A new species of *Alopecosa* (Araneae: Lycosidae) from Canada: a morphological description supported by DNA barcoding of 19 congers

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Abstract

A new species, *Alopecosa koponeni* sp. n., is described from the Arctic part of Manitoba. Individuals of *A. koponeni* most resemble those of *A. pictilis* (Emerton, 1885), but are smaller than the latter and differ in the epiginum and in colour pattern in both sexes. DNA barcode results show an interspecific distance of 0.93 between *A. koponeni* sp. n. and *A. pictilis*, a shallow genetic divergence that suggests a recent separation.

Introduction

Spiders of the Canadian Arctic are becoming better known through recent collecting efforts and through published revisions such as those by Dupérré (2013), Marusik *et al.* (2006), Marusik & Koponen (2001), Saaristo & Koponen (1998), and Saaristo & Marusik (2004). Additionally, two recent checklists also included arctic species (Buckle *et al.* 2001; Paquin *et al.* 2010) and a recent study on the spiders of Churchill revealed an undescribed species of *Alopecosa*, which was given the interim name *Alopecosa* sp. 1GAB (Blagoev *et al.* 2013).

Among all 120 valid genera of Lycosidae, *Alopecosa* Simon, 1885 is the fifth largest genus (Platnick 2014). Roughly 75% of *Alopecosa* are restricted to Eurasia, and 9% have a typical Holarctic or Palearctic distribution. To date, only seven species of *Alopecosa* are known from the Nearctic. Based on copulatory organs, these seven species are divided into three main species groups; *Alopecosa pulverulenta* group, *Alopecosa exasperans* group, and *Alopecosa solivaga* group (Dondale, Redner 1979, 1990).

Using morphological and molecular evidence, we describe a new species belonging to the *Alopecosa solivaga* species group from arctic tundra at Churchill, Manitoba.

Methods

Collecting methods

All ten specimens of *A. koponeni* sp. n. were collected during the snow-free months near Churchill (Fig. 1) using pitfall traps. The traps were placed in the soil between moss substrates around the rocks and temporary ponds close to the marine shoreline. Spiders were removed twice weekly from the traps. All specimens were then preserved in fresh 95% ethanol and are now deposited in the Canadian National Collection of Insects & Arachnids, Ottawa, Ontario (CNC), and the Biodiversity Institute of Ontario (BIO), University of Guelph.

The species locality map (Fig. 1) was created with SimpleMappr, http://www.simplemappr.net (Shorthouse 2010).

All measurements are given in mm.

Molecular methods

For comparative molecular analysis, COI sequences from 341 specimens from 18 *Alopecosa* species were used to explore relationships (Table 1, Fig. 8).

The DNA barcoding protocols were replicated, following Blagoev *et al.* (2013).
NEW WOLF SPIDER FROM ARCTIC CANADA

Sloan, Kadir Kunt, Lars Hendrich, Maria Naumova, Marko Mutanen, Monica Young, Robb Bennett, Stoyan Lazarov, Suzanne Bateson, Vadim Zolotuhin, Yuri Alekseenko, and Yuri Marusik. We are grateful to Cor Vink and two anonymous reviewers for their valuable comments on the manuscript.

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