

Bulletin of the British Myriapod Group 5 (1988)

THE LIFE HISTORY OF *CHORDEUMA PROXIMUM* RIBAUT FROM A WOOD IN AVON

Helen Read

Department of Botany, The University, Woodlands Road, Bristol, BS8 1UG *

Introduction

There are four species within the order Chordeumatidea (family Chordeumatidae) in Britain. The life histories of the two species of *Melogona* have been described, but there is only limited data for the two species of *Chordeuma*. Blower (1979) found that *Melogona scutellare* follows an annual cycle in South Wales and Derbyshire, and David (1984) describes an annual cycle in a French population of *Melogona gallica* in the Forest of Orleans. Blower (1985) notes that *Chordeuma proximum* and *C. sylvestre* appear to be annuals in the south of Britain, but rather limited data for *C. proximum* in the Forest of Dean was suggestive of a two year cycle. Whilst undertaking a long term pitfall trapping study in various sites in Avon, one woodland was discovered to contain a population of *C. proximum*. As trapping continued for a year this was a good opportunity to look in more detail at this species.

Haw Wood (ST 558 800) where the collections were made is a mixed deciduous wood containing oak, hazel, field maple and large quantities of brambles. The leaf litter is exceptionally deep, averaging 131 mm in depth. The wood is 3 km down wind of a large zinc-smelting works at Avonmouth and consequently the leaf litter and the mineral soil have greatly elevated levels of zinc, cadmium, lead and copper.

Methods

15 pitfall traps (plastic vending machine cups) were laid in a 5 x 3 grid formation. Each contained 5 ml of a 4% formalin solution to which was added a few drops of detergent to reduce surface tension. They were emptied at fortnightly intervals (weather permitting). Captures from each trap have been combined into trapping occasions for this study. Collecting by pitfall trapping has the disadvantage that animals must be mobile to have a chance of being caught. Captures are therefore the result of abundance and activity. Consequently the younger stadia which, being less active, are less likely to be caught and will be under-represented in the data. However, from those individuals that were captured, stadia V to IX can be characterised and some comments on life history can be made.

Ocular field in *Chordeuma proximum*

Blower (1984) suggested that the ocular field in *Chordeuma* spp. is built up by adding a new row of ocelli at each moult as in the Julida. Commencing with two 'rows' containing only one ocellus, a subsequent row of two is added at the moult to stadium IV, a row of three to stadium V, and so on. Ideally an equilateral triangle is built up with one extra ocellus occupying the postero-ventral apex (Figure 1). At some moults the full complement of ocelli will not be added to a row. Blower (1984) suggests that *C. proximum* is more likely to have incomplete rows than *C. sylvestre* and illustrates the ocular field of *Melogona scutellare* in which there is a considerable reduction, no row containing more than three ocelli. Figure 2 illustrates the ocular field from stadium V in *C. proximum* from Haw Wood. The majority of specimens showed the maximum complement of ocelli up to stadium VIII but a reduction of one in the final row of stadium IX. This final row often consisted of smaller ocelli and the ventralmost ocellus was difficult to see and was squashed in between the ventral margin, the organ of Tomosvary, and the other ocelli. Thus in specimens from Haw wood there does not appear to be a great reduction in the numbers of ocelli.

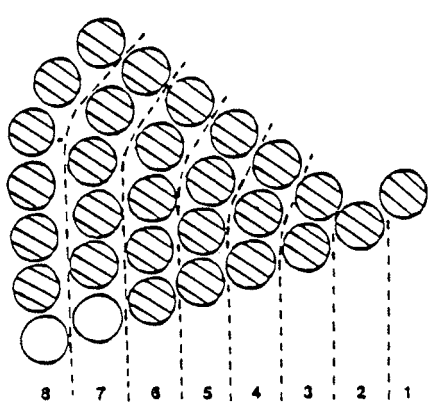
Table 1

Numbers of Chordeuma proximum caught at Haw Wood

DATE	STADIUM				
	V	VI	VI	VIII	IX
19.12.84	.	.	.	1	.
02.01.85	.	.	.	3	17
23.01.85	.	.	.	1	13
31.01.85	.	.	.	1	19
28.02.85	.	.	.	3	31
14.03.85	.	.	.	1	18
28.03.85	4
11.04.85	1
25.04.85	3
09.05.85	17
23.05.85	8
06.06.85	8
20.06.85
04.07.85	2
18.07.85	.	6	.	.	.
01.08.85	.	.	6	.	.
15.08.85	.	.	11	.	.
29.08.85	.	.	7	1	.
12.09.85	.	.	2	35	.
26.09.85	.	.	1	8	.
10.10.85	.	.	.	1	11
24.10.85	.	.	.	3	40
07.11.85	.	.	.	4	42
21.11.85	.	.	.	7	13
05.12.85	.	.	.	5	3
19.12.85	.	.	.	2	16

