

Notes on British Cionini (Col.) mainly arising out of Mr Cunningham's findings in the Portsmouth Area

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Mr P. Cunningham's valuable survey of the figwort-weevils (Cionini) of the Portsmouth area of South Hampshire (*antea*: p. 184) prompts a number of questions, etc., which, with a few related points, I thought it might be worthwhile to touch on; hence the following brief comments, often with reference to the writer's experience of these pretty and highly interesting little beetles gained in the course of nearly half a century's intermittent collecting in southern England. The points calling for remark are ranged under five headings in roughly the sequence in which they occur in Mr Cunningham's paper.

For purposes of convenience and brevity, *Cleopus pulchellus* will be considered throughout as though it were a *Cionus* — as indeed it was so treated in all the literature up to quite late.

1. *Means of protection.* — Mr Cunningham makes the interesting observation that the death-feigning reflex appears to be weakest in *C. alauda*. May not this fact be somehow connected with its peculiar coloration? For *Cionus alauda* is one of a small group¹ (for which I would propose the descriptive term *ornithocopromimes*) whose characteristic style of coloration—basically white, with darker shades intermixed, or with grey and brown mottlings, clouds, or marblings—causes them to be easily passed over, when at rest, as small pieces of bird-dropping. In proportion to the success of this mimicry, evolutionary pressure to develop a death-feigning reflex (even though its possession would be an added advantage) would tend to be slackened.

Our other Cionini have no such resemblance or very little. When sitting in the middle of a leaf, for instance, the adult weevils are conspicuous enough; but in fact they are very often to be found at or near the tips of the shoots amongst flower-buds or seed-vessels where their somewhat disruptive (?) coloration makes them, perhaps, less easily seen. The curious velvety-black spots at base and apex of elytra, so characteristic of the tribe, probably play some part here. The brownish-green or grey-green tint of the *hortulanus*-group species may well be procryptic in effect.

The short, fat, sluggish and indeed slug-like larvae are no doubt protected both by their covering of slime and by their

¹The majority of them are small moths

likeness to the seed-vessels of the plant. This resemblance would apply also to the cocoons.

It should be noted that the freely exposed larvae and cocoons of the Cionini are very closely paralleled in another weevil group, the Phytonomini (Hyperini). The two tribes are not usually considered to be closely allied as far as imaginal structure is concerned, in which case they would seem to present a remarkable instance of convergent evolution as regards the biology of the early stages.

2. *Mixed colonies*.—The normal maximum (possibly occasionally exceeded) is four species coexisting on the same plant specimen, these in my experience being *scrophulariae*, *alauda*, *hortulanus* and *pulchellus* together on a plant of *S. nodosa*. Such a community is by no means rare. One generally finds in these cases that one or both of the smaller species present (*alauda*, *pulchellus*) are fewer or much fewer in numbers than the other, larger, species—suggesting that the former are experiencing some stress of competition. Presumably *tuberculosis* can replace *scrophulariae* locally in mixed colonies (but see under 4); or the two might co-exist with probable elimination of one of the others. Evidence on this matter would be of interest. The commonest combinations are of either two or three species in company; to find one species, other than *tuberculosis*, in sole possession of a single figwort plant² is so much more unusual that the question arises whether there may not be some (obscure) advantage to the weevils in some degree of interspecific symbiosis. In fact I cannot recollect ever having met with such an instance personally; but as Mr Cunningham has so found *hortulanus* several times, as well as *tuberculosis*, most likely my memory is at fault here.

When *two* species are found cohabiting, they seem more often to be either *alauda* and *scrophulariae*, or *pulchellus* and *hortulanus*, than any of the other possible pairs. Again however, more precise observations are needful.

As to the alternative host-genus, *Verbascum*, the experience of both of us is so different from what it has been with *Scrophularia* (see the following section) that, in spite of the statements of Fowler (1891) and other authors, it would appear improbable that as many as four species could be found living together on any one mullein plant, in a state of nature, in Britain.

3. *Foodplants*.—Though all 7 of our recorded Cionini are stated in the literature to occur on *Verbascum* (mostly *V. thapsus*, the hairy mullein) as well as on *Scrophularia*, and one (*C. longicollis*) on the former only, nevertheless it is general experience that they are more commonly found on the two figwort species, *S. nodosa* and *S. aquatica*. I have myself met with

²I refer, of course, to established breeding populations, not to casual individuals

only three of the weevil species on mullein (as far as records and memory go): these are *hortulanus* (a few times), *thapsi* (*thapsus* auct.)—frequent on the North Downs about Box Hill in Surrey, also but rather less often on *S. nodosa* — and *pulchellus* once, sparingly, near Marlborough in Wilts. In each case the plant was *V. thapsus*. *C. pulchellus* alone is not recorded by Fowler from *Verbascum*, but mine is not the only such find.

Despite what has just been said, it is surely extraordinary that no Cionini at all were found on any of about 500 plants of *V. nigrum* and about 80 of *V. thapsus* examined by Mr Cunningham. Fowler gives *V. nigrum* (dark mullein) as a foodplant of *C. alauda* but it is possible that some of his host data may be taken from foreign works: in our insular fauna many insects tend to have more specialised habits or tastes than they do abroad. Linssen (cited by Mr Cunningham) copies Fowler's data almost throughout his two volumes and is highly unreliable for up-to-date information; he must certainly be wrong in stating that dark mullein is "the" foodplant of *C. hortulanus*, though it may perhaps be a foodplant.

