

***Hippodamia variegata* (Goeze) (Coleoptera: Coccinellidae) Found in South Dakota, U.S.A.**

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SCIENTIFIC NOTE

***HIPPODAMIA VARIEGATA* (GOEZE) (COLEOPTERA: COCCINELLIDAE)
FOUND IN SOUTH DAKOTA, U.S.A.**

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Hippodamia variegata (Goeze) is a Palearctic coccinellid that was first reported from North America in Québec, Canada (Gordon 1987). It has radiated into much of eastern North America (Wheeler and Stoops 1996; McCorquodale 1998; Ellis *et al.* 1999; Gardiner and Parsons 2005; Day and Tatman 2006), and its geographic range expansion had progressed to western Wisconsin by 2009 (Williams and Young 2009). We have monitored populations of lady beetles in eastern South Dakota over the past several years through 2009, but *H. variegata* was not detected (Hesler and Kieckhefer 2008; Hesler and Petersen 2008; unpublished data). Herein we document the presence of *H. variegata* in South Dakota from continued collection efforts in 2010. Number of specimens collected and their depository are given between brackets with JGLC = J. G. Lundgren Collection and NCARL = North Central Agricultural Research Laboratory.

New State Records. SOUTH DAKOTA, Brookings County: Eastern South Dakota Soil and Water Research Farm (ESDSWRF), 44.3 N, 96.8 W, *Elymus trachycaulus* (Link) Gould ex Shinners (Poaceae), 18-V-2010, slender wheatgrass plot, J. G. Lundgren [3 adults JGLC]; ESDSWRF, 2 km north of Brookings, alfalfa plot B13, 26-V-2010, E. A. Beckendorf and P. A. Rozeboom [2 adults NCARL]; NCARL, 1 km north of Brookings, 26-V-2010, spring wheat plot A12, G. McNickle [1 adult NCARL]; ESDSWRF, 2 km north of Brookings, 1-VI-2010, alfalfa plot B8, E. A. Beckendorf and P. A. Rozeboom [1 adult NCARL]; NCARL, 1 km north of Brookings, 3-VI-2010, alfalfa plot A15, E. A. Beckendorf and P. A. Rozeboom [1 adult NCARL]; NCARL, 1 km north of Brookings, 16-VI-2010, winter wheat plot A13, E. A. Beckendorf and P. A. Rozeboom [1 adult NCARL]; Brookings Prairie, 1 km south of Brookings, 16-VI-2010, E. A. Beckendorf and P. A. Rozeboom [1 adult, specimen lost]; NCARL, 1 km north of Brookings, 21-VI-2010, spring wheat plot A12, G. McNickle [1 adult NCARL]; ESDSWRF, 2 km north of Brookings, 22-VI-2010, spring wheat plot C2, E. A. Beckendorf and

P. A. Rozeboom [1 adult NCARL]; NCARL, 1 km north of Brookings, 22-VI-2010, winter wheat plot A13, E. A. Beckendorf and P. A. Rozeboom [1 adult NCARL]; 2 km north of Brookings, 23-VI-2010, alfalfa, G. McNickle [3 adults NCARL]; 2 km north of Brookings, 24-VI-2010, oats field B7, L. S. Hesler [1 adult NCARL]; ESDSWRF, 2 km north of Brookings, 24-VI-2010, alfalfa plot B7, G. McNickle [3 adults NCARL], 2 km north of Brookings, 25-VIII-2010, alfalfa, G. McNickle [1 adult NCARL].

Hippodamia variegata was associated with English grain aphids and bird cherry-oat aphids in wheat, and with pea aphids in alfalfa in our survey. Previous surveys in other areas of North America recorded *H. variegata* from wheat and alfalfa (Ellis *et al.* 1999; Day and Tatman 2006). Potential prey in slender wheatgrass and the prairie was undetermined in our survey, but *H. variegata* has also been associated previously with plant species that occur in prairies (Ellis *et al.* 1999).

The detection of *H. variegata* in South Dakota was unexpected this soon, as the nearest records of this species occurred approximately 400 km away in western Wisconsin in 2009 (Williams and Young 2009). The collections of 21 *H. variegata* during summer 2010 indicate that this species is now well established in Brookings County, South Dakota. In addition to weekly sampling of lady beetles in crop fields in Brookings County during the summer of 2010, other surveys for lady beetles in South Dakota did not find *H. variegata* at a nature preserve in Minnehaha County on 4 June or one in Beadle County on 31 July, suggesting a still limited local distribution. Additional surveys are needed to determine the extent to which *H. variegata* is present in South Dakota and to follow its geographic dispersion.

Hippodamia variegata was released in Nebraska and several other Midwestern states, but not South Dakota, from 1987 to 1994 for intended biological control of the Russian wheat aphid (Flanders *et al.* 1991; Prokrym *et al.* 1998). However, the releases were deemed unsuccessful in establishing *H. variegata* (Ellis *et al.* 1999). As *H. variegata* was not released

in South Dakota for biological control of any specific arthropod pest, it will be important to identify habitats where *H. variegata* is reproducing and to determine its impact on various prey species. If *H. variegata* becomes abundant in this region, potential outcomes include improved pest management through fortuitous biological control, disruption of biological control that arises from negative interactions with other natural enemies, and negative impacts on non-target prey (Obrycki *et al.* 2000; Williams and Young 2009). Additional studies are warranted to monitor populations of *H. variegata* in South Dakota and to determine its effects within native and anthropogenic insect communities (Wheeler and Stoops 1996; Ellis *et al.* 1999; Hesler and Kieckhefer 2008).

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