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THE PSYLLIDS (HOMOPTERA: PSYLLOIDEA) OF CHUKOTKA, NORTHEAST USSR

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ABSTRACT

Psyllids—small, phloem-feeding homoptera—were collected at five sites in the northeast USSR. The sites form a natural transect from arctic tundra to subarctic forest. Twelve species were recorded. Eight of these also occur in Alaska. The tundra fauna consists entirely of circumpolar and amphi-Beringean species that also occur in Alaska. In contrast, none of the three species found in subarctic coastal forest occurs in Alaska. The subarctic, high-elevation forest is similar to the tundra rather than to the much closer coastal forest.

INTRODUCTION

The Chukotka region of northeast USSR represents the easternmost extremity of the palaearctic zoogeographical region. Within recent geological time this region was repeatedly linked by a land bridge across the Bering Strait to Alaska, the westernmost outpost of the nearctic region. The psyllid fauna of Alaska is reasonably well known (Hodkinson, 1978; MacLean and Hodkinson, 1980, this volume) as are those of Northern Europe and northwest Siberia (Loginova, 1964; Klimaszewski, 1973). This paper fills a geographical gap in our knowledge of the distribution of boreal psyllid species and provides evidence for faunal connections in the past across the Bering land bridge (see also Hodkinson, 1980).

Collections were made at coastal tundra sites at Chaun Bay Station and Pevek on Chaun Bay, an inland shrub tundra site at Kiperveem and two taiga forest sites, one in Snow Valley (Snezhnaya Dolina), near Magadan, the other at Aborigen, near tree line in the Kolyma Highlands (Figure 1). Collections at Pevek, Kiperveem, and Snow Valley were made during brief visits to the sites and are probably not complete; collections at Aborigen and Chaun Bay sites of biological field stations operated by the Institute of Biological Problems of the North, USSR Academy of Sciences, were made over a number of days in a variety of habitats and are more nearly complete records for these sites.

SPECIES RECORDED

1. *Psylla betulae* (L.)
   On *Betula middendorfi*, Magadan 9.VIII.1977.
2. *Psylla betulaenanae* Oss.
   On *Betula nana* L. ssp. *exilis* (Sukatsch.) Hult. Chaun Bay 9.VIII.1979, Kiperveem 12.VIII.1977, Aborigen 21-29.VII.1979.
3. *Psylla myrtilli* Wag.
   On *Vaccinium uliginosum* L. Aborigen 24-25.VII.1979. This species is often parthenogenetic (Ossiannilsson, 1975), but males were collected at this site. A num-

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ber of specimens collected off a variety of host plants including *Betula* and *Alnaster* at Chaun Bay 13.VIII.1977 and 9.VIII.1979 appear to be brachypterous form of *P. myrtilli*. The genetalia are identical but the wings and antennae are shorter and the wing veins are more prominent.

4. *Psylla palmeni* Loew
   On *Salix* spp. especially *S. pulchra* Cham. Pevek 31.VIII.1979. Chaun Bay 13-20.VIII.1977, 3-9.VIII.1979, Kiperveem 12.VIII.1977, Aborigen 25-27.VII.1979.
5. *Psylla phlebophyllae* Hod.
   On *Salix arctica* Pall. Chaun Bay 13-14.VIII.1977.
6. *Psylla rhododendri* Put.
   On *Rhododendron aureum*. Snow Valley 9.VIII.1977.
7. *Psylla sibirica* Log.
   On *Salix* sp. Aborigen 27.VII.1979.
8. *Psylla zaecevi* Sulc.
   On *Salix tschuktschorum* at Chaun Bay 13.VIII.1979; on *Salix* spp. Chaun Bay 20.VIII.1977; Aborigen 27.VII.1979.
9. *Psylla zinovjevi* Log.
   Swept from *Larix* and *Betula* sp. Snow Valley 9.VII.1977. Normal host plant *Salix* spp.
10. *Trioza arctica* Hod.
    On *Salix* sp. Kiperveem 12.VIII.1977.
11. *Trioza atkasookensis* Hod.
    On *Salix pulchra* Cham. Chaun Bay 20.VIII.1977.
12. *Trioza salicivora* Reut.
    On *Salix* sp. Aborigen 27.VII.1979.