I can assure Mr Cunningham that other species besides *tuberculosis* are to be found on the water betony, *Scrophularia aquatica*; those I have encountered are (definitely) *scrophulariae* and *alauda*, e.g. in East Kent, and (less certainly) *pulchellus*. I am inclined, however, to doubt whether *hortulanus* breeds on *S. aquatica*—unless perhaps quite exceptionally. In any case I agree that in general *nodosa* is much the more favoured plant.

There are by now a good many references in the literature — and others unpublished — to the occurrence of various species of these weevils on buddleia in gardens. That they will breed freely on this and certain related exotic plants seems odd in view of their normal restriction in the wild in Britain to only two genera of the Scrophulariaceae when there are many others also available.

Much doubtless remains to be learnt about host-preferences, etc., in the various species. The findings rather suggest that there may be local or regional differences in this respect which in the present state of knowledge are quite unaccountable.

4. *Relative incidence*, etc. — It is possible to arrange our species in order of general or overall frequency. This of course will differ somewhat according to the individual collector or observer; my own experience indicates the following order for the southern and S.E. districts at least (proceeding from more to less common): *scrophulariae*, *hortulanus*, *alauda*, *pulchellus*, *tuberculosis* (very local), *thapsi* (ditto, and only on the chalk), *longicollis*. This brings me to the second exceedingly strange negative finding reported by Mr Cunningham: the apparent absence of *C. scrophulariae* in the areas worked by

him. I think most coleopterists would place this as on the whole our most frequent species, of almost general distribution in at any rate the southern counties. Perhaps in certain districts it tends to be replaced by *tuberculosis*, which I have never found in company with *scrophulariae*, and only once both in the same locality (Rickmansworth, Herts.). *C. tuberculosis* has been very local to me; near London I have found it only on the N. and N.E. fringe, but there abundantly in a few spots, especially on *S. nodosa* along hedgebanks; Fowler's "marshy places", therefore, is not always apt. *C. hortulanus*, I would say,—often with *pulchellus*—is commonest in shaded situations, e.g. beside woodland paths or in clearings. I am not aware of ever having found it mixed with the very similar-looking *thapsi*, a species of downland, chalk cuttings, etc.

With gregarious insects such as these, terms like 'common' and 'rare' are naturally to be understood as relating, not to the numbers of a species in an average colony, but to the frequency of its colonies in the area in question. Thus even the most local species may be as numerous, where it occurs, as the least local. At the same time it will be evident that none is really common in the sense of occupying nearly all (apparently) suitable habitats in a given area—which in fact is true of the great majority of insects in varying degrees.

5. *A further species from Portsdown.* — To complete the record of these weevils in the area of Mr Cunningham's researches, it should be noted that the first known British examples of *Cionus longicollis* Bris. were taken by H. Moncreaff in 1871 "off a plant of *Verbascum thapsus* growing in an old roadway at Portsdown". In *Ent. Mon. Mag.* 1894, 30: 100, where this record is given, G. C. Champion points out that some of the specimens were previously determined as *C. thapsi*; this may, therefore, be the basis of Fowler's record of the latter "Portsdown . . . (Moncreaff)" though there is no reason why both species should not have occurred there. *C. longicollis* has a very restricted distribution in this country; Moncreaff remarked in a letter to Champion that he never met with it again, but it was later reported from Harewood Forest in N. Hants. by J. R. Tomlin. Its British headquarters at the present time is the Suffolk/Norfolk Breckland. However, it is tempting to speculate that it could yet persist in some out-of-the-way nook in the original district; if so, I hope that Mr Cunningham will be fortunate enough to rediscover it.

In conclusion, I should like to urge those who encounter these and other species of the two plant genera concerned (particularly *Verbascum*) to examine them well for weevils. There are on the Continent several species of Cionini and Gymnetrini not yet known to occur here, but of which some might possibly be found if their hosts are searched. Warm sheltered hollows or south-facing slopes of the chalk probably offer the best chances. For instance, *Cionus olens* F. was once

taken in Britain (one specimen, locality unknown) but has not been found since and requires confirmation; it lives on the hoary mullein, *V. pulverulentum*. Another Cionine, *Stereonychus fraxini* Deg., is common e.g. through Denmark, and ought to be found with us even if only rarely. Its foodplant is the common ash, the foliage of which is not known to support any British beetle and thus may receive too little attention from collectors.

Dimorphism in *Papilio* Pupae

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Before describing a recent experiment with *Papilio demodocus* Esp., I propose making some general remarks and recapitulations.

Broadly speaking the pupae of the African and Indian Papilios, with which I am well acquainted, both at first hand and from literature, can be divided into two groups, those which are highly procryptic in shape, and those which are not. The former, which includes the cylindrical, stick-like pupae of *Chilasa* Moore and the dried, curled leaf-like pupae with projecting subdorsal processes of *Polydorus* Swains., are usually monomorphic and brown in colour, although the pupa of *C. paradoxa* (Zinken-Sommer) is said to be green or brown 'according to the colour of the twig to which it is fastened' (Talbot, *Fauna of British India, Butterflies*, i, 2nd edit.), and that of *P. dasarada* (Moore) is said to be greenish yellow with lilacine stripes (Talbot, *loc. cit.*). On the other hand the pupae of *Troides* Hbn., *Papilio* L. and *Graphium* Scop. are not particularly procryptic and are usually dimorphic, having a green and a dark form. Possibly polymorphic would be a better term as, although the green forms are fairly constant, the dark forms vary quite considerably in shade, and *P. demoleus* L. and *P. demodocus* have a pink form as well. There are exceptions to this, for instance the highly specialised, flattened, leaf-like pupa of *P. dardanus* Brown is, as might be expected, always green. Another exception is the pupa of *Graphium pylades* (F.), which is always green, but this exhibits a certain degree of