On the occurrence of *Pelecinus polyturator* (Hymenoptera: Pelecinidae) in Manitoba, Canada

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Pelecinus polyturator (Drury) is a striking, jet black wasp that is endoparasitic in June beetle larvae, *Phyllophaga spp.* in North, Central and South America (Hammond 1944, Lim *et al*. 1980, Johnson and Musetti 1999). The behaviour of this wasp is poorly known, with limited observations on host location by Davis (1919) and Bennett (2003) and on mating behaviour (Aguiar 1997). Hammond (1944) reported that 1-3% of *Phyllophaga* larvae were parasitized in Ontario and Québec. In 1999, Johnson and Musetti revised the genus *Pelecinus* Latreille, and provided extensive information on the distribution and biology of *P. polyturator*, the most widely distributed species in the genus. They obtained specimens for their study from a number of museums in Canada and the United States, and on that basis, plotted the distribution of the specimens they obtained, mostly from the eastern United States and southern Ontario, with scattered records from Central America, the central United States and Atlantic provinces (Fig. 7B, Johnson and Musetti 1999). They also provided a map to describe a climatic model with potential distribution for *P. polyturator* in North America (Fig. 7A, Johnson and Musetti 1999). Johnson and Musetti (1999) did not obtain any specimens of *P. polyturator* from Manitoba from any of the museums they contacted, nor did their climatic model include Manitoba even within the range of marginal climate for this species. There are many specimens of *P. polyturator* in the J.B. Wallis Museum, Department of Entomology, University of Manitoba, and the objective of this paper is to document these specimens and note the extension of the range of this species from what information is available in the literature. Records are cited below, in chronological order of collection date. *Pelecinus polyturator* is such a remarkable-looking wasp; it is habitually collected by entomologists, especially students who are preparing a collection for their courses. Many of the specimens reported here are the results of these students' efforts, and their contribution is gratefully acknowledged.

Specimens examined: CANADA: Manitoba: Lockport, 26.viii.1976, J.S. Lee, 1♀; Winnipeg, 10.viii.1978, 3♀♀, 20.viii.1978, P. Kok, 2♀♀; near Birds Hill Park, 13.viii.1980,

1♀, 15.viii.1980, 1♀, 16.viii.1980, 1♂, 4♀♀, 20.viii.1980, 2♀♀, T.R. Reichardt; Winnipeg, 24.viii.1980, W. Turnock, 1♀; Winnipeg, 29.viii.1980, I.R. Toal, 1♀; Birds Hill, 20.vi.1983, D. Pollock, 1♀; Birds Hill Provincial Park, 26.viii.1983, T.W. Suzanski, 1♀; Morden, 15.viii.1985, J. Leferink, 1♀; Winnipeg, 5.viii.1988, P. Wardle, 1♀; Winnipeg, 11.viii.1989, S. Pernal, 1♀; Winnipeg, 8.ix.1990, R.W. Turnock, 1♀; Winnipeg, 6.ix.1990, R.W. Turnock, 1♀; Winnipeg, 16.ix.1991, B.G. Elliot, 1♀; 7 mi. E. Rouseau River, 14.viii.1994, H. White and K.C. Roughley, 1♀; Tolstoi, 12.viii.1995, D.G. Delf, 1♀; Winnipeg, 20.viii.1995, T. McKay, 1♀; Winnipeg, 24.viii.1995, T. McKay, 1♀; 2km E. Brunkild, 8.viii.1996, F.L. Dewar, 1♀; near Gardenton Tallgrass Prairie site, 26.viii.1996, H. White, 1♀; 2km SW. Gardenton 3.ix.1998, C. Borkowsky, 1♀; 6km. S., 11km. W. Elma, Lewis Road, 29.viii.1999, R.E. Wrigley, 1♀; Winnipeg, 10.ix.2001, R.M. Underwood, 1♀; Winnipeg, 16.ix.2001, T.J. Underwood, 1♀; Winnipeg, 31.viii.2002, T. Mousseau, 1♀; Winnipeg, 24.viii.2003, D. Dykes, 1♀; 3 mi. W., Winnipeg, 18.ix.2004, R.E. Wrigley, 1♀; 3 mi. N. Winkler on High #3, Burnwalde Woods, 12.viii.2006, K. Froese, 1♀; Winnipeg, 28.viii.2008, T.D. Galloway, 1♀.

Among these specimens, abdominal segment 2 (segment 1 of the metasoma – the apparent abdomen) in nearly all females is split open dorsally through the centre of the tergum. Mason (1984) described this segment as having the thinnest integument of any of the abdominal segments, but he did not mention its propensity to split open. This segment contains most of the gut, ovaries and Malpighian tubules, as well as large levator muscles (Mason 1984), which may also contribute to the split in the tergum as the specimen dries.

There are five species of *Phyllophaga* reported for Manitoba: *P. anxia* (LeConte), *P. drakeii* (Kirby), *P. lanceolata* (Say), *P. nitida* (LeConte) and *P. rugosa* (Melsheimer) (McNamara 1991), some of which are widely distributed in the southern part of the province. It is possible that any or all of these species may serve as hosts for *P. polyturator*, and it is clear that *P. polyturator* is well established in Manitoba, despite the predictions of the model by Johnson and Musetti (1999). The question remains whether the range of *P. polyturator* has recently expanded into Manitoba, or whether it has been in the province for a much longer time. The earliest specimen deposited in the J.B. Wallis Museum was collected in 1976 by Jack Lee. There are no specimens in the collection of representative insects of Manitoba compiled by J.B. Wallis in the 1950's and 1960's. Given the unusual appearance and conspicuous nature of *P. polyturator*, which in combination make it attractive for entomologists to collect, it is surprising that there are no earlier records available, unless it was rare or absent prior to that time. Although we will probably never know the answer to this question, intensive collecting in the future may help to determine the limits to the range of *P. polyturator* in Manitoba, and perhaps even whether its range is expanding.

Pelecinus polyturator is most frequently collected in late summer in Manitoba. The majority of specimens were collected in August and early September, consistent with collecting dates for this species presented by Johnson and Musetti (1999). One specimen collected by Darren Pollock in June is anomalous, or perhaps there is an error in the date recorded. Todd Reichardt collected many specimens from his field study site near Birds Hill Provincial Park in 1980, and he noted its abundance there beyond the nine specimens he collected. However, of particular interest in his collections is

the one male specimen he found. The skewed sex ratio is typical for *P. polyturator*, which is predominantly thelytokous at northern latitudes, and bisexual in southern parts of its range (Johnson and Musetti 1998). Johnson and Musetti (1999) found that about 4% of specimens from northern latitudes in museums were males, but they believed this prevalence to be biased because entomologists would be more inclined to collect males if they encountered them. That is consistent with Reichardt's collections, because he collected only a small number of females relative to the number present in the field at the time, but was enormously excited by encountering that one male specimen.

Pelecinus polyturator is a very interesting wasp for which there are many important gaps in our knowledge. Hopefully people will continue to collect this species at the northern limits of its range.

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