Larch sawfly, *Pristiphora erichsonii* (Hymenoptera: Tenthredinidae) and its parasitoids from Alaska

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ABSTRACT

The larch sawfly and four parasitoids were reared in the laboratory from cocoons collected in Alaska for two consecutive years. Emergence of adult sawflies exceeded thirty percent each year. The number of parasitoids emerging was four times greater from the 1993 collection than from the subsequent year. Twelve *Tritneptis klugii* (Ratzeburg) emerged from one cocoon of the 1993 collection. The emergence of *Delomerista laevis* (Gravehorst) from the same collection established a new host record. *Mesoleius tenthredinis* Morley was the most common parasitoid that emerged from cocoons collected in 1993, and the only one that emerged from cocoons collected in 1994.

Key words: Rearing, sawfly, Tachinidae, Ichneumonidae, Pteromalidae

INTRODUCTION

The larch sawfly, *Pristiphora erichsonii* (Hartig), is a Holartic destructive insect on *Larix* spp. (Drooz 1960). Insects feeding on the leaves of hosts stunt tree growth and may kill the tree.

Schmiege (1966) first reported the larch sawfly in Alaska. He collected specimens near Fairbanks in 1965 and found evidence that the sawfly had been in the area since at least 1960. He did not note the presence of its parasites. Our rearing of adult sawflies and parasitiods from cocoons provides the first information on emergence in the laboratory of both specimens from Alaska.

MATERIALS AND METHODS

Cocoons of the larch sawfly were collected from leaf litter 32 km east of Fairbanks, AK in September 1993 and 1994. Approximately 400 cocoons were shipped to Cary, NC in September each year in a ventilated box that contained damp sphagnum. Cocoons collected in 1993 were stored at 4°C until 1 April 1994 when 170 fungus-free cocoons were placed individually into plastic boxes that were incubated at 18±2°C. Cocoons collected in 1994 were stored at 4°C until 15 March 1995 when adult sawflies began to emerge. On 17 March 1995, 200 fungus-free cocoons were incubated. Moisture in the plastic boxes was maintained by wetting blotter paper beneath the boxes. This technique provides a suitable microenvironment, and precludes the escape of *Tritneptis klugii* (Ratzeburg) (Hymenoptera: Pteromalidae) and additional parasitization of cocoons during rearing (Drooz and Thompson 1986). It also aids in culling fungus-infected cocoons.

Data on the emergence of sawflies and parasitoids were recorded. Parasitiods were identified and voucher specimens deposited at the USDA Systematic Entomology Laboratory, Beltsville, MD.

