

OBSERVATIONS ON *ARCTIA CAJA AMERICANA* HAIR (LEPIDOPTERA: ARCTIIDAE) ON TANSY RAGWORT, *SENECIO JACOBAEA* L.

BERNARD J. R. PHILOGENE

Department of Plant Science
University of British Columbia, Vancouver 8, B.C.

ABSTRACT

This is the first record of *Arctia caja americana* Hair on tansy ragwort, in British Columbia. The development of the insect on the weed, its polyphagous habits and its potential as an experimental animal are reported and discussed.

INTRODUCTION

Tansy ragwort, *Senecio jacobaea* L., is a well established noxious weed in pastures of the lower Fraser Valley, and on Vancouver Island, British Columbia (Wilkinson, 1965). Up to now only four insects had been observed feeding on the weed in those areas: an Arctiid moth, *Phragmatobia fuliginosa* L.; an aphid, *Aphis lugentis* Williams; a leaf-mining fly, *Phytomyza atricornis* Meigen; and the introduced cinnabar moth, *Hypocrita jacobaeae* L. The plant is known to harbour many more insect species in other parts of North America, particularly in the western United States (Frick, 1964, 1972; Frick and Hawkes, 1970), but no mention was made of the garden tiger moth, *Arctia caja americana* Hair., in these reports. Observations made on this insect in the course of the spring and summer of 1972 are reported here.

Large woolly-bear caterpillars were collected on a north-facing field at Clearbrook in the Fraser Valley during the second week of June. Twenty-nine of the 36 larvae collected were actively feeding on tansy ragwort. The remaining larvae were collected on plantain, thistle, and equisetum but there was no indication that they were eating these weeds. The larvae were reared in the lab on tansy ragwort and reached the pupal stage in eight days. Two larvae devoured three fully-grown tansy ragwort leaves every 24 hr. at room temperature. Silken cocoons were spun on the walls of the cage within which the larvae moulted to brown chrysalids. Adult emergence occurred after three weeks. No mating was observed in the daytime. Oviposition started after five days. The eggs were laid on the leaf under-surface and on the main stem of tansy ragwort potted plants but mostly on the wooden frame of the cage. Some females attempted to lay on the screening. The eggs were in batches varying from 19 to 287. All the eggs

that were not laid on the wooden frame (60.3% of the total) failed to hatch. Adults showed signs of reduced activity after ten days and died 13 to 16 days later. First instar larvae hatched within eight days, and immediately made their way to the tansy ragwort if the eggs had not already been placed on it. Development to the fifth instar proceeded according to the schedule given in the text table below:

ARCTIA CAJA AMERICANA HAIR: Development at room temperature on tansy ragwort

Embryonic development	7-8	days
1st instar	5-6	"
2nd instar	5-6	"
3rd instar	5-6	"
4th instar	6-9	"
Cocoon spinning and molting	2	"
Pupa	20-21	"
Adults	13-16	"
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Life cycle	63-72	"

The woolly-bear caterpillars then became sluggish and practically stopped feeding, entering what appeared to be a state of hibernation. According to Moreau (1964) who reared the insect on plantain, *Arctia* goes through seven instars and may have one complete, followed by one partial generation a year, in France. This does not seem to be the case here.

A Dipterous parasite emerged from pupae of the moth: *Carelia reclinata* A. & W. (Tachinidae, Diptera). Nine of the field collected individuals, i.e., 31 were thus parasitized, the number of parasites per individual varying from 1 to 16.

Larvae emerging from eggs in the lab were also reared on apple, cherry, pear, tomato, hybrid grape, radish and lettuce leaves. No development occurred on tomato and grape. Development appeared to proceed normally on

¹Supported by University of B.C. Research Committee Grant No. 24-9552.

²Identified by D. M. Wood, Entomology Research Institute, C.D.A., Ottawa.

lettuce but after three days the larvae died. The other four types of leaves were acceptable to the woolly-bear caterpillars, but the moths which emerged from larvae fed on them were smaller than those whose larvae had developed on tansy ragwort. There were variations in colouration also.

Arctia caja americana is a polyphagous insect with a wide range of hosts. From this point of view, it is an ideal tool for plant-insect relationship studies. The adult is also one of those warningly-coloured insects which store secondary plant substances (Rothschild, 1972). Our observations show that it is very easy to rear in the lab on tansy ragwort. The polyphagy of this insect makes it an unlikely biological control agent for *Senecio jacobae*. It

would seem, on the contrary, that it should be watched carefully because, in spite of what we have observed, Moreau (1964) also reports it to be an active feeder in its early instars on *Vitis vinifera*. It does not seem, however, to be able successfully to complete its cycle on this economically important plant, at least in France. The presence of a Dipterous parasite indicates that it is partly under biological control in normal conditions. Further studies are being carried out on the feeding range and habits of this insect, and particularly on its use of secondary plant substances.

Acknowledgements

The technical assistance of Mrs. R. M. Iyer is gratefully acknowledged.

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