Dates given are those when the traps were collected, they were in position for the entire period between collecting times, usually a period of two weeks (including the collection on 19.12.84).

1



2

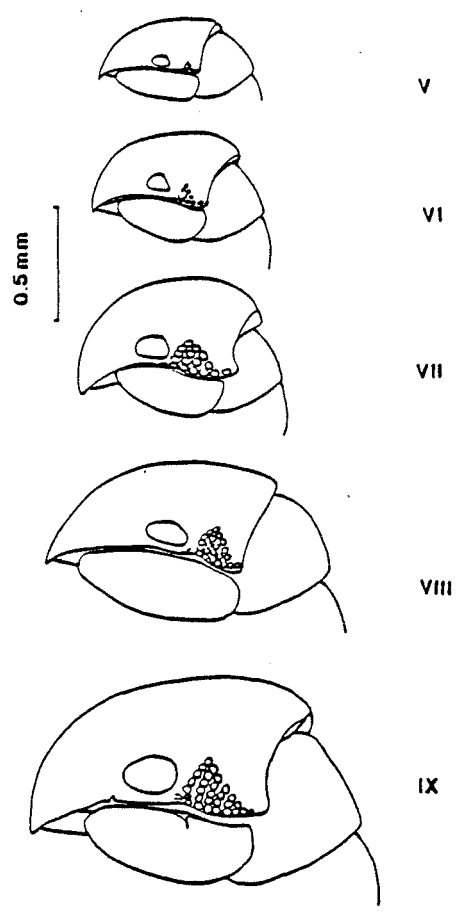


Figure 1.
 Diagrammatic representation of the ocular field. Ocelli cross-hatched are those always found in animals from Haw wood, those left open are present in some animals, but not in all. Numbers indicate the order in which the rows are added.

Figure 2.
 The ocular fields in Chordeuma proximum from stadium V to IX.

Life Cycle

The animals captured were assigned the correct stadium by using the ocular field and the numbers in each stadium are recorded in Table 1 for each trapping occasion. From 4.7.85 the growth of the 1985 cohort of animals can be followed up to maturity in October. In this period, from July to October, there are no adult specimens caught. At all other times of the year there are adults, including some mature males. This is indicative of a single year life cycle.

In order to determine oviposition time, females from various collections were dissected for eggs. A maximum of 54 eggs were found between segments 10 and 28 (30 being the telson) in a female caught on 23.5.85. Whilst large eggs were present in females during the spring, none were found in females caught in October. Very small eggs were noted from animals in November. This confirms the suggestion from Table 1 that oviposition occurs in the spring.

It would appear that the population of C. proximum in Haw wood is annual and there is no indication of a two year life cycle as in the Forest of Dean animals (Blower 1986). In the year of this study (1985) the population was well synchronised, in contrast to C. sylvestre in Cornwall. This species in April yielded adults and newly hatched stadia II and III, and also stadia IV, V, VI and VII, an observation which was presumed to be due to an extended period of egg laying (Blower, 1986). At Haw wood the period of egg laying seems to be more precise.

References

- Blower, J.G. 1979. Millipede faunas of two British limestone woodlands. in: Camatini, M. Myriapod Biology. Academic Press: 203 - 214.
- Blower, J.G. 1984. The British Chordeumatidae. Bull. Br. Myriap. Gn., 2: 8 - 23
- Blower, J.G. 1985. Millipedes. Synopses Br. Fauna. NS. No. 35. Linnean Society. E.J.Brill, 242pp.
- David, J.F. 1984. Le cycle annuel du diplopode Microchordeuma gallicum (Latzel, 1884). Bull. Soc. Zool. Fr., 109 (1) : 61 - 70.

* now at: Zoologisk Museum, Universitetsparken 15, DK2100 COPENHAGEN Ø