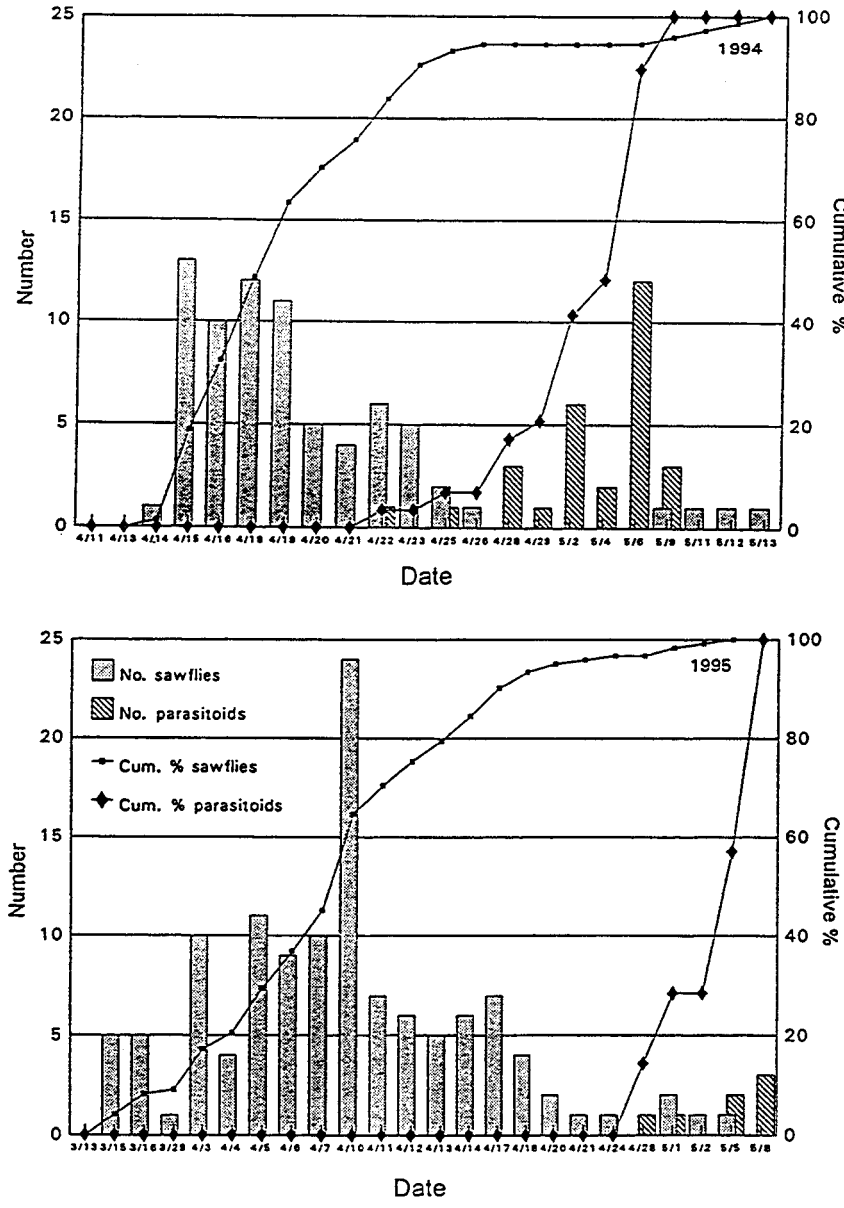

Figure 1. Number and cumulative percent of larch sawflies, *Pristiphora erichsonii* and parasitoids reared in 1994 and 1995 in the laboratory from cocoons collected in September 1993 and 1994 in Alaska.

RESULTS AND DISCUSSION

During laboratory rearing 74 adult sawflies and 30 adult parasitoids emerged from the 1993 collection, and 122 sawflies and 7 parasitiods emerged from the 1994 collection (Fig 1).

For the 1994 rearing, larch sawflies began emerging 14 days after incubation began and continued for about 1 month. Most sawflies emerged between the second and third week, at which time parasitoids also started to emerge. The start of parasitoid emergence is similar to that seen when rearing *Olesicampe benefactor* Hinz (Hymenoptera: Ichneumonidae), a common parasite of the larch sawfly (Drooz and Thompson 1986).

Of the 30 parasitoids that emerged from the 1994 rearing, 2 were *Bessa harveyi* (Townsend) (Diptera: Tachinidae); 14 were *Mesoleius tenthredinis* Morley (Hymenoptera: Ichneumonidae); 2 were *Delomerista laevis* (Gravenhorst) (Hymenoptera: Ichneumonidae); and 12 were *T. klugii* that emerged from one cocoon on 6 May. Almost all *B. harveyi*, *T. klugii*, and *M. tenthredinis* emerged after the peak of host emergence. *D. laevis*, a new host record, emerged on 9 May, after most of the hosts.

For the 1995 rearing, 10 adult sawflies emerged at 4°C on March 15 and 16 before cocoons were incubated (Fig. 1). After 200 cocoons were incubated on March 17, an additional 112 sawflies and 7 parasitoids also emerged. All of the parasitioids were *M. tenthredinis*. Peak emergence of sawflies occurred between April 3 and 10, earlier than peak emergence for the 1994 rearing.

The larch sawfly in Alaska is host to parasites native to Alaska and to one previously found only in other areas of North America. *B. harveyi*, *D. laevis*, and *T. klugii* are native parasites that attack across families of sawflies. In contrast, *M. tenthredinis*, a host specific parasitoid, was introduced into Canada from England in 1910 (Hewitt 1912). Subsequent releases were made in eastern and central Canada (Criddle 1928), and it was released in southeastern British Columbia in 1934 (Hopping *et al.* 1943). It was never released in Alaska, and we suggest it arrived there with the northwestern migration of its only known host, the larch sawfly.

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