



## Systematics and ecology of the genus *Dendrozetes* (Acari: Oribatida: Peloppiidae) from arboreal habitats in Western North America

ZOE LINDO<sup>1,4</sup>, MARILYN CLAYTON<sup>2</sup> & VALERIE BEHAN-PELLETIER<sup>3</sup>

<sup>1</sup>McGill University, Department of Biology, 1205 Docteur Penfield, Montreal, QC H3A 1B1, Canada. Phone: (514) 398-5971, fax: (514) 398-5069. E-mail: zoe.lindo@mcgill.ca

<sup>2</sup>Forest Biodiversity Network, Canadian Forest Service-Pacific, Natural Resources Canada, Victoria, British Columbia, Canada V8Z 1M5. E-mail: mclayton@pfc.cfs.nrcan.gc.ca

<sup>3</sup>Biodiversity Program, Research Branch, Agriculture and Agri-Food Canada, KW Neatby Building, Ottawa, Ontario, Canada K1A 0C6. E-mail: valerie.behan-pelletier@agr.gc.ca

<sup>4</sup>Corresponding author. E-mail: zoe.lindo@mcgill.ca

### Abstract

We present the systematics and ecology of a new species of arboreal oribatid mite in the family Peloppiidae (Acari: Oribatida), *Dendrozetes jordani* n. sp., a dominant arthropod on branch tips and arboreal lichens associated with western hemlock (*Tsuga heterophylla* (Pinaceae)) and Pacific silver fir (*Abies amabilis* (Pinaceae)) in the coniferous temperate and montane forests of the Pacific Northwest of North America. *Dendrozetes jordani* represents the first record of the genus *Dendrozetes* in North America. The species is described on the basis of morphology of all active instars plus molecular sequence data for the mitochondrial cytochrome oxidase I (COI) gene. *Dendrozetes jordani* is compared with type specimens of *D. caudatus* Aoki from Japan, and a revised diagnosis of the genus *Dendrozetes* is given. *Dendrozetes jordani* has a stable, overlapping population structure through the year, and its association with trees in Pinaceae is an ecological characteristic shared with *D. caudatus* from Japan.

**Key words:** oribatid mites, canopy, *Dendrozetes*, Pinaceae, Pacific Northwest, Japan

### Introduction

Oribatid mites are known from many arboreal habitats, including bark and trunks of trees (Nicolai 1993), leaf domatia and stems (Walter & O'Dowd 1995), moss, lichen and other corticolous epiphytic cover (Seyd & Seaward 1984), and accumulations of organic matter known as suspended soils (Behan-Pelletier *et al.* 1993; Lindo & Winchester 2007). Representatives of the oribatid mite families Camisiidae, Ceratozetidae, Scheloribatidae, and Mycobatidae are usually numerically dominant in the canopy of old-growth Pacific Northwest forests (Behan-Pelletier & Walter 2000). Members of the superfamily Gustavioidea (e.g. Liacaridae, Peloppiidae) are commonly recorded in some canopy systems, but are rarely a dominant fauna (Aoki 1973; Karasawa & Hijii 2006; Lindo & Winchester 2006). Peloppiidae collected from arboreal habitats in North America include members of the genus *Ceratoppia* and *Metrioppia* (Behan-Pelletier & Winchester 1998; Fagan *et al.* 2006; Lindo & Winchester 2007; Lindo *et al.* 2008). Peloppiidae are also known from canopy habitats in Germany (Erdmann *et al.* 2006) and western Siberia (Tolstikov *et al.* 2003).

The monotypic oribatid mite genus *Dendrozetes* Aoki 1970 (Peloppiidae) has been known only from Japan where the type species, *Dendrozetes caudatus* Aoki 1970, was collected from the canopy of trees by fogging with insecticides (Aoki 1970). At the type locality, *D. caudatus* was collected from Jezo spruce (Pinaceae), and from southern Japanese hemlock (Pinaceae), Veitch's fir (Pinaceae) and a single specimen from Erman's birch (Betulaceae). Subsequently, a single specimen was recorded from litter of Siberian dwarf pine (Pinaceae) (Aoki 1973), and many specimens from the canopy of northern Japanese hemlock (Pinaceae) (Ito 1986; Fujikawa *et al.* 1993).