


First record of *Hyperaspis concavus* Watson in Canada and a key to selected species of *Hyperaspis* of eastern North America (Coleoptera, Coccinellidae, Hyperaspidini)

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Introduction

Ladybirds (Coleoptera, Coccinellidae) exhibit a rich variety of trophic relationships: larvae and adults are often predators of sternorrhynchan Hemiptera, but there are several phytophagous and mycophagous lineages as well (Ślipiński & Tomaszewska 2010). Members of the genus *Hyperaspis* Chevrolat (Hyperaspidini) predominantly feed on scale insects (Coccoidea) and aphids (Aphidoidea) (Gordon & Canepari 2008). *Hyperaspis*, including more than 400 species (Iqbal et al. 2019), has a worldwide distribution, but most species inhabit the Nearctic and Neotropical regions (Gordon 1985, Gordon & Canepari 2008). To date, 27 *Hyperaspis* species have been recorded in Canada (Majka et al. 2006, Larson 2013), 9 from the province of Quebec (Larochelle 1979, Laplante et al. 1991). While studying the ladybirds of Quebec at the Ouellet-Robert Entomological Collection (QMOR), a species new to Canada was identified.

Results and Discussion

Hyperaspis concavus Watson, 1969, was described from specimens deposited in the University of Michigan Museum of Zoology (UMMZ). Unfortunately, the genitalia of the type specimen (Fig. 1), glued to a card are missing (Ken Eldredge, pers. comm.). Until now, this species was known from 4 specimens (2 ♂ and 2 ♀) and is distributed in the eastern part of USA: New York: Ithaca (Gordon 1985); New Hampshire: summits of Mt Whiteface (Gordon 1985) and Mt Washington (Watson 1969). Females are not separable from most other two-spotted species having entirely black pronotum (Gordon 1985). Identification therefore requires examination and genitalic dissection of male specimens. In this study, the specimens were identified mostly based on male genitalia and using the keys of Watson (1969), Gordon (1985) and Larson (2013). Five specimens were found in the

QMOR collection (QMOR74,843-47) (Fig. 2) from Montréal and Berthierville, Quebec. They represent new records for Canada.

Eleven two-spotted *Hyperaspis* species are known from the eastern part of North America (New England, Mid-Atlantic and East North Central regional US divisions; and Eastern provinces of Canada), and can be distinguished using the following identification key (modified from Watson 1969 and Gordon 1985):

1. Elytron with a single median spot 3
 - Elytron with the spot in another position ... 2
- 2(1). Apical spot *bigeminata* (Randall)
 - Spot on elytron obliquely elongate, near suture *moerens* LeConte
- 3(1). Large, median yellow spot extending from lateral margin nearly to suture *lewisi* Crotch
 - Smaller spot, not touching the suture 4
- 4(3). Basal lobe of male genitalia shorter than paramera, with lateral projection 5
 - Basal lobe of male genitalia as long as paramera, not strongly asymmetrical, without lateral projection ... 9
- 5(4). Basal lobe of male genitalia with lateral projection on left side in ventral view.... *conviva* Casey
 - Basal lobe of male genitalia with lateral projection on right side in ventral view...6
- 6(5). Basal lobe of male genitalia short (1/2 as paramera), strongly asymmetrical and deeply excavated on one side, paramere very broad and spatulate.... 7
 - Basal lobe of male genitalia long (2/3 as paramera), paramere not spatulate ...8
- 7(6). Pronotum of male with anterolateral angle and apical margin broadly yellow... *concavus* Watson
 - Pronotum of male narrowly yellow on lateral and apical margins.... *major* Dobzhansky
- 8(6). Basal lobe of male genitalia with apex rounded.... *pistillata* Watson
 - Basal lobe of male genitalia with apex truncate *signata signata* (Olivier)

9(4). Paramere broad at base, tapered to slender, rounded process in apical 1/3 ... *rivularis* Dobzhansky
 - Paramere slender, slightly narrowed toward apex, basal lobe slender, nearly parallel-sided, apex obliquely truncate... 10

10(9). Discal spot on elytron on middle of disc, male pronotum with lateral yellow area occupying 1/8 or less of pronotum ... *binotata* (Say)
 - Discal spot on elytron posterior to middle, male pronotum with lateral yellow area occupying 1/5 or more of pronotum... *inedita* Mulsant

Material

https://data.canadensys.net/micropublications/resource?r=specimen_40

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Fig. 1. Labels and dorsal habitus of the holotype ♂ of *Hyperaspis concavus* Watson (UMMZI-192245).

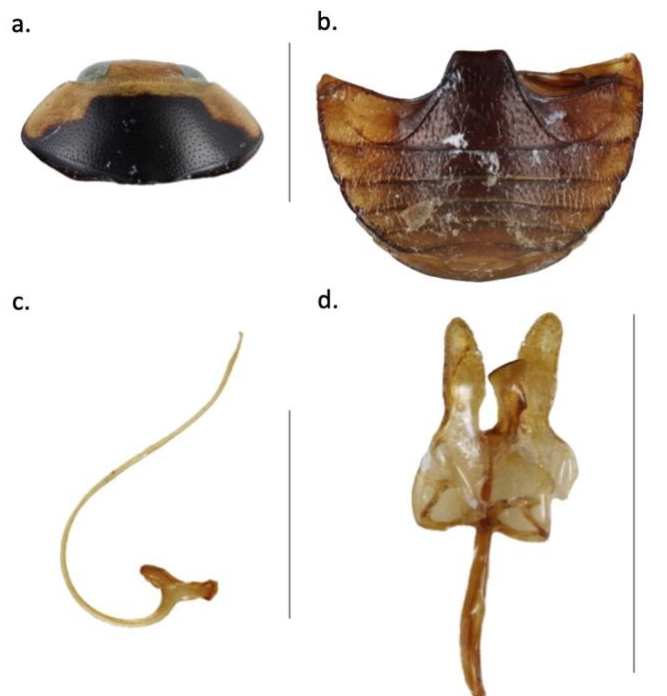


Fig. 2. Specimen QMOR74,847 of *Hyperaspis concavus* Watson ♂. Head (a), abdomen (b), and genitalia: penis (c), tegmen (d). Scale bar = 5 mm.