

## The Northern True Katydid, *Pterophylla camellifolia* (Orthoptera: Pseudophyllidae), at Ottawa, Ontario

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Five males of the Northern True Katydid (*Pterophylla camellifolia*) are reported from Ottawa, Ontario (approximately 45°25'N, 75°42'W), in 2001 and 2002 at three separate locations. Based on its distribution and habits extralimital occurrences in Ottawa are likely due to chance introduction.

Key Words: Northern True Katydid, *Pterophylla camellifolia*, Ontario, distribution, insect dispersal.

In mid-August 2001 two male Northern True Katydid, *Pterophylla camellifolia* (Fabricius), were heard calling at a site in an urban residential area of eastern Ottawa, Ontario (location 1, Figure 1). Calling continued until about 9 October when daily minimum temperatures fell below freezing. Calling perches in trees were located between 5 and 10 metres above the ground. Several species of trees were utilized, including Sugar Maple (*Acer sacharrum* Marsh.), Norway Spruce

(*Abies balsamea* (L.) Mill.) and Red Oak (*Quercus rubra* L.). Over the calling period they moved short distances (less than 50 metres horizontally) from one tree to another, but were never heard calling together in the same tree (it was assumed that the two males heard repeatedly were the same two individuals). *Pterophylla camellifolia* is not usually associated with coniferous trees and the Norway Spruce was occupied for only a single night.

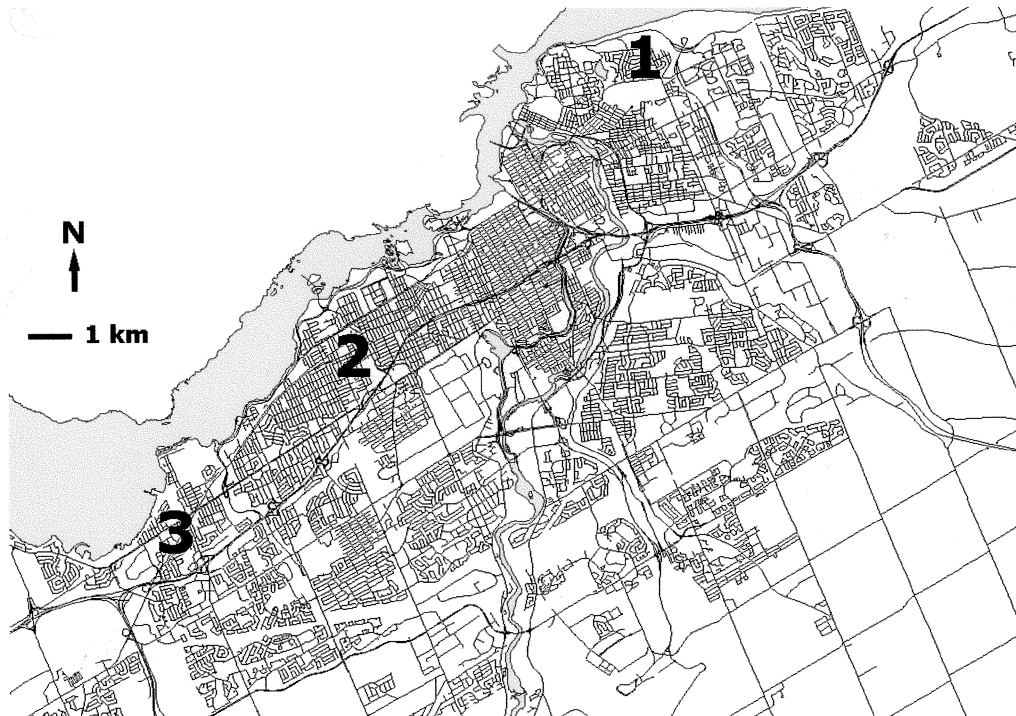


FIGURE 1. Map of the Ottawa urban area showing the locations of calling males of *Pterophylla camellifolia*, approximately 45°25'N, 75°42'W. Location 1: two males in 2001; location 2: one male in 2002; location 3: two males in 2002.

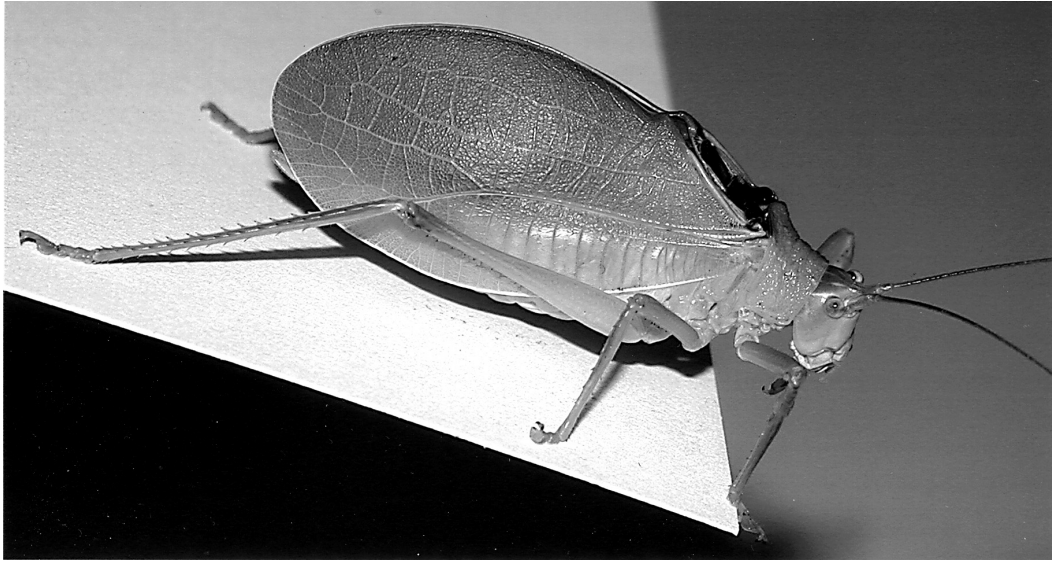


FIGURE 2. Male *Pterophylla camellifolia* from Ottawa, Ontario (location 3, Figure 1). Photographed 19 September 2002.