DISCUSSION

Table 1 summarizes the known distribution of Chukotkan psyllids. The species are categorized into faunal elements in Table 2. The fauna includes six species of circumpolar distribution, three amphi-Beringean species known only from Chukotka and Alaska, and three palaearctic species. The two sites with reasonably complete collections, Chaun Bay and Aborigen, each produced six species, four of which are common to the two sites. Although the collection from Pevek may not be complete, the apparent reduction in species from Chaun Bay to Pevek is consistent with our observations in arctic Alaska (MacLean and Hodkinson, 1980, this volume).

All of the species found at the three tundra localities, and five of the six species from Aborigen, are either circumpolar or amphi-

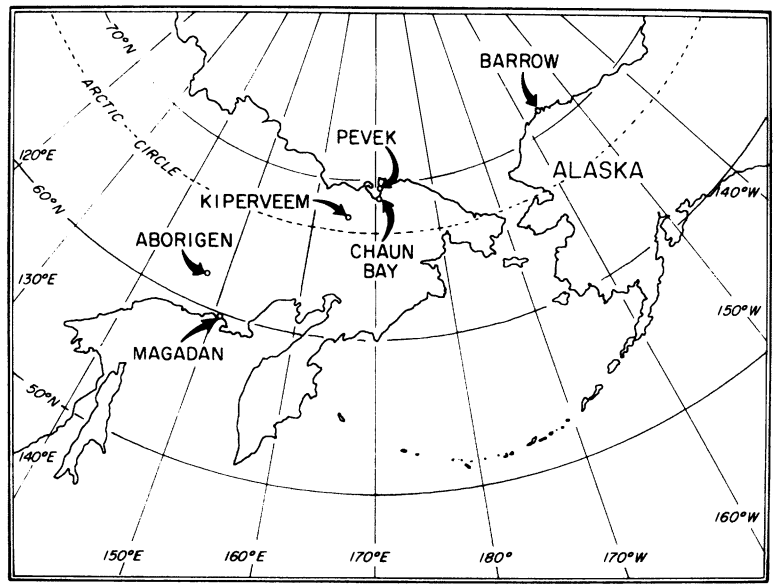

FIGURE 1. Map of eastern Asia showing collection sites: Pevek, Chaun Bay, Kiperveem, Aborigen, and Magadan (Snow Valley).

Beringean in distribution. Thus, overlap in species between northern Chukotka and Alaska is very high, an observation already made at the level of genus by Hodkinson (1980). MacLean et al. (1978) recorded soil Acari and Collembola at the Chaun Bay station, and found a similar high degree of overlap with the Alaskan fauna. In contrast, none of the three psyllid species found in the coastal forest near Magadan was found at any of the other collecting locations in Chukotka, nor have any been recorded in Alaska, although *Psylla betulae* does occur in more southerly areas of North America. The high-elevation (ca. 500 to 1242 m) forest site at Aborigen is more similar in its psyllid fauna to the arctic tundra than it is to the coastal forest near Magadan.

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TABLE 1
Psyllid species collected at the five sites in Chukotka, USSR, and in Alaska

	Pevek	Chaun Bay	Kiperveem	Aborigen	Magadan	Alaska
Psylla betulae					X	
P. betulaenanae		X	X	X		X
P. myrtilli		X		X		X
P. palmeni	X	X	X	X		X
P. phlebophyllae		X				X
P. rhododendri					X	
P. sibirica				X		
P. zaecevi		X		X		X
P. zinovjevi					X	
Trioza arctica			X			X
T. atkasookensis		X				X
T. salicivora				X		X

TABLE 2
Biogeographic elements of the psyllid fauna of Chukotka, USSR

	Circumpolar	Amphi-Beringean	Palaearctic
Arctic-Subarctic	*P. palmeni* *P. zaecevi* *P. betulaenanae*	*P. phlebophyllae* *T. arctica* *T. atkasookensis*	
Boreo-Alpine	*P. myrtilli*		*P. rhododendri*
Northern forest	*Trioza salicivora* *P. betulae*		*P. siberica* *P. zinovjevi*

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