

Forest Pest Management



SD144

M9

A3

no. 85-24

Report 85-24

3450

October 1985

EVALUATION OF LARCH CASEBEARER PARASITES ON THE FLATHEAD NATIONAL FOREST, MONTANA - 1985

by

Scott Tunnock and Wayne Bousfield¹

ABSTRACT

An evaluation during the summer of 1985 showed that parasites were still exerting control on the larch casebearer on the Flathead NF. Parasitism ranged from 4 to 60 percent and averaged 25.2 percent in the 12 areas surveyed. Four species of parasites were involved. The most abundant was *Agathis pumila* (Ratzeburg), an exotic wasp that was established within the Flathead NF from 1967 to 1969.

INTRODUCTION

The larch casebearer² was first detected on the Flathead National Forest in 1966 when it invaded the southwest quarter of the Forest (Tunnock 1968).

To combat this moth after its entry into the Northern Region in 1957, a program of rearing and releasing exotic parasites was started in 1960 and intensified in 1964 (Denton 1979). The exotic parasite, *Agathis pumila* (Ratzeburg), was released for the first time on the Flathead NF in 1967 near Ashley Lake. In 1968 it was placed in 34 other locations, and in 1969, 22 more areas were seeded with this parasite (Bousfield et al. 1974). Post-release evaluations showed that *A. pumila* became established in many of these sites (Bousfield et al. 1974).

¹Entomologists, USDA Forest Service, Cooperative Forestry and Pest Management.

²*Coleophora laricella* (Hubner)



Larch casebearer populations have fluctuated from high to almost undetectable several times since it completely infested the larch stands of the Flathead NF in 1971. Casebearer populations have increased from almost undetectable in 1983 to heavy in 1985 over most of the Forest. Land managers on the Flathead NF became concerned that these fluctuations in the casebearer population might be adversely affecting the parasite complex. They asked Cooperative Forestry and Pest Management to determine if A. pumila was still present in areas infested by larch casebearer, and to find out what other parasites were involved.

METHODS

Most parasites of the larch casebearer emerge from host pupae. To evaluate casebearer parasitism on the Flathead NF, pupae were collected from 12 areas during the weeks of May 28 and June 3. At each area, the number of pupae per 100 larch spurs (buds) was determined. Fifty pupae were collected and placed singly in gelatin capsules. The capsules were then enclosed in a plastic cup with a perforated lid. The parasites were lab reared at room temperature and high humidity. After moth or parasite emergence from the pupae, the content of each capsule was examined. Percent moth emergence and parasitism by each parasite species was calculated.

RESULTS

Parasitism ranged from 4 to 60 percent in the 12 areas (Table 1), and averaged 25.2 percent. Only four species of parasites were present. The most abundant parasite was A. pumila (90 emerged) followed by Chrysocharis laricinellae (Ratzeburg) (43 emerged). Agathis pumila was present in 11 of the 12 areas, and C. laricinellae was present in eight of the 12 areas.

DISCUSSION

The parasites, A. pumila and C. laricinellae, are exotic wasps imported from Europe that were previously released in the eastern United States. We introduced A. pumila into the Flathead NF but we don't know how C. laricinella got there. The other two parasites in table 1 are native to the U.S. and have other known hosts. Sometimes Spilochalcis populations build up and cause over 75 percent mortality of a casebearer population.

It is of interest that no A. pumila were present in casebearers collected from the Swan River Highway Department area. This was a successful release plot and populations of A. pumila became very abundant there. They were collected from this area a few times and shipped to Oregon for introduction. Our sample might have been too small, or the wrong larch trees were chosen. A. pumila could still be present in larch stands surrounding this plot.

This survey did confirm that A. pumila is still widespread over the Flathead NF and caused 40 percent casebearer mortality in one area. The widespread distribution of C. laricinellae is also encouraging.

Populations of larch casebearer will continue to fluctuate on the Flathead NF, and it is unlikely that any tree mortality will occur. Some slight growth loss might occur during periods when defoliation is heavy for several years in an area.

Table 1.--Larch casebearer populations and parasitism at 12 locations on the Flathead National Forest during 1985.

	Average pupae/ 100 spurs		Emerging moths		Unknown cause of death		Agathis	Chrysocharis	Mesoplopus	Spilochalcis	Unknown parasites	Total	
	Number	Percent	Number	Percent	Number	Percent						Number	Percent
Swan R. (Hwy. Dept.)	17		45		3		14				1		
Smith Lake	30		39		4		3		4		2		4
Rad Rock Canyon	11		24		8		8		10				14
Lion Lake	14		43		3		4						36
Stillwater Forest	16		33		8		2		2		5		8
Big Fork	15		38		6		5		1		10		18
Dondon (Lion Cr.)	10		41		2		4		2		1		12
Riverside Camp (Hungry Horse Res.)	23		15		5		16		11		3		60
Canyon Creek (Hungry Horse Res.)	26		24		3		11		11		1		46
Bitterroot Lake	12		26		3		20		22		2		42
Lake Mary Roman	6		27		3		14		5		1		40
S. of Lakeside	16		42		4		3		6		1		8

REFERENCES

- Bousfield, W.; S. Tunnock; L. Pettinger, and D. Ross. 1974. Establishment and distribution of the larch casebearer parasite, Agathis pumila, in Idaho, Montana, Washington, Oregon, and British Columbia. USDA Forest Serv., Northern Region, Div. of State and Private Forestry, Missoula, MT. Rept. 74-3, 40 p., illus.
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