Katydids were also heard calling in August, September, and early October 2002 at two other locations within urban Ottawa (locations 2 and 3, Figure 1). At location 2 (Figure 1) a single male was heard calling from a large silver maple (*Acer saccharinum* L.) at a height of about 10 metres. It remained in the same tree throughout the observation period (about two months). At location 3 (Figure 1), two individuals were heard calling in a landscaped area around a large apartment complex. Perches were about three to four metres high in English Oak (*Quercus robur* L.) and Crab Apple (*Malus* sp.). Calling continued at these two locations until about 10 October, when night-time temperatures began to approach freezing.

Since the insect is univoltine (Riley 1874; Caudell 1906; Hebard 1941), searches were made of about 1 km<sup>2</sup> around location 1 in September 2002 and 2003 and about 0.5 km<sup>2</sup> around locations 2 and 3 in September 2003. Although repeated searches were made on warm evenings after complete darkness, no individuals were heard calling at location 1 in 2002, or at any of the sites in 2003.

The range of *Pterophylla camellifolia* is reported to be from Massachusetts to north-central Florida, westward through southern New York, southern Ontario and Michigan to Iowa, Kansas, Oklahoma and eastern Texas (Hebard 1941; Vickery and Kevan 1983). Caulfield (1887) was the first to report the species in Ontario (under the name *Platyphyllum concavum*). The known distribution is primarily along the north shore of Lake Erie from the Niagara Peninsula to Essex County in southwestern Ontario and largely coincident to the Carolinian forest region (Vickery and Kevan 1985).

The family Pseudophyllidae contains about 1000, mostly tropical, species. In Canada, the only representative of the family is *Pterophylla camellifolia*. Although there are a few similar large green tettigoniid species in eastern Canada, *P. camellifolia* is readily distinguished morphologically by its large size (about 25–50 mm) and its ovate, strongly convex tegmina (outer or front wings) which are slightly longer than the abdomen (Vickery and Kevan 1983, 1985). The loud onomatopoeic stridulations (chirps) also readily distinguish this species (audio file: Walker and Moore 2003\*). Differences in pulse number and pulse frequency of the chirp occur throughout the range of the species (Alexander 1968) and with environmental conditions (Shaw 1975). The most common chirp is of three to five pulses followed by a short pause (Caudell 1906). Males heard in Ottawa produced three, or sometimes two or four, pulses per chirp. Hebard (1941) recognized two species of *Pterophylla* in the United States, one restricted to Florida and the other widespread in North America with considerable variation suggesting a single polymorphic species with five geographic races (subspecies). The northern type present in Ontario is *P. camellifolia camellifolia*.

Blatchley (1920) stated that open forests are preferred, although Hebard (1941) found the insect most common in dense forests, particularly where large oaks occur. Calling perches are usually in canopies whenever tall trees are present, 25 to 100 feet (7.6–30.5 m) or above (Hebard 1941; Shaw and Carlson 1969). Where tall trees are absent, calling will occur from lower perches in small trees, orchards and shrubbery (Caudell 1906; Blatchley 1920; Hebard 1941). This is consistent with the observations of individuals in Ottawa.

Throughout most of the species' range males mature and begin calling in July and continue through to the advent of cold weather: late July to late September or early October in Iowa (Shaw and Carlson 1969); late July to early October (rarely to early November) in Washington, D.C. (Caudell 1906); 30 July to 10 October in Michigan (Cantrall 1968); and, 10 July to 27 October in Indiana (Blatchley 1920). During the first severe frosts of autumn the insects fall to the ground (Hebard 1941) and perish unless the weather subsequently moderates.

Although possessed of tegmina and hind wings, *Pterophylla camellifolia* does not fly, the wings being used to parachute or glide from one perch to a lower one or to the ground (Caudell 1906; Hebard 1941; Shaw and Carlson 1969; Vickery and Kevan 1985). When on the ground or accessing higher perches they walk. Individuals normally travel only short distances during their lifetime (Caudell 1906; Hebard 1941), but may often move from tree to tree.

The Northern True Katydid seems to be expanding its range northwards and westwards, with recent reports placing calling males in southern Minnesota (as far north as the Twin Cities area) (Tekiela 2002\*), south-eastern North Dakota (Walker and Moore 2003\*), and Colorado (Weissmann and Leatherman 1992; Walker and Moore 2003\*). In Ontario recent sightings have been at Barrie (Sinclair 1998\*) and Toronto (D. A. Sutherland, personal communication).

What are the mechanisms by which this large flightless insect could expand its range northward and westward to areas distant from its previous distribution? The new extralimital records in Ontario come from more-or-less urban regions, which suggests that inadvertent human transportation is involved. The apparently independent immigrations detected in the Ottawa area have been to well-established residential areas where commercial truck or rail traffic would not be a likely mechanism. It seems possible that nymphs or adults may be carried on non-commercial vehicles moving from southern regions during the early part of the summer. A trip from the contiguous range to the Ottawa area would take a minimum of 8-10 hours. The highway system and vehicle traffic have made such a trip possible for many decades now, yet immigration has been noticed only recently. As it is one of the loudest insects in North America, the presence of mature males in residential areas is very conspicuous in spite of their cryptic green colouration and usually inaccessible calling perches. No females have been found in the Ottawa area yet and there is no evidence of an established breeding population.

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