu'à partir d'informations tirées des bases de données du musée d'entomologie Wallis-Roughley de l'Université du Manitoba. Cette liste contient 251 espèces réparties en 22 sous-familles, et compte 14 nouvelles mentions. Certaines sous-familles — par exemple, Microgastrinae, Agathidinae et Aphidiinae — renferment un nombre relativement élevé d'espèces connues parce qu'elles ont attiré l'attention des chercheurs par le passé. D'autres sous-familles moins connues sont sans doute plus riches en espèces qu'il n'y parait, mais les lacunes de la recherche et des ressources taxonomiques compliquent l'identification des espèces. Cette liste devrait servir de référence et faciliter à l'avenir les études sur la biodiversité, les programmes de conservation et la recherche sur la lutte biologique axés sur les Braconidae de l'écozone des prairies au Canada.

Introduction

Braconidae (Hymenoptera) is one of the most fascinating, diverse, and beneficial groups of insects. Braconids are parasitic wasps (also called parasitoids) that are valued for their ability to kill pest insects, especially forest pests and insects that cause economic damage to crops. However, they are underused as biocontrol agents, as many species are understudied or simply unknown to science. The sheer diversity of Braconidae poses challenges for researchers to implement taxonomic, ecological, or biodiversity studies. Currently, there are

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more than 19,000 described species (Yu *et al.* 2011), making Braconidae the second largest family in Hymenoptera next to its sister lineage, Ichneumonidae. Approximately 2,000 species have been described since 2005. However, the known species likely represent only 30–50% of the actual number of species on Earth (Jones *et al.* 2009), which is unfortunate given their great value as biocontrol agents.

Members of Braconidae have a wide range of parasitic lifestyles and a few rare species are herbivorous (Austin and Dangerfield 1998). Generally, parasitic braconids are either ectoparasitic, feeding on the outside of their host, or endoparasitic, feeding from within their host. Braconids may cause permanent paralysis of the host upon oviposition, and thus the host can no longer continue development (idiobiosis) (Askew and Shaw 1986; Gupta 1988; Wharton 1993). Alternatively, some parasitoids allow their hosts to continue development throughout much of the parasitoid's life (koinobiosis) (Askew and Shaw 1986). Many braconids can be solitary, with one individual using one host. However, others are gregarious, as multiple parasitoids from the same mother utilize the same host (Clausen 1940). Polyembryony (more than one embryo from a single egg) also occurs among some braconids, although it is relatively rare (Lu *et al.* 2006).

Parasitoids can also be described by the stage of the host they attack (i.e., the host stage in which the reproductive female parasitoid will lay her eggs) and the stage in which the host is killed (by the offspring of the reproductive female) (Askew and Shaw 1986; Wharton 1993). For example, an egg–larval parasitoid will lay eggs within the egg of her host, and her offspring will kill the host in the larval stage. Alternatively, a pupal parasitoid will attack the pupal stage, and her offspring will also kill the host in the same stage. Relative to their sister lineage Ichneumonidae, many species of Braconidae have adaptations for attacking early life stages of their hosts (Gauld 1988). This has important implications for pest management, as the most effective parasitoids for biocontrol are those that kill their hosts prior to the stage when the host causes economic damage (to crops, for example) (Austin and Dowton 2000).

The potential of Braconidae for controlling pest insects in agricultural areas makes them an important group to assess in the Prairies Ecozone of Canada, where the native landscape has been largely converted to agricultural farmland. Control of insect pests that damage crops is crucial to producers, especially as crop prices continue to rise (Agriculture and Agri-Food Canada 2013). Knowing which species of Braconidae are present in this region, and their potential as biocontrol agents, would be valuable in the farming heartland of Canada. Conservation of remnant native prairie, by protecting habitats for endemic species and promoting a more sustainable ecosystem for adjacent lands with intensive agriculture, is also important for preserving these species (Samson and Knopf 1996; Macfadyen *et al.* 2012). We cannot determine whether species are under threat of extinction or extirpation unless we know which species are present in the first place, and thus species checklists are exceptionally useful tools for tracking biodiversity over time (Mace 2004). However, our knowledge of braconid wasps in the Prairies Ecozone is limited for several reasons. First, there has been a lack of taxonomic and biodiversity studies on braconid wasps in this region. Second, while excellent generic keys are available (e.g., Wharton *et al.* 1997), there are few species-level identification keys for most taxa. Finally, there are few taxonomic experts in Canada working on Braconidae, which poses challenges for accurate braconid identification for ecological, biocontrol, or biodiversity studies.

The purpose of this chapter is to provide an annotated checklist of the Braconidae in the Prairies Ecozone of Canada. This checklist will serve as a starting point for future studies on Braconidae in this region, whether taxonomic, ecological, conservation, or biocontrol in nature.

Methods for Compiling the Checklist

The annotated checklist of Braconidae (Table 1) found in the Canadian Prairies Ecozone (as defined in Shorthouse 2010) was generated from published records of Braconidae from Alberta, Saskatchewan, and Manitoba in the Taxapad database of Ichneumonoidea (Yu *et al.* 2011). Of the 956 braconid species recorded in Taxapad from Canada (Yu *et al.* 2011), 187 were from Alberta, 103 from Saskatchewan, and 139 from Manitoba, totalling 313 different species. The locality data for each of the 313 species recorded from these provinces were then cross-referenced with the geographical region of the Prairies Ecozone (Shorthouse 2010) to exclude records from other ecozones. We used relatively relaxed borders, as many of the ecoregions within the Prairies Ecozone have been altered as a result of agricultural intensification. Records from Waterton Lakes National Park, which borders the Prairies Ecozone, were not included in the final checklist. Additional records were obtained from Batulla and Robinson (1984) and Wylie *et al.* (2005), as these publications were not included in the reference list in Taxapad. When the exact localities of specimens were unknown (i.e., if only the province was listed), these records were included in the checklist (Table 1), but should be considered as tentative records for the Prairies Ecozone. Unpublished new records were also added from databased specimens from the Wallis-Roughley Museum of Entomology (JBWM). The identification of most species that represent new records was confirmed by BJS and these species are listed in bold type in Table 1. Locality information was also added to the checklist from JBWM specimens if they were from the Prairies Ecozone and the published record listed only a provincial locality (Table 1).

The locality information for all new provincial and Canadian records is listed in Table 2. Labels were recorded verbatim to accurately capture the collector's meaning, style, and scientific notation and to avoid unnecessary interpretation. Individual labels were not included if they were specific to an unpublished experiment, for example, a label with just a number on it that refers to a collection event or rearing experiment. All museum bar codes are provided (Table 2), as these data will be uploaded to the Canadensys data repository (http://data.canadensys.net/) in the future.

Annotated Checklist of Braconidae in the Prairies Ecozone

Introductory Comments

The checklist of Braconidae in the Canadian Prairies Ecozone consists of 251 species (Table 1).These species represent 22 different subfamilies of the 42 recognized by Sharanowski *et al.* (2011). Most of the subfamilies not represented in this region include those that are not recorded from the Nearctic (e.g., Amicrocentrinae) or subfamilies that are rarely collected (e.g., Meteorideinae). Although no members of Hormiinae are included in the checklist, *Chremylus* sp. (putatively *C. elaphus*) has been collected in Spruce Woods Provincial Park in Manitoba (BJS, unpublished data), and it is likely that ongoing collections will reveal additional members of this commonly collected subfamily. Surprisingly, members of Helconinae (*sensu* Sharanowski *et al.* 2011) are not included in the checklist, although many species of their wood-boring beetle hosts are frequently collected in the ecozone. *Wroughtonia* spp. have been collected in Whiteshell Provincial Park in the Boreal Shield Ecozone in Manitoba (BJS, unpublished data), although rarely, and not within the Prairies Ecozone.

Table 1. Annotated checklist of Braconidae (Hymenoptera) in the Canadian Prairies Ecozone. Species are listed alphabetically under their containing subfamily. New records determined from specimens in the Wallis-Roughley Museum of Entomology are indicated by an asterisk (*) and listed in bold type; these have the museum acronym, JBWM, listed as the only reference for the locality. If the identity of the species could not be confidently confirmed using keys or species descriptions, the species was included in the final list and has an asterisk preceding the species binomial, but is not listed in bold type. New JBWM localities are indicated by a period separating the published localities. Abbreviations: AB = Alberta; MB = Manitoba; SK = Saskatchewan; NP = national park; PP = provincial park.

	Species	Locality and Locality Reference
Agathidinae		
1	*Agathis gibbosa* (Say, 1836)	Edmonton, AB (Strickland 1946)
2	*Agathis tibiator* Provancher, 1880	Vermilion, AB (Strickland 1946)
3	*Bassus binominatus* (Muesebeck, 1958)	MB; SK (Wong 1972)
4	*Bassus buttricki* Viereck, 1917	AB (Sharkey *et al.* 1987)
5	*Bassus dimidiator* (Nees, 1834)	Edmonton, AB (Strickland 1952)
6	*Bassus discolor* (Cresson, 1873)	Edmonton, AB (Strickland 1946)
7	*Bassus nigripes* (Cresson, 1865)	MB (Sharkey *et al.* 1987)
8	*Crassomicrodus apicipennis* Muesebeck, 1927	Lethbridge, AB (Strickland 1946)
9	*Cremnops ashmeadi* (Morrison, 1917)	AB (Marsh 1961)
10	*Cremnops comstocki* (Morrison, 1917)	Edmonton, AB (Strickland 1946)
11	*Cremnops montrealensis* (Morrison, 1917)	SK (Marsh 1961)
12	*Cremnops nigrosternum* (Morrison, 1917)	SK (Marsh 1961)
13	*Cremnops vulgaris* (Cresson, 1865)	Edmonton, AB (Strickland 1946)
14	*Earinus limitaris* (Say, 1835)	Edmonton, AB (Strickland 1946)
15	*Therophilus agilis* (Cresson, 1873)	Drumheller, AB (Strickland 1952)
16	*Therophilus arthurellus* (Sharkey, 1985)	Drinkwater, SK (Sharkey 1985)
17	*Therophilus perforator* (Provancher, 1880)	Athabasca, AB (Strickland 1946)
Alysiinae		
18	*Alysia frigida* Haliday, 1838	Elkwater Lake, AB (Wharton 1986)
19	*Alysia lucia* Haliday, 1838	Scoutlake, SK (Wharton 1986)
20	*Alysia lucicola* Haliday, 1838	Elkwater Lake, AB (Wharton 1986)
21	*Alysia subaperta* Thomson, 1895	Kananaskis, AB (Wharton 1988*a*)
22	*Alysia truncator* (Nees, 1812)	Elkwater Lake, AB (Wharton 1986)
23	*Anisocyrta curticubita* Wharton, 1980	Elkwater Lake, AB (Wharton 1980)
24	***Aphaereta minuta* (Nees,1811)	Carman, MB JBWM
25	****Aphaereta pallipes* (Say, 1829)**	**Glenlea, MB JBWM**
26	*Coelinius hopkinsii* (Ashmead, 1893)	MB (Muesebeck 1967)
27	*Cratospila neocirce* Wharton, 1980	Elkwater Lake, AB; Shilo, MB (Wharton 1980)
28	*Idiasta maritima* (Haliday, 1838)	Onefour, AB (Wharton 1980)
29	*Phaenocarpa puberae* Fischer, 1974	Cypress Hills, SK (Fischer 1974)
Aphidiinae		
30	*Acanthocaudus tissoti* Smith, 1944	St Ambroise, MB (Batulla and Robinson 1984)
31	*Adialytus salicaphis* (Fitch, 1855)	Sandilands PP, MB (Batulla and Robinson (1984)
32	**Aphidius avenaphis* (Fitch, 1861)	SK. Sandilands, MB (Olfert *et al.* 2002). JBWM
33	*Aphidius ervi* Haliday, 1834	Glenlea, MB (Wylie *et al.* (2005)

	Species	Locality and Locality Reference
34	*Aphidius matricariae* Haliday, 1834	Glenlea, MB; SK (Batulla and Robinson 1984; Olfert *et al.* 2002)
35	*Aphidius nigripes* Ashmead, 1901	Edmonton, AB (Strickland 1952)
36	*Aphidius obscuripes* Ashmead, 1889	Glenlea, MB (Batulla and Robinson 1984)
37	*Aphidius pisivorus* Smith, 1941	Edmonton, AB (Strickland 1952)
38	*Aphidius ribis* Haliday, 1834	Hansen Creek, MB (Batulla and Robinson 1984)
39	*Aphidius rosae* Haliday, 1833	Morden, MB (Batulla and Robinson 1984)
40	*Aphidius smithi* Sharma and Subba Rao, 1959	Brooks, AB (Harper 1976)
41	****Diaeretiella rapae* (McIntosh, 1855)**	**Lethbridge, AB (Strickland, 1946). Winnipeg, MB JBWM**
42	*Ephedrus incompletus* (Provancher, 1886)	Sandilands PP, MB (Batulla and Robinson 1984)
43	*Lysiphlebus testaceipes* (Cresson, 1880)	Edmonton, AB (Strickland 1952)
44	*Pauesia californica* (Ashmead, 1889)	AB (Muesebeck 1967)
45	*Praon artemisaphis* Smith, 1944	Winnipeg, MB (Batulla and Robinson 1984)
46	*Praon carinum* Johnson, 1987	Spruce Woods PP, MB (Johnson 1987)
47	*Praon exsoletum* (Nees, 1811)	Glenlea, MB (Wylie 1981)
48	*Praon occidentale* Baker, 1909	Winnipeg, Glenlea, St. Agathe, MB (Wylie *et al.* 2005)
49	*Praon pequodorum* Viereck, 1917	Winnipeg, Glenlea, Morden, Morris, Myrtle, St. Adolphe, St. Agathe, MB (Wylie *et al.* 2005)
50	*Praon simulans* (Provancher, 1886)	Cypress Hills, AB (Strickland 1952)
Brachistinae		
51	*Blacus asaphus* van Achterberg, 1976	Lethbridge, AB (van Achterberg 1976)
52	*Blacus cognatus* van Achterberg, 1976	Indian Head, SK (van Achterberg 1976)
53	*Blacus defectuosus* Provancher, 1886	SK (van Achterberg 1976)
54	*Blacus masoni* van Achterberg, 1976	Edmonton, AB (van Achterberg 1976)
55	*Blacus ruficornis* (Nees,1811)	AB, SK, MB (van Achterberg 1976)
56	*Blacus rufipes* (Ashmead,1889)	SK (van Achterberg 1988)
57	*Blacus striatus* van Achterberg, 1976	Saskatoon, SK (van Achterberg 1976)
58	*Triaspis magnafoveae* Martin, 1956	Edmonton, AB (Martin 1956)
Braconinae		
59	*Atanycolus charus* (Riley, 1875)	Edmonton, AB (Strickland 1946)
60	*Bracon cephi* (Gahan, 1918)	Drumheller, AB (Strickland 1946; Nelson and Farstad 1953)
61	*Bracon connecticutorum* (Viereck, 1917)	Edmonton, AB (Strickland 1946)
62	*Bracon gastroideae* Ashmead, 1889	Edmonton, AB (Strickland 1946)
63	*Bracon hyslopi* (Viereck, 1912)	Vermilion, AB (Strickland 1946)
64	*Bracon lissogaster* Muesebeck, 1953	Couts, Coaldale, Coalhurst, AB (Cárcamo *et al*. 2012)
65	*Bracon lutus* Provancher, 1880	MB; SK (Wong 1972)
66	*Bracon nuperus* Cresson, 1872	Vermilion, AB (Strickland 1946)
67	*Bracon pini* (Muesebeck, 1925)	Seebe, AB (Powell 1971)
68	*Bracon rhyacioniae* (Muesebeck, 1931)	MB (DeBoo *et al.* 1971)
69	*Bracon tenuis* Muesebeck and Walkley, 1951	Northwest AB (Wesley *et al.* 2006)
70	*Coeloides crocator* (Kirby, 1837)	Edmonton, AB (Mason 1978)
71	*Coeloides rufovariegatus* (Provancher, 1880)	Aweme, MB (Mason 1978)
72	*Habrobracon gelechiae* (Ashmead, 1889)	Edmonton, AB (Strickland 1946)

	Species	Locality and Locality Reference
73	*Vipio croceus* (Cresson, 1865)	Lethbridge, AB (Strickland 1946)
74	*Vipio piceipectus* Viereck, 1905	AB (Inayatullah *et al*. 1998)
Cardiochilinae		
75	*Cardiochiles explorator* (Say, 1836)	Lethbridge, AB (Strickland 1946)
76	*Toxoneuron viator* (Say, 1836)	Lethbridge, AB (Strickland 1946)
Cenocoeliinae		
77	*Cenocoelius sanguineiventris* (Ashmead, 1889)	Steinbach, MB (Saffer 1982)
78	*Cenocoelius saperdae* (Ashmead, 1889)	Gladstone, MB (Saffer 1982)
79	*Cenocoelius tenuicornis* (Rohwer, 1914)	Langruth, MB (Saffer 1982)
Charmontinae		
80	*Charmon extensor* (Linnaeus, 1758)	Edmonton, AB; Saskatoon, SK (van Achterberg 1979)
Cheloninae		
81	**Ascogaster argentifrons* (Provancher, 1886)	Winnipeg, MB JBWM
82	*Ascogaster aurea* Shaw, 1983	Indian Head, SK (Shaw 1983)
83	*Ascogaster borealis* Shaw, 1983	Rose Valley, SK (Shaw 1983)
84	*Chelonus gracilis* McComb, 1968	Scandia, AB (McComb 1968)
85	*Chelonus insolitus* McComb, 1968	Morden, MB (McComb 1968)
86	*Chelonus medicaginis* McComb, 1968	Brooks, AB (McComb 1968)
87	*Chelonus pecki* McComb, 1968	Saskatoon, SK (McComb 1968)
88	*Chelonus phaloniae* Mason, 1959	Morden, Altona, MB (Mason 1959)
89	***Chelonus sericeus (Say, 1824)**	**Oakbank, MB JBWM**
90	*Chelonus subtuberculatus* McComb, 1968	Richard, SK (McComb 1968)
91	*Phanerotoma diversa* (Walker, 1874)	MB (Zettel 1992)
92	*Phanerotoma fasciata* Provancher, 1881	AB; SK; MB (Zettel 1992)
93	*Phanerotoma longicauda* Walley, 1951	AB (Zettel 1992)
Doryctinae		
94	*Doryctes californicus* Marsh, 1969	Seebe, AB (Powell 1971)
95	*Doryctes rufipes* (Provancher, 1880)	AB (Marsh 1969)
96	*Doryctes slossonae* Marsh, 1969	Onah, MB (Marsh 1969)
97	*Ecphylus hypothenemi* Ashmead, 1896	Canada (Marsh 1965)
98	*Ontsira imperator* (Haliday, 1836)	AB (Marsh 1966)
99	*Rhaconotus badius* Marsh, 1976	Lethbridge, AB (Marsh 1976)
100	*Rhaconotus canadensis* Marsh, 1976	St. Victor, SK (Marsh 1976)
101	*Rhaconotus fasciatus* (Ashmead, 1893)	AB (Marsh 1976)
102	*Spathius sequoiae* Ashmead, 1889	AB; MB (Matthews 1970)
Euphorinae		
103	*Dinocampus coccinellae* (Schrank, 1802)	Lethbridge, AB (Strickland 1946)
104	*Leiophron braunae* (Goulet, 2006)	Lethbridge, AB (Goulet and Mason 2006)
105	*Leiophron broadbenti* (Goulet, 2006)	Lethbridge, AB (Goulet and Mason 2006)
106	*Leiophron carcamoi* (Goulet, 2006)	Lethbridge, AB (Goulet and Mason 2006)
107	*Leiophron guttatipidis* (Loan, 1979)	Saskatoon, SK (Loan 1979)
108	*Leiophron otaniae* (Goulet, 2006)	Saskatoon, SK (Goulet and Mason 2006)
109	*Leiophron pallipes* Curtis, 1833	Edmonton, AB (Strickland 1946)
110	*Meteorus betulini* Mason, 1968	Traverse Bay, MB (Mason 1968)

	Species	Locality and Locality Reference
111	*Meteorus campestris* Viereck, 1905	Calgary, AB (Strickland 1921)
112	*Meteorus dimidiatus* (Cresson, 1872)	Edmonton, AB (Strickland 1946)
113	****Meteorus humilis* (Cresson, 1872)**	**Winnipeg, MB JBWM**
114	****Meteorus hyphantriae* Riley, 1887**	**Starbuck, MB JBWM**
115	****Meteorus pendulus* Muller, 1776**	**Winnipeg, MB JBWM**
116	*Meteorus politus* (Provancher, 1886)	SK (Muesebeck 1923)
117	*Meteorus rubens* (Nees, 1811)	Saskatoon, SK (Pivnick 1993)
118	*Neoneurus mantis* Shaw, 1992	Onefour, Vockeroth, AB (Shaw 1992)
119	*Perilitus bicolor* (Wesmael, 1835)	Glenlea, MB (Wylie 1988)
120	*Perilitus brevipetiolatus* Thomson 1892	Glenlea, MB (Wylie 1982)
121	*Perilitus eleodis* Viereck, 1913	Medicine Hat, AB (Strickland 1946)
122	*Perilitus melanopus* (Ruthe, 1856)	Lethbridge, AB (Fox *et al.* 2004)
123	*Perilitus nigritus* Provancher, 1888	MB (Muesebeck 1958)
124	*Perilitus psylliodis* (Loan, 1969)	MB; SK (Wylie and Loan 1984)
125	*Perilitus punctulatae* (Loan and Wylie 1984)	MB; SK (Wylie and Loan 1984)
126	*Syntretus transversus* (Papp and Shaw 2000)	Riding Mountain NP, MB (Papp and Shaw 2000)
127	*Zele albiditarsus* Curtis, 1832	Sundre, AB (van Achterberg 1979)
Gnamptodontinae		
128	*Exodontiella muesebecki* Wharton, 1977	Cypress Hills, Elkwater, AB (Wharton 1978)
Homolobinae		
129	*Homolobus truncator* (Say, 1829)	Beverley, SK; Lethbridge, AB (van Achterberg 1979)
Ichneutinae		
130	*Ichneutes pikonematis* Mason, 1968	Marshall, SK (Mason 1968)
Macrocentrinae		
131	*Austrozele uniformis* (Provancher, 1880)	Spruce Woods PP, MB (Mason 1976)
132	*Hymenochaonia delicata* (Cresson, 1872)	Winnipeg, MB (Ahlstrom 2005)
133	*Macrocentrus aegeriae* Rohwer, 1915	Morris, MB (Ahlstrom 2005)
134	*Macrocentrus ancylivorus* Rohwer, 1923	Morden, MB (Ahlstrom 2005)
135	*Macrocentrus canarsiae* Muesebeck, 1932	Aweme, MB (Ahlstrom 2005)
136	*Macrocentrus cerasivoranae* Viereck, 1912	Lethbridge, AB (Strickland 1946)
137	*Macrocentrus crambi* (Ashmead, 1894)	Winnipeg, MB (Ahlstrom 2005)
138	*Macrocentrus crassipes* Muesebeck, 1932	Vermilion, AB (Strickland 1946)
139	*Macrocentrus cuniculus* Walley, 1933	Hinton, AB (Ahlstrom 2005)
140	*Macrocentrus incompletus* Muesebeck, 1932	Lethbridge, AB (Strickland 1946)
141	*Macrocentrus instabilis* Muesebeck, 1932	Edmonton, AB (Strickland 1946)
142	*Macrocentrus linearis* (Nees, 1811)	Islay, AB (Ahlstrom 2005)
143	*Macrocentrus marginator* (Nees, 1811)	Seebe, AB (Ahlstrom 2005)
144	*Macrocentrus nigridorsis* Viereck, 1924	Edmonton, AB (Strickland 1946)
145	*Macrocentrus pallisteri* DeGant, 1930	Edmonton, AB (Strickland 1946)
146	*Macrocentrus pectoralis* Provancher, 1880	Estevan, SK (Ahlstrom 2005)
147	*Macrocentrus terminalis* (Ashmead, 1889)	Edmonton, AB (Strickland 1946)
Microgastrinae		
148	*Apanteles crassicornis* (Provancher, 1886)	Edmonton, AB (Strickland 1946)
149	*Apanteles ensiger* (Say, 1836)	MB (Fernández-Triana 2010)

	Species	Locality and Locality Reference
150	*Apanteles feltiae* Viereck, 1912	SK (Fernández-Triana 2010)
151	*Apanteles forbesi* Viereck, 1910	MB (Fernández-Triana 2010)
152	*Apanteles morrisi* Mason, 1974	Cypress River, MB (Mason 1974)
153	*Apanteles polychrosidis* Viereck, 1912	MB (Fernández-Triana 2010)
154	*Cotesia acronyctae* (Riley, 1871)	AB; SK (Fernández-Triana 2010)
155	*Cotesia atalantae* (Packard, 1881)	AB; SK; MB (Fernández-Triana 2010)
156	*Cotesia autographae* (Muesebeck, 1921)	MB; Winnipeg, MB (Fernández-Triana 2010). JBWM
157	*Cotesia cingiliae* (Muesebeck, 1931)	AB (Fernández-Triana 2010)
158	*Cotesia congregata* (Say, 1836)	MB (Fernández-Triana 2010)
159	*Cotesia diversa* (Muesebeck and Walkley, 1951)	MB (Fernández-Triana 2010)
160	*Cotesia fiskei* (Viereck, 1910)	AB; MB; SK (Fernández-Triana 2010)
161	*Cotesia flavicornis* (Riley, 1889)	MB (Fernández-Triana 2010)
162	*Cotesia griffini* (Viereck, 1911)	AB (Fernández-Triana 2010)
163	*Cotesia halisidotae* (Muesebeck, 1931)	MB (Fernández-Triana 2010)
164	*Cotesia hyphantriae* (Riley, 1887)	MB. East Braintree, MB (Fernández-Triana 2010). JBWM
165	*Cotesia laeviceps* (Ashmead, 1890)	AB; MB; SK. Altona, MB (Fernández-Triana 2010). JBWM
166	*Cotesia murtfeldtae* (Ashmead, 1898)	MB (Fernández-Triana 2010)
167	*Cotesia nemoriae* (Ashmead, 1898)	MB; SK. Beausejour, MB (Fernández-Triana 2010). JBWM
168	*Cotesia phobetri* (Rohwer, 1915)	AB (Fernández-Triana 2010)
169	*Cotesia plathypenae* (Muesebeck, 1921)	MB. Franklin, MB (Fernández-Triana 2010). JBWM
170	*Cotesia teleae* (Muesebeck, 1926)	AB (Fernández-Triana 2010)
171	*Cotesia xylina* (Say, 1836)	Glenlea, MB (Wylie and Bucher 1977)
172	*Cotesia yakutatensis* (Ashmead, 1902)	MB (Fernández-Triana 2010)
173	*Diolcogaster bakeri* (Muesebeck, 1922)	SK (Fernández-Triana 2010)
174	*Diolcogaster facetosa* (Weed, 1888)	AB (Fernández-Triana 2010)
175	*Dolichogenidea consimilis* (Viereck, 1911)	MB (Muesebeck 1921)
176	*Dolichogenidea homoeosomae* (Muesebeck, 1933)	SK (Fernández-Triana 2010)
177	*Hygroplitis melligaster* (Provancher, 1886)	MB (Fernández-Triana 2010)
178	*Microgaster canadensis* Muesebeck, 1922	Edmonton, AB (Strickland 1946)
179	*Microgaster congregatiformis* Viereck, 1917	Edmonton, AB (Strickland 1946)
180	*Microgaster leechi* Walley, 1935	MB (Fernández-Triana 2010)
181	*Microplitis alaskensis* Ashmead, 1902	Medicine Hat, Lethbridge, AB (Strickland 1946)
182	*Microplitis carteri* Walley, 1932	Lethbridge, AB (Strickland 1946)
183	*Microplitis ceratomiae* Riley, 1881	SK (Fernández-Triana 2010)
184	*Microplitis hyphantriae* Ashmead, 1898	Edmonton, AB (Strickland 1946)
185	*Microplitis impressus* (Wesmael, 1837)	MB (Fernández-Triana 2010)
186	*Microplitis kewleyi* Muesebeck, 1922	Calahoo, AB (Schaaf 1972)
187	*Microplitis melianae* Viereck, 1911	Edmonton, AB (Strickland 1952)
188	*Microplitis plutellae* Muesebeck, 1922	Lethbridge, AB (Sarfraz *et al.* 2010)
189	*Microplitis scutellatus* Muesebeck, 1922	Edmonton, AB (Strickland 1952)

	Species	Locality and Locality Reference
190	*Pholetesor ornigis* (Weed, 1887)	Birdshill PP, MB (Still and Wong 1973)
191	*Pholetesor salicifoliellae* (Mason, 1959)	MB (Fernández-Triana 2010)
192	*Pholetesor variabilis* Whitfield 2006	Ceylon, Elfos, SK (Whitfield 2006)
193	*Pholetesor viminetorum* (Wesmael, 1837)	AB (Whitfield 2006)
194	*Pholetesor zelleriae* Whitfield 2006	Sprague, MB (Whitfield 2006)
195	*Protapanteles fulvipes* (Haliday, 1834)	AB (Fernández-Triana 2010)
196	*Protapanteles militaris* (Walsh, 1861)	MB. Glenlea, MB (Fernández-Triana 2010). JBWM
197	*Protapanteles neomexicanus* (Muesebeck, 1921)	AB; MB (Williams 1988)
198	*Protapanteles paleacritae* (Riley, 1881)	MB (Fernández-Triana 2010)
199	*Protapanteles stigmaticus* (Muesebeck, 1922)	AB (Strickland 1952; Fernández-Triana 2010)
200	*Venanides xeste* (Mason, 1981)	MB (Fernández-Triana 2010)
Opiinae		
201	****Biosteres carbonarius* (Nees, 1834)**	**Glenlea, MB JBWM**
202	*Biosteres incertus* (Fischer, 1965)	Edmonton, AB (Fischer 1965)
203	*Biosteres numerosus* (Fischer, 1965)	Winnipeg, MB (Fischer 1965)
204	*Biosteres spinaciae* (Thomson, 1895)	AB (Fischer 1965, 1977)
205	*Desmiostoma parvulum* (Wesmael, 1835)	Cut Knife, SK (Fischer 1964)
206	****Diachasma alloeum* (Muesebeck, 1956)**	**Morden, MB JBWM**
207	****Diachasmimorpha mellea* (Gahan, 1915)**	**Morden, MB JBWM**
208	*Eurytenes abnormis* (Wesmael, 1835)	Cut Knife, SK (Fischer 1965)
209	*Opius amplus* (Ashmead, 1890)	AB (Fischer 1964)
210	*Opius bidentis* Fischer, 1964	Edmonton, AB (Fischer 1964)
211	*Opius bruneipes* Gahan, 1913	AB (Fischer 1965)
212	*Opius cinctus* Provancher, 1886	SK (Muesebeck 1958)
213	*Opius curtiarticulatus* Fischer, 1964	Saskatoon, SK (Fischer 1964)
214	**Opius dimidiatus* (Ashmead, 1889)	Grandview, MB JBWM
215	*Opius downesi* Gahan, 1919	Edmonton, AB (Strickland 1946)
216	*Opius longicubitalis* Fischer, 1965	Drumheller, AB (Fischer 1965)
217	*Opius pallipes* Wesmael, 1835	Blackfoot Hills, AB (Fischer 1965)
218	*Opius succineus* Gahan, 1913	SK (Fischer 1964)
219	*Phaedrotoma complicans* (Fischer, 1965)	Drumheller, AB (Fischer 1965)
220	*Phaedrotoma nitidulator* (Nees, 1834)	Edmonton, AB (Fischer 1964)
221	*Phaedrotoma turneri* (Gahan, 1919)	AB (Fischer 1965)
222	*Utetes canaliculatus* (Gahan, 1915)	MB (Fischer 1964)
223	*Utetes frequens* (Fischer, 1964)	Morden, MB (Fischer 1964)
224	*Utetes gahani* (Muesebeck, 1931)	MB (Fischer 1964)
225	*Utetes juniperi* (Fischer, 1964)	Morden, MB (Fischer 1964)
226	*Utetes rosicola* (Muesebeck, 1950)	Saskatoon, SK (Balduf 1959)
227	*Xynobius cincticornis* (Gahan, 1915)	SK (Fischer 1964)
228	*Xynobius severini* (Fischer, 1964)	Coaldale, AB (Fischer 1964)
Orgilinae		
229	*Orgilus agrestis* Muesebeck, 1970	Drumheller, AB (Muesebeck 1970)
230	*Orgilus detectus* Provancher, 1886	Lethbridge, AB (Strickland 1946)
231	*Orgilus hyalinus* Muesebeck, 1970	Onefour, AB, MB (Muesebeck 1970)

	Species	Locality and Locality Reference
232	*Orgilus pedalis* Muesebeck, 1970	Lethbridge, AB (Muesebeck 1970)
233	*Orgilus pratensis* Muesebeck, 1970	Scandia, AB (Muesebeck 1970)
Rhysipolinae		
234	*Cantharoctonus canadensis* Mason, 1968	Audy Lake, MB (Mason 1968)
235	*Rhysipolis decorator* (Haliday, 1836)	AB; SK (Spencer and Whitfield 1999)
236	*Rhysipolis pallipes* (Provancher, 1888)	AB; MB (Spencer and Whitfield 1999)
237	*Rhysipolis platygaster* Spencer, 1999	Morley, Calgary, Jumoing Pd, AB; Tamarack, MB (Spencer and Whitfield 1999)
238	*Rhysipolis stenodes* Spencer, 1999	Elbow, Bounty, SK (Spencer and Whitfield 1999)
Rhyssalinae		
239	*Histeromerus canadensis* Ashmead, 1891	AB (van Achterberg 1992)
Rogadinae		
240	*Aleiodes bucculentus* Marsh and Shaw 2001	Bilby, AB (Marsh and Shaw 2001)
241	*Aleiodes crassijugosus* Fortier 2007	MB (Fortier 2007)
242	*Aleiodes dichromatus* Shaw and Marsh 2006	Saskatoon, SK; Elkwater, AB (Shaw *et al*. 2006)
243	*Aleiodes malacosomatos* (Mason, 1979)	Coaldale, AB; Crane Lake, Shaunavon, SK (Mason 1979)
244	*Aleiodes maritimus* Shaw and Marsh 2004	Spruce Grove, AB (Shaw and Marsh 2004)
245	*Aleiodes megastomus* Marsh and Shaw 1999	Saskatoon, SK (Marsh and Shaw 1999)
246	*Aleiodes rileyi* Cresson, 1869	SK (Shaw *et al.* 1998)
247	*Aleiodes sexmaculativorax* Fortier 2007	Stony Plain, Spruce Grove, AB (Fortier 2007)
248	****Aleiodes stigmator* (Say, 1824)**	**Carrot River, Ordale, Wadena, SK; Glenlea, Winnipeg, MB JBWM**
249	*Aleiodes terminalis* Cresson, 1869	Lethbridge, Edmonton, AB (Strickland 1946)
250	*Stiropius bucculatricis* (Ashmead, 1889)	Edmonton, AB; Ninetee, MB (Whitfield 1988)
Sigalphinae		
251	*Sigalphus bicolor* (Cresson, 1880)	MB (Muesebeck 1958)

Of the 251 species recorded from the Prairies Ecozone, 14 are new records determined from material within the JBWM. These new records highlight the importance of museums and specimen databasing, as they provide readily accessible information on Canada's biodiversity. Furthermore, the specimens provide a record of species distributions through time and are critical sources of information for assessing changing species distributions, whether through evolution, biological invasions, or climate change. Collating species data into regional checklists also helps to further knowledge on species presence and distribution. For example, species of Microgastrinae are the most common of the 22 subfamilies represented, comprising 21% of the total known species in the ecozone, most being known from the extensive checklist produced by Fernández-Triana (2010). Of the 251 species of Braconidae now known from the Prairies Ecozone, 46 are known from Strickland's (1946, 1952) checklists of the Ichneumonoidea of Alberta.

Other subfamilies with a relatively large number of known species from the Prairies Ecozone (e.g., Agathidinae, Aphidiinae, Euphorinae, Opiinae, Macrocentrinae) have received considerable research attention for taxonomic reasons (e.g., Fischer 1964, 1965; van Achterberg 1976; Wharton 1986; Ahlstrom 2005) or to facilitate biological control

of crop pests (e.g., Batulla and Robinson 1984; Wylie and Loan 1984; Goulet and Mason 2006). Subfamilies with fewer known species (e.g., Alysiinae, Brachistinae, Orgilinae) are likely much more speciose than is reflected in the checklist, as they are commonly collected (BJS, pers. obs.) but are more difficult to identify to species because of a lack of taxonomic research and resources. Comments for each subfamily represented in the checklist are provided below.

Agathidinae

Agathidines are koinobiont endoparasitoids (where the host continues development while being fed upon) of lepidopteran larvae, many of which are small caterpillars concealed in leaf rolls or stems (Sharkey 1992; Sharkey *et al.* 2006). There are 17 species from six genera recorded from the Prairies Ecozone. Most specimens are recorded from in and around cities, and certainly additional sampling in native grassland habitats will reveal additional species. Species of *Agathis* and *Earinus* are known to be more species rich in temperate regions (Sharkey 1992), and it is likely that additional species richness will be discovered from members of these two genera. Although members of Agathidinae have not been used extensively in biocontrol programs, they do attack many pest species, including agricultural pests. For example, *Bassus nigripes* attacks the Sunflower moth, *Homeosoma ellectellum* Hurst, an occasional pest of sunflower in Manitoba (Sharkey *et al.* 1987). However, agathidines can also interfere with biological control programs where lepidopteran larvae have been brought in to control weeds (Halstead 1989).

Alysiinae

Members of Alysiinae are koinobiont endoparasitoids of flies in the infraorder Muscomorpha (which includes house flies, blowflies, and flesh flies among others). Of the two tribes in the subfamily (Alysiini and Dacnusini), members of Dacnusini are typically more specialized and mainly attack species of Agromyzidae (Wharton 1984). As many cyclorrhaphous Diptera are pests of livestock as well as crops, alysiines likely have biocontrol potential in the Canadian Prairies. For example, *Aphaereta pallipes* (=*auripes* Provancher) has been recorded as an occasional parasitoid of *Delia radicum* (Linnaeus) (=*Hylemya brassicae* Bouché) in Quebec (Wishart 1957), a major pest of cruciferous crops. Here, we report *Aphaereta pallipes* as a new record for Manitoba and the Prairies Ecozone (Table 1). Future studies should examine the abundance of this species in agroecosystems and whether or not it attacks *D. radicum* in the Prairies, where canola and other brassicas are major crops. There are 12 species from seven genera recorded from the Prairies Ecozone, two of which are new records (Table 1). *Aphaereta minuta* is recorded for the first time in Canada; however, the species identification of this specimen could not be determined with complete confidence. There are many more species of Alysiinae present within the Prairies Ecozone than is reflected in the checklist. A recent study of alysiine parasitoids found in canola in Manitoba has revealed several morphospecies of *Chorebus* and *Dacnusa* (W. Lodge-Zaparnick and BJS, unpublished data). Species identification of these specimens awaits comparison with types.

Aphidiinae

Aphidiines are solitary koinobiont endoparasitoids of nymphal and adult aphids. As aphids are major pests of many economically important agricultural and horticultural crops, the host relationships for members of Aphidiinae are probably the best known of all of the braconid subfamilies (Pike *et al.* 2000). Aphidiines have been used extensively

in biocontrol programs. For example, *Aphidius ervi* has been introduced into several regions in North America, including British Columbia, to control the pea aphid, *Acyrthosiphon pisum* Harris (Mackauer and Campbell 1972). However, Marsh (1977) and Starý (1974) suggested that this species was likely present in North America prior to purposeful introductions. *Aphidius smithi* was introduced into Manitoba for pea aphid control, though *A. ervi* was discovered simultaneously to be established in Manitoba and a more effective parasitoid of the pea aphid than *A. smithi* (Wylie *et al.* 2005). There are 21 species from eight genera recorded from the Prairies Ecozone, two of which are new records (Table 1). Of particular interest is the new record for Manitoba for the parasitoid *Diaeretiella rapae*, which has been introduced into North America to control the exotic Russian wheat aphid, *Diuraphis noxia* (Mordvilko) (Brewer *et al.* 2001). *Diaeretiella rapae* has been recorded in Canada previously by Treherne (1916) in Ontario and by Strickland (1946) in Lethbridge, Alberta. We also report *Sipha agropyronensis* as a new host record for *D. rapae* on the basis of specimens in the JBWM (Table 2). *Aphidius avenaphis* (Fitch) is also a new record for Manitoba, although the species identity was not confirmed confidently.

Brachistinae

Here we follow the higher classification of Brachistinae *sensu* Sharanowski *et al.* (2011), which includes the tribes Blacini, Brachistini, Brulleiini, Diospilini, and Eadyini. Host records are scarce for most members of Brachistinae; however, it is likely that all species are solitary koinobiont endoparasitoids of Coleoptera larvae, especially species of Anobiidae, Cerambycidae, Chrysomelidae, Curculionidae, and Mordellidae (Yu *et al.* 2011). Several hosts of members of Brachistinae are major crop pests, such as the red sunflower seed weevil, *Smicronyx fulvus* LeConte, which is parasitized by *Triaspis aequoris*. Interestingly, *T. aequoris* has not yet been discovered in the Canadian Prairies Ecozone, even though sunflowers (various varieties of *Helianthus annus* L.) are grown in the southern regions of Manitoba and *T. aequoris* has been collected just across the border in North Dakota (Charlet 2002). Numerous species of *Blacus*, *Eubazus*, *Nealiolus*, and *Triaspis* have been collected in the Prairies Ecozone of Manitoba, and several will be described and recorded as new records in a future publication (BJS, unpublished data). To date, however, there are only eight published species records from two genera recorded from the Prairies Ecozone (Table 1).

Braconinae

Members of the speciose subfamily Braconinae are commonly collected in the Prairies Ecozone (BJS, pers. obs.), although generally they are far more speciose in tropical than in temperate regions (Mason 1978). Only 16 species in five genera are recorded from the Prairie Provinces, and only 12 species have definitive records from the Prairies Ecozone (Table 1). Generally, most diversity in the prairies and in Canada occurs in the large genus *Bracon* (Mason 178). The majority of records listed here (Table 1) are from Strickland's (1946) checklist of Ichneumonoidea in Alberta. Generally, braconines are idiobiont ectoparasitoids (parasitoids that immobilize the host and prevent its further development) and as a group, they attack a wide variety of insect hosts, including species of Diptera, Coleoptera, Lepidoptera, and Hymenoptera. *Atanycolus charus* attacks the bronze birch borer, *Agrilus anxius* Gory, which can be highly problematic in natural birch stands as well as in urban birch plantings in the prairies. Species of *Coeloides* are common larval parasitoids of bark beetles (Curculionidae: Scolytinae), and C. *rufovariegatus* is known to attack several pest species of *Dendroctonus*

and *Ips* (Mason 1978). *Habrobracon gelechiae* has a broad host range that includes some agricultural pests such as the European corn borer, *Ostrinia nubialis* Hübner. *Bracon cephi* attacks the wheat stem sawfly (*Cephus cinctus* Norton), one of the major pests of wheat in the grassland prairies of Canada and the United States; therefore, its biology is well-known (Nelson and Farstad 1953). *Bracon lissogaster* Muesebeck was recently reported in the Prairies Ecozone in southern Alberta (Cárcamo *et al*. 2012).

Cardiochilinae

Cardiochilines are koinobiont endoparasitoids of lepidopteran larvae, especially species of Noctuidae and Pyralidae (Huddleston and Walker 1988). There are only five cardiochiline species known from Canada (Yu *et al.* 2011), two of which have been recorded from the Prairies Ecozone (Table 1) and only known from Lethbridge, Alberta. Additional sampling will likely reveal more species; however, we have yet to collect cardiochilines, at least in Manitoba (BJS, pers. obs.).

Cenocoeliinae

Cenocoeliinae is a small subfamily with seven genera worldwide, of which only *Cenocoelius* is found in Canada (Yu *et al.* 2011). Saffer (1982) recognized 24 species of *Cenocoelius* in North America, four of which occur in Canada and three of which are recorded from the Prairies Ecozone, all from Manitoba (Table 1). However, they are rare in Malaise trap and sweep net samples from this region (BJS, pers. obs.). Reliable host records indicate that species of *Cenocoelius* attack wood-boring beetle larvae, primarily species of Buprestidae, Cerambycidae, and Curculionidae (Saffer 1982).

Charmontinae

Charmontini was formerly placed within Homolobinae (van Achterberg 1979), but was elevated to subfamily rank by Quicke and van Achterberg (1990) on the basis of morphological characters of the ovipositor that suggested a closer relationship to Macrocentrinae. This hypothesis was also supported by the molecular phylogeny of Sharanowski *et al.* (2011). Generally, charmontines are koinobiont endoparasitoids of concealed lepidopteran larvae (Quicke and van Achterberg 1990). Charmontinae includes two genera, *Charmontia* and *Charmon*, only the latter of which occurs in Canada. Two species have been reported in Canada, and only one of these, the widely distributed *Charmon extensor*, is known from the Prairies Ecozone (Table 1).

Cheloninae

Chelonines are frequently collected in Malaise trap and sweep net samples in the Prairies Ecozone (BJS, pers. obs.). Generally, chelonines are solitary koinobiont egg–larval endoparasitoids of lepidopterans. The biology of many species is well-known, as several chelonines are excellent natural control agents of many pest species, particularly in agriculture (Jones 1985; Grossniklaus-Bürgin *et al.* 1994). They are also studied for their physiological effects on hosts, given their interesting associations with polydnaviruses and a wide variety of venom proteins (Bonvin *et al.* 2004; Kaeslin *et al.* 2010). There are 13 species from three genera recorded from the Prairies Ecozone, two of which are new records (Table 1). *Chelonus sericeus* has been recorded from the dingy cutworm, *Feltia jaculifera* Guenée (=*ducens* Walker), and the new record reported here also includes reared material from the dingy and the redbacked cutworm, *Euxoa ochrogaster* Guenée (Table 2). However, ongoing rearing experiments of both the dingy and redbacked cutworms

in Manitoba have not yet produced any species of *Chelonus* (RWMUMW and BJS, unpublished data), and thus *Chelonus sericeus* is likely a rare parasitoid on these hosts.

Doryctinae

Doryctines are members of a heterogeneous lineage and in desperate need of a revision of the higher classification, as well as within several genera (Quicke and van Achterberg 1990; Sharanowski *et al.* 2011). Most doryctines are idiobiont ectoparasitoids of wood-boring Coleoptera larvae; however, several other groups are also attacked, including Lepidoptera, Hymenoptera, and even Embioptera. Many species have little to no known host information. There are currently more than 1,600 species in the subfamily, but only 33 are reported from Canada (Yu *et al.* 2011). The diversity in Canada is likely much higher, but the large size of the subfamily and paucity of identification keys for species increases the difficulty of accurate species-level identification. There are nine species from five genera reported in the Prairies Ecozone.

Euphorinae

Following the higher classification of Sharanowski *et al.* (2011), Euphorinae now includes Meteorini and Neoneurini as tribes instead of individual subfamilies. Because of the taxonomic instability of Euphorini, *Peristenus* is treated here as a subgenus of *Leiophron* in accordance with the classification in Taxapad (Yu *et al.* 2011). All euphorines are koinobiont endoparasitoids, but attack a wide variety of hosts from different orders and from early larval stages to adults (Shaw 2004). Many species of Euphorinae are important biological control agents, particularly of agricultural pests; thus, there have been several taxonomic works on euphorine taxa (e.g., Wylie and Loan 1984; Goulet and Mason 2006). Interestingly, euphorines are also studied for their ability to interfere with biological control programs, especially since they are major parasitoids of beneficial ladybird beetles (Riddick *et al.* 2009). For example, *Dinocampus coccinellae* Schrank attacks several species of ladybird beetles (Wright and Laing 1982). There are 25 species from seven genera recorded from the Prairies Ecozone, three of which are new records, all species of *Meteorus* (Table 1). Of particular interest are the species of *Leiophron*, which are biocontrol agents of *Lygus* spp. (Hemiptera: Miridae) (Loan 1974; Goulet and Mason 2006), major pests on several Canadian crops.

Gnamptodontinae

Gnamptodontinae is a very small subfamily with 88 described species worldwide (Yu *et al.* 2011). Only five species are reported from Canada and only one (*Exodontiella muesebecki* Wharton) from the Prairies Ecozone (Table 1). The hosts for this species are unknown.

Homolobinae

Homolobines are koinobiont endoparasitoids and attack exposed lepidopteran larvae (van Achterberg 1979), particularly species of Geometridae and Noctuidae, many of which are agricultural pests. Only four species are known from Canada of 62 described worldwide. Only *Homolobus truncator* is known from the Prairies Ecozone (Table 1), where it attacks numerous species of cutworms and armyworms.

Ichneutinae

Only four species of Ichneutinae have ever been reported from Canada, which is surprising given that their sawfly hosts are numerous and highly diverse in Canada (Goulet 1992). The relative rarity of ichneutines may be because ichneumonid sawfly parasitoids are better

competitors than ichneutine species in temperate regions. Future biodiversity studies will certainly reveal additional species; however, as of now, only one species is known in the Prairies Ecozone (Table 1). *Ichneutes pikonematis* attacks the yellowhead spruce sawfly, *Pikonema alaskensis* (Rohwer), in eastern Canada.

Macrocentrinae

Macrocentrines are koinobiont endoparasitoids of both large and small lepidopteran larvae. There are 31 species known from Canada (Yu *et al.* 2011) and 17 of these taxa occur in the Prairies Ecozone (Table 1). Much of our knowledge of macrocentrine species comes from Ahlstrom's (2005) revision of the subfamily, and most of the diversity includes species of *Macrocentrus*. Many species are reported from multiple hosts (Yu *et al.* 2011).

Microgastrinae

Microgastrinae is a highly speciose lineage with over 2,200 species described worldwide (Yu *et al.* 2011). Microgastrines are koinobiont endoparasitoids of lepidopteran larvae and generally attack early instars. Several species are important biological control agents of both agricultural and forest pests (Krause *et al.* 1990; Sarfraz *et al.* 2005). Whitfield (1995: 245) has described Microgastrinae as "the most important single group of parasitoids of Lepidoptera in the world." Although identification to subfamily is simple given their unique wing venation and antennal flagellomeres, identification to species is often incredibly difficult as there are numerous cryptic species and few diagnostic characters at the species level for many genera (Smith *et al.* 2008). However, Whitfield (1997) provides an excellent key to genera for the New World. There are 53 species in nine genera recorded from the Prairies Ecozone (Table 1).

Opiinae

Opiinae is also a large speciose lineage, with over 1,900 described species (Yu *et al.* 2011); they are commonly collected in Malaise traps and sweep net samples throughout the region (BJS, pers. obs.). Members of Opiinae are koinobiont endoparasitoids of cyclorrhaphous Diptera and use a relatively wide diversity of hosts, although agromyzid leaf miners and tephritid fruit flies are the most common (Quicke and van Achterberg 1990). There is extensive literature on the biology and ecology of many species of opiines, particularly those species that attack *Rhagoletis* fruit flies. Much of our knowledge of the opiines in the Prairies Ecozone comes from Fischer's (1964, 1965, 1977) revisionary works. However, the more recent treatment of Opiinae by Wharton (1988*b*) includes updated taxonomic treatments for many genera and tribes. There are 28 species from nine genera recorded from the Canadian Prairies, including four new records (Table 1). *Opius dimidiatus* Ashmead could not be confidently identified to species; however, if the identification is correct, this represents a new record for Canada and Manitoba. *Opius dimidiatus* has been recorded from northern US states such as Minnesota, and so it is not unreasonable that this species would also be present in Manitoba.

Orgilinae

Members of Orgilinae are koinobiont endoparasitoids of concealed microlepidopteran larvae. There are 36 species of Orgilinae in Canada, all species of *Orgilus* (Yu *et al.* 2011). A few species of Orgilinae are commonly collected in Malaise trap samples in the prairies (BJS, pers. obs.). Five species of *Orgilus* are recorded from the Prairies Ecozone (Table 1), although there are no known host records for these species.

Rhysipolinae

This small subfamily has been variably placed within Rogadinae, Hormiinae, and Exothecinae, but has recently been elevated to subfamily status (Quicke 1994; van Achterberg 1995). Members of Rhysipolinae are koinobiont ectoparasitoids of small lepidopteran larvae. There are only six species from two genera recorded from Canada and five of these occur in the Prairies Ecozone (Table 1).

Rhyssalinae

This subfamily was recognized by Quicke and van Achterberg (1990) and now includes several taxa that were formerly included in a variety of different subfamilies. Generally, rhyssalines are idiobiont ectoparasitoids of Coleoptera and Lepidoptera (van Achterberg 1995). There are five species recorded from Canada, but only *Histeromerus canadensis* has been recorded from the Prairie Provinces—and only from Alberta (van Achterberg 1992) (Table 1).

Rogadinae

Rogadines are koinobiont parasitoids that attack both concealed and exposed lepidopteran larvae and use the dead host (or mummy) as a pupation chamber (Zaldivar-Riverón *et al.* 2008). There are 45 species recorded from Canada, all but four in the large and cosmopolitan genus *Aleiodes*. Eleven species, including 10 species of *Aleiodes*, are recorded from the Prairies Ecozone. *Aleiodes stigmator* is a new record for Manitoba and the Canadian Prairies (Tables 1 and 2). Several species in the checklist attack forest pests. For example, *Aleiodes malacosomatos* attacks the forest tent caterpillar, *Malacosoma disstria* Hübner.

Sigalphinae

Sigalphinae is small subfamily of larval lepidopteran parasitoids. There is only one species recorded from Canada and the Prairies Ecozone, *Sigalphus bicolor*, which has a wide distribution across North America (Sharkey and Janzen 1995) (Table 1). This species parasitizes dagger moths in the genus *Acronicta* (Noctuidae).

Concluding Comments

The 251 species in the compiled checklist is certainly a vast underestimate of the actual diversity of Braconidae in the Prairies Ecozone. Ongoing collections (BJS, unpublished data) have revealed numerous new species and new records; however, these species await description and formal publication. Biodiversity studies are much needed in this ecozone, particularly in remnant native grassland regions and the unique sandy or upland regions within the ecozone, such as the Tall Grass Prairie Preserve in Manitoba, Grasslands National Park in Saskatchewan, Suffield National Wildlife Area in Alberta, Spruce Woods Provincial Park in Manitoba, and Cypress Hills Interprovincial Park crossing through Saskatchewan and Alberta. Biodiversity studies of parasitic wasps in agroecosystems would also be an important and much needed contribution to facilitate ecological approaches to pest control. It is hoped that this checklist will facilitate future biodiversity studies, assist with conservation programs, and assist biocontrol researchers. The 14 new records discovered in the JBWM emphasize the importance of museums and specimen databasing. There are numerous other specimens in the museum that have not yet been determined to species, and it is likely that numerous new records will be discovered as that material is identified.

Table 2. Label data for specimens in the Wallis-Roughley Museum of Entomology (JBWM) that represent new locality records for a province or for Canada. Labels are presented verbatim. JBWM codes are internal bar-code numbers that are included as labels on individual specimens. A double bar (||) indicates a new line on a label. A double plus sign (++) indicates a new label.

JBWM	Verbatim Label
Alysiinae	
Aphaereta minuta. New Record for Canada and Manitoba	
114655	13.Sept.00||Fr pupa||Carman||14-15 Aug 00++Det: Hemma 03'
114656	13.Sept.00||Fr pupa||Carman||14-15 Aug 00++Det: Hemma 03'
114657	13.Sept.00||Fr pupa||Carman||14-15 Aug 00++Det: Hemma 03'
114658	13.Sept.00||Fr pupa||Carman||14-15 Aug 00++Det: Hemma 03'
Aphaereta pallipes. New Record for Manitoba	
248815	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248816	Glenlea, Man.||coll 74a 28/07/77||H.G. Wylie++Ex. Dip puparium on||12/08/77
248817	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248818	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248819	Glenlea, Man.||coll 74a 27/07/77||H.G. Wylie++Ex. Dip puparium on||12/08/77
248820	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248821	Glenlea, Man.||coll 74a 27/07/77||H.G. Wylie++Ex. Dip puparium on||12/08/77
248822	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248823	Glenlea, Man.||coll 74a 27/07/77||H.G. Wylie++Ex. Dip puparium on||12/08/77
248824	Glenlea, Man.||coll 113 25/10/77||em 19/11/77||H.G. Wylie
248825	Glenlea, Man.||coll 74a 27/07/77||H.G. Wylie++Ex. Dip puparium on||12/08/77
Aphidiinae	
Aphidius avenaphis. New Record for Manitoba	
256793	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256796	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256792	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256795	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256794	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256791	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974
256790	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74

JBWM	Verbatim Label
256789	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74
256788	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74
256787	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74
256786	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74
256785	Dugald, Man.||em. Aug. 20, 1974||H. G. Wylie++Ex. Aphid mummy||Macrosiphum||avenae ||coll. On wheat heads||Aug. 18, 1974 ++Aphidius||avenaphis||H.E. Bisdee 74
Diaeretiella rapae. New Record for Manitoba. New host record.	
258007	WINNIPEG, MAN.||COLL #28||Em. July 10/80||H. G. WYLIE++Host||Sipha||agrpyronensis||Gillette)
258006	WINNIPEG, MAN.||COLL #42||Em. July 28/80||H. G. WYLIE++Host||Sipha||agrpyronensis||Gillette)
258005	WINNIPEG, MAN.||COLL #123||27/10/75||H. G. WYLIE
258004	Winnipeg, Man.||coll. #123||27/10/75||H. G. WYLIE
258003	Winnipeg, Man.||coll. #123||27/10/75||H. G. WYLIE
258002	Winnipeg, Man.||coll. #123||27/10/75||H. G. WYLIE
258001	Winnipeg, Man.||coll. #123||27/10/75||H. G. WYLIE
258000	Winnipeg, Man.||coll. #123||27/10/75||H. G. WYLIE
258219	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258218	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258217	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258216	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258215	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258214	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258213	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258212	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258211	Winnipeg, Man.||6 FEB 78||PDA GREENHOUSE++Diaeretella||rapae (McI.)
258210	La Salle, Man.||coll. #1 Fld. 1||8/05/75||H. G. WYLIE++Diaeretella||rapae (McI)
258209	La Salle, Man.||coll. #1 Fld. 1||8/05/75||H. G. WYLIE++Diaeretella||rapae (McI) W. R. Mason 75
258208	FLD 1 SAMPLE 2||VOL> RAPE||08/05/75||H. G. WYLIE++Diaeretella||rapae (McI) W. R. Mason 75
Cheloninae	
Ascogaster argentifrons. New Record for Manitoba	
248810	Winnipeg, Man.||Coll 9 Feb 80||Leaf Litter||R. bilodeau++para pupa||11 Feb 80||Em. Mar 80
Chelonus sericeus. New Record for Manitoba	

248809 Oakbank, Man.||H. Coll 28 May, 1981|| G.L. Ayre ++H.L. Feltia ducens||PP 29 June 1981||Em: 15 July 1981++ W.R. Mason 81'

248808 Oakbank, Man.||H. Coll 28 May, 1981|| G.L. Ayre ++H.L. Euxoa ochrogaster||PP 29 June 1981||Em: 15 July 1981++ W.R. Mason 81'

Euphorinae

Meteorus humilis. New Record for Manitoba

249424 Winnipeg, Man.||3 Nov 1982||I.R. Wylie-Toal++From Leaf Litter

Meteorus hyphantriae. New Record for Manitoba

249323 Starbuck, Man.||Coll #10 Fld 5||11/06/75||H.G.Wylie

Meteorus pendulus. New Record for Manitoba

249425 Gnadenthal Man.||Lot 220||Coll. Sept 9/74 ||G. Layre++Light trap in sugar beet field

249427 Birtle, Man.||Lot 197||Em: Sept 18/74||H.G. Wylie++Host: Lepid larva coll. On rape aug 26/74

Opiinae

Biosteres carbonarius. New Record for Manitoba

248780 Glenlea, Man.||Coll. 93 Subplot I||15/08/78||H.G. Wylie

Diachasma alloeum. New Record for Manitoba

248887 Morden, Man.||8 AUG 1951||H.P.Rie AAROSON++Det: W. Mason 79'

Diachasmimorpha mellea. New Record for Manitoba

248894 Morden, Man.|| 8 August, 1951||H.P. Richardson++W. Mason 79

248893 Morden, Man.|| 8 August, 1951||H.P. Richardson++W. Mason 79

Opius dimidiatus. New Record for Canada and Manitoba

248886 Grandview, Man.||coll.31-8||20-V-76|H.G. Wylie

Rogadinae

Aleiodes stigmator. New Record for Manitoba

248990 Carrot R.||Sask.||Em.21-9-65||Inc.3896F.I.S.++MCMONICTA||Ex.DACTTLIMA||3896

248991 Carrot R.||Sask.||Em.21-9-65||Inc.3896F.I.S.++Acronista||Ex.DACTTLIMA||3896

248993 Carrot R.||Sask.||Em.21-9-65||Inc.3896F.I.S.++Acronicta||Ex.DACTYLIMA||3896

249000 Carrot R.||Sask.||Em.21-9-65||Inc.3896F.I.S.++Acronicta||Ex.DACTYLIMA||3896

249001 Carrot R.||Sask.||Em.21-9-65||Inc.3896F.I.S.++Acronicta||Ex.DACTYLIMA||3896

248995 CARROT||RIVER,SASK.||Em.23-9-65||Ex3896-O.I.S.++Ex.3896-01||Ex.Acronicta||dactylina||W65

248996 CARROT||RIVER,SASK.||Em.23-9-65||Ex3896-O.I.++Ex.3896-01||Ex.Acronicta||dactylina||W65

248997 CARROT||RIVER,SASK.||Em.23-9-65||Ex3896-O.I.S.++Ex.3896-01||Ex.Acronicta||dactylina||W65

248998 CARROT||RIVER,SASK.||Em.23-9-65||Ex3896-O.I.S.++Ex.3896-01||Ex.Acronicta||dactylina||W65

JBWM	Verbatim Label
248999	CARROT||RIVER,SASK.||Em.23-9-65||Ex3896-O.I.S.++Ex.3896-01||Ex.Acronicta||dactylina||W65
249022	DESCHHAMBAULT||LAKE, MAN.||Em. 16-9-65||Ex. 3804-01 F.I.S.++Ex 3804-01||Ex.Acronicta||dactylina||W65
249028	DESCHHAMBAULT||LAKE, SASK.||Em.16-9-65||Ex. 3804-01 F.I.S.++Ex 3804-01||Ex.Acronicta||dactylina||W65
249043	DESCHHAMBAULT||LAKE, SASK.||Em. 16-9-65||Ex. 3804-01.S.++Gx3804-01||Ex.AcronitTa||dactylina||W65
249018	Deschambault||Lk., SASK.||Em.20-10-65||Ex.4097-02 .S.++Ex. 4097-02||Ex. Acronicta||dactylina:W65
249019	Deschambault||Lk., SASK.||Em.20-10-65||Ex.4097-02 .S.++Ex. 4097-02||Ex. Acronicta||dactylina:W65
249020	Deschambault||Lk., SASK.||Em.20-10-65||Ex.4097-02 .S.++Ex. 4097-02||Ex. Acronicta||dactylina:W65
249021	Deschambault||Lake, SASK.||Em.20-10-65||Ex.4097-02 .S.++Ex. 4097-02||Ex. Acronicta||dactylina:W65
249026	EAST BRAIN-||TREE, MAN.||Em.1-9-65||Ex.3242-01 F.S.I.++Ex. 3242-01||Ex. Hyphantria||cunea W65++Meteorus||bakeri||C&D
249027	EAST BRAIN-||TREE, MAN.||Em.1-9-65||Ex.3242-01 F.S.I.++Ex. 3242-01||Ex. Hyphantria||cunea:W65
249002	Gilbert plains||Man.||Em.13-9-65||Inc.3619F.I.S.++Acronicta||Ex.Dactylina||3019
249014	Gilbert plains||Man.||Em.13-9-65||Inc.3619F.S.I.++Acronicta||Ex.Dactylina||3619
249015	Gilbert plains||Man.||Em.13-9-65||Inc.3619F.S.I.++Acronicta||Ex.Dactylina||3619
249003	Gilbert plains||Man.||Em.13-9-65||Inc.3618F.I.S.++Acronicta||Ex.Dactylina||3619
249004	Gilbert plains||Man.||Em.13-9-65||Inc.3619F.I.S.++Acronicta||Ex.Dactylina||3619
249042	Glenlea, Man.||Light traps||July 10/74.||H.G. Wylie++Rogas||stigmator||(say)
249049	Glenlea, Man.||coll. #21||7/07/75||H.G. Wylie++37++Bracon sp.
249050	Glenlea, Man.||coll. #21||7/07/75||H.G. Wylie++25++Bracon sp.
249056	Glenlea, Man.||coll.41 Vac.Sample||1/06/77||H.G. Wylie++19++Bracon||sp.
249055	Glenlea, Man.||coll.43 Vac.Sample||6/06/77||H.G. Wylie++20++Bracon||sp.
249057	Glenlea, Man.||coll.43 D-Vac.||1/08/80||H.G. Wylie++from||prostrate||knotweed++42++Bracon||sp.
249024	L. Katherine||Man||Em. 21-9-65||Inc. 3877 F.I.S.++A.dactylina||Ex. 3877||W-65
249038	L. Katherine||Man||Em. 21-9-65|| Inc. 3877 F.I.S.++A.dactylina||Ex. 3877||W-65
249044	L. Katherine||Man||Em. 21-9-65||Imc. 3877 F.I.S ++ A. Dactylina||Ex. 3877|| w-65
249045	L. Katherine||Man||Em. 21-9-65||Imc. 3877 F.I.S ++ A. Dactylina||Ex. 3877|| w-65
249046	L. Katherine||Man||Em. 21-9-65||Imc. 3877 F.I.S ++ A. Dactylina||Ex. 3877|| w-65
249047	L. Katherine||Man||Em. 21-9-65||Imc. 3877 F.I.S ++ A. Dactylina||Ex. 3877||W-65
249036	L. Katherine||Sask||Em.24-9-65||Inc.3877 F.S.I++ A. Dactylina||Ex.3877||W-65
249037	L. Katherine||Sask||Em.24-9-65||Inc.3877 F.S.I++ A. Dactylina||Ex.3877||W-65
249048	L. Katherine||Sask||Em.24-9-65||Inc.3877 F.S.I++ A. Dactylina||Ex.3877||W-65

249034 WADENA,||SASK.||Em.31-9-65||Inc.Ex.1314 (01F).I.S.++Ex.LITHOPHANES SP.||RRD.W65||Ex1314(01)
249035 KATHERINE||LAKE MAN;||Em. 30-9-65||Ex.387701 F.S.I++Ex.3871-01||Ex.Acronicta||dactylina||W65
249039 KATHERINE||LAKE, MAN.||Em. 30-6-65||Ex.3877-01 F.I.S++Ex. 3871-01||Ex. Acronicta||dactylina||W65
249025 MilNen||Ridge MAN||Em.8-9-65||Inc.3119 F.S.I.++Ex.Tetralopha||3119||w-65
249051 MORDEN MAN.||8 AUG 1951||H.P. RICHARDSON++BRACON SP.||W. MASON 79
249052 MORDEN MAN.||8 AUG 1951||H.P. RICHARDSON++BRACON SP.||W. MASON 79
249054 MORDEN MAN.||8 AUG 1951||H.P. RICHARDSON++BRACON SP.||W. MASON 79
249010 ordale||Sask.||Em.14-10-65||Inc.4035 F.I.S++Acronicta||Ex.Dactylina||U of S
249011 ordale||Sask.||Em.14-10-65||Inc.4035 F.I.S++Acronicta||Ex.Dactylina||U of S
249012 Ordale||Sask.||Ex. 14-10-65||Inc. 4085 F.S.I.++Acranicta||Ex. Dactylina||4085
249013 Ordale||Sask.||Ex. 14-10-65||Inc. 4085 F.S.I.++Acranicta||Ex. Dactylina||4085
249016 Ordale||Sask.||Ex. 14-10-65||Inc. 4085 F.S.I.++Acranicta||Ex. Dactylina||4085
249017 Acranicta||Ex. Dactylina||4085++Ordale||Sask||14-10-65||Inc.4085 F.S.I.
249077 Swan River, Man.||Lighttrap 2||11-VII-74||G. K. Braken++14++Petalodes||palmatus||Wly.
249078 Swan River, Man.||Lighttrap 2||17-VII-74||G. K. Braken++14++PETALODES||PALMATUS||WALLEY||W.R.MASON 94
249029 WADENA,||SASK||Em.31-9-65||Inc. Ex1314(01 F).I.S.++Ex.LITHOPANE SP.|| RRD. W65||Ex.1314(01)
249030 WADENA,||SASK||Em.31-9-65||Inc. Ex1314(01 F).I.S.++Ex.LITHOPANE SP.|| RRD. W65||Ex.1314(01)
249031 WADENA,||SASK.||Em. 21-7-65||Inc EX1314(01) F.I.S++Ex. LITHOPHANE SP.||RRD. W65||Ex.1314(01)
249033 WADENA,||SASK||Em.31-9-65||Inc. Ex1314(01 F).I.S.++Ex.LITHOPANE SP.|| RRD. W65||Ex.1314(01)
249032 WADENA,||SASK||Em. 21.7.65||Inc. Ex.1314(01) F.S.I.++Ex. LITHOPHANE SP.||RRD. W65||EX1314(01)
249008 White L.||Man||Em. 30-9-65||Inc.3945F.I.S++A Dactylina||Ex.3945||w-65
249009 White L.||Man||Em. 30-9-65||Inc.3945F.I.S++A Dactylina||Ex.3945||w-65
248994 White L.||Man||Em. 30-9-65||Inc.3945F.I.S++A. Dactylina||Ex.3945||w-65
249005 White L.||Man||Em. 30-9-65||Inc.3945F.I.S++A Dactylina||Ex.3877||w-65
249006 White L.||Man||Em. 30-9-65||Inc.3945F.I.S++A Dactylina||Ex.3945||w-65
249023 White L.||Man||Em. 5-10-65||Inc.3945F.I.S++Acronicta||Ex. Dactylina||3945||w-65
249007 White L.||Man||Em. 5-10-65||Inc.3945F.I.S++Mconista||Ex. Dactylina||3045||w-65
249053 WINNIPEG, MAN.||3 NOV. 1982||I.R.WYLIE-TOAL++From||leaf litter++Bracon sp.||Det. M.J. Sharkey 1984
249079 WINNIPEG, MAN.||3 NOV. 1982||I.R.WYLIE-TOAL++From||leaf litter++Cantharoctonus canadensis||Det. M.J. Sharkey 1984
249041 WINNIPEG, MAN||7 APRIL,1983||I.R. WYLIE-TOAL++From||leaf litter++Rogas||stigmator (say)||M. Sharkey /84

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