

SCIENTIFIC NOTE

Polistes dominulus* (Christ) (Hymenoptera: Vespidae: Polistinae) in British Columbia: first collection records of an invasive European paper wasp in Canada*CHRISTOPHER J. BORKENT¹ and ROBERT A. CANNINGS²**

Two species of the cosmopolitan genus *Polistes* (paper wasps), *P. fuscatus* (Fabricius) and *P. aurifer* Saussure, are native to British Columbia (Carpenter 1996), although some entomologists consider *P. aurifer* a subspecies of *P. fuscatus* (Kenner 2002). These wasps are frequently confused with yellowjacket species (Vespinae) but are easily distinguished by their thread waist, their habit of trailing their legs in flight, and their nests of exposed cells. They frequently nest on man-made structures.

The European paper wasp, *P. dominulus* (Christ) (Fig. 1), native to Europe, Asia and North Africa, has been introduced into the USA, Australia and Chile (Carpenter 1996). It was first recorded in the USA from Massachusetts in the late 1970s (Eickwort 1978) and its range has since expanded south and west, covering most of the northeastern states (Judd and Carpenter 1996, Pickett and Wenzel 2000, Gamboa *et al.* 2004, Johnson and Starks 2004). It has also moved north to Kingston (sighted in 2002) and Sandfield (2004), Ontario (H. Goulet, Agriculture and Agri-food Canada, pers. comm.), but apparently no specimens have been collected in eastern Canada. *Polistes dominulus* has recently appeared in the western USA from Washington to California and east to Colorado (Landolt and Antonelli 1999, Pickett 2003). It is not clear if these populations are the result of new introductions, possibly from Asia, or of a western expansion of eastern introductions (Johnson and Starks 2004).

In British Columbia, *P. dominulus* was first recorded in late August 2003, when D. Manastryski (3808 Rowland Dr. Victoria,

BC) photographed a nest (identified by H. Goulet) in Saanich. No specimens were collected, but the photograph was published on the back cover of the Entomological Society of Canada 2003 meeting program. On 5 September 2004, while walking along the shore of Shuswap Lake in Salmon Arm, the first author found a pre-hibernation cluster of about 25 unusual wasps under an overhang on a wooden signpost. One was collected and identified as *P. dominulus*. Art Borkent (Royal BC Museum, Victoria, BC) collected 10 wasps from the same cluster on 20 September 2004. There was no nest or nest-building activity; this late-season aggregation behaviour has been previously reported for the species (Landolt and Antonelli 1999).

On 30 September 2004, a *P. dominulus* nest was collected from a nail protruding from the eaves of a house in Saanich, BC. The nest had three female wasps on its surface (Fig. 1) and 17 between the eaves and the back of the nest. The wasps may have congregated for warmth; the temperature was 7 °C (2130 PDT). The nest held 206 cells, six of which contained larvae in various stages of development. A few other cells were less than a third filled with nectar. This cell number falls well within the range documented for the species by Pickett and Wenzel (2000). None of the specimens collected at either site showed signs of Strepsiptera parasitism. Voucher specimens from both localities are deposited at the Royal BC Museum, Victoria, BC, and the Canadian National Collection of Insects, Ottawa, Ontario.

Polistes dominulus is distinguished from the native *P. aurifer* and *P. fuscatus*

¹ Corresponding author: 2396 Estevan Ave., Victoria, BC, V8R 2S5; email: cborkent@alumni.uvic.ca

² Royal BC Museum, 675 Belleville St., Victoria, BC, V8W 9W2

by the yellow patterns on the thorax (Fig. 2). *Polistes dominulus* individuals are usually the size of yellowjacket wasps, making them smaller than native species.

Although *P. dominulus* is clearly expanding its range, the effect of this invasion on native species is not as easily determined (Pickett and Wenzel 2000, Johnson and Starks 2004). The recent appearance of *P. dominulus* in BC provides an opportunity to measure its effect on native *Polistes* populations. Probably it will in-

crease in abundance within its new BC range, resulting in many more observations in and around human dwellings, where it prefers to nest.

We thank D. Manastryski, A. Borkent and H. Goulet for their help in collection and discussion of *P. dominulus*. The manuscript was improved by comments from J. Carpenter and an anonymous reviewer. This study was supported in part by funds from the Royal BC Museum.



Figure 1. Females of *Polistes dominulus* at a nest in Saanich, BC, 30 September 2004.

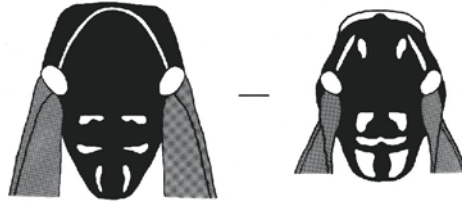


Figure 2. Diagrammatic representation of the thorax of *Polistes aurifer* or *P. fuscatus* (left) and *P. dominulus* (right), showing differences in size and markings (white areas = yellow). Gray areas represent wings. Scale line = 1 mm.

REFERENCES

- Eickwort, G.C. 1978. *Polistes dominulus* discovered near Boston. Polistine Information Bulletin Newsletter.
- Gamboa, G.J., M.A. Noble, M.C. Thom, J.L. Tegal, R. Srinivasan and B.D. Murphy. 2004. The comparative biology of two sympatric paper wasps in Michigan, the native *Polistes fuscatus* and the invasive *Polistes dominulus* (Hymenoptera, Vespidae). *Insectes Sociaux* 51:153-157.
- Johnson, R.N. and P.T. Starks. 2004. A surprising level of genetic diversity in an invasive wasp: *Polistes dominulus* in the northeastern United States. *Annals of the Entomological Society of America* 97: 732-737.
- Judd, T.M. and J.M. Carpenter. 1996. *Polistes dominulus* (Hymenoptera: Vespidae) found in Michigan. *Great Lakes Entomologist* 29: 45-46.
- Kenner, R. 2002. *Stylops shannoni* (Stylopidae, Strepsiptera): A new species for Canada, with comments on *Xenos peckii*. *Journal of the Entomological Society of British Columbia* 99: 99-102.
- Landolt, P.J. and A. Antonelli. 1999. The Paper wasp *Polistes dominulus* (Christ) (Hymenoptera: Vespidae) in the state of Washington. *Pan-Pacific Entomologist* 75: 58-59.
- Pickett, K.M. 2003. Evolution of transitional forms: behavior, colony dynamics, and phylogenetics of social wasps (Hymenoptera: Vespidae). Ph.D. dissertation, Ohio State University, Columbus, Ohio.
- Pickett, K.M. and J.W. Wenzel. 2000. High productivity in haplometrotic colonies of the introduced Paper wasp *Polistes dominulus* (Hymenoptera: Vespidae; Polistinae). *Journal of the New York Entomological Society* 108: 314-325.