CONTROL OF GORSE BY *ANISOPLACA PTYOPTERA*

J.H.B. BUTLER

Research Division,
Ministry of Agriculture & Fisheries,
Lincoln

Summary

Symptoms of damage by a moth *Anisoplaca ptyoptera*, to gorse (*Ulex europaeus*) in the Rakaia Gorge area of Canterbury are described. The importance of insect damage to the plant and likely importance for widespread biological control is discussed.

INTRODUCTION

Biological control of gorse by pests and diseases of the growing plant in addition to the well known and established gorse seed weevil (*Apion ulicis*), has been advocated for many years and various insects and diseases are reported as having potential (Little 1960; Holloway 1964; Hoy 1964; Zwoffer 1968; Miller 1970). A number of species of insects have been found on gorse but the importance of these to the survival and thrift of the gorse is not known. Species found on gorse and identified include *Oemona hirta* (lemon tree borer), *Gastrosarus nitricollis* and *Ambeodontus tristis* (Somerfield, K.G. pers. comm.).

Mr A.O.H. Tripp of "Snowden Station" in the Rakaia Gorge area of Canterbury noticed in 1968 that a small clump of gorse on part of his property was unthrifty with many dead branches. Subsequently he has observed that the gorse did not flower in the spring and made little growth until the autumn period each year. Furthermore, by taking branches from plants showing these symptoms he has been able to transmit the control agent to healthy clumps. Infected patches are stunted and do not spread even though areas on adjacent properties are vigorous and do spread.

Samples collected in 1978 revealed the presence of small caterpillars burrowing in the outer cambium and phloem tissue. The caterpillars, 1-2 cm in length, were identified by Dr J.S. Dugdale of the Entomology Division, Auckland as *Anisoplaca ptyoptera* Meyrick (Lepidoptera : Gelechiidae). Subsequently, caterpillars have been collected from a gorse area near Leeston showing similar effects.

A. ptyoptera is an indigenous moth, its natural hosts being *Carmichaelia* and *Coralliospartium* (Dugdale pers.comm.). There is no published information available other than a description of the adult by Hudson (1928) who mentioned that it occurs at Christchurch. Dugdale (pers.comm.) suggested that the insect is widely distributed in both high and low rainfall areas. It is of interest that species of *Carmichaelia* were present in the undeveloped grassland at both the above sites.

SYMPTOMS OF DAMAGE

The caterpillar is most active during spring from September to November, eating phloem and cambium tissue around the stem. Each stem may support up to ten caterpillars although four is a more usual number. Later the caterpillar burrows longitudinally (up to 30 cm) before pupating about January. Empty cocoon cases are evident in February thus

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supporting Hudson (1928) who believed the adult moth to emerge in January and February.

Damage to the gorse is most evident during the caterpillar's active stage in spring. The caterpillar burrows around the stem thus reducing the conducting tissue and sometimes completely ring barking the stem. Where heavy infestations of *A.ptyoptera* occur most gorse bushes are brown with only a few green shoots and spines evident. No flowering takes place. By December the gorse bushes are pale green but signs of the attack are still evident. Bushes are unthrifty, new spines on the ends of the branches are pale green and the growth poor. These and the callousing at the circular burrow indicate clearly that ring barking has occurred and that the terminal branches are surviving on food reserves and water able to travel up the undamaged xylem tissue.

DISCUSSION

While this note can do no more than assign a cause of unthriftiness in the two areas of gorse, it leads to speculation on the potential of *A.ptyoptera* for more widespread biological control. There appear to be two main considerations. Firstly, though the moth is endemic, mobile and occurs throughout the country, there have been only occasional reports of unthrifty gorse which may have been due to *A.ptyoptera*. It does have parasites which attack it (MacCarter pers.comm.) so that following a build up of gorse damaging populations a crash in population probably occurs. This has not yet happened to the Rakaia Gorge population and there is evidence that *A.ptypotera* has provided useful long-term biological control by reducing seed production and reducing the growth of the bushes, and has been spread successfully. Its main use in this area is to slow the growth and spread of gorse while development of gorse areas continue. More detailed study of this population seems warranted in view of its persistence. The second consideration is whether artificially increased populations of the moth will produce a saturation effect and put excessive pressure on rare species of *Carmichaelia* and *Corallospartium*.

Because of the presence of parasites its usefulness in New Zealand is likely to be limited. Its value may well be as a species for consideration in other countries where gorse is a problem, provided useful plant species are not attacked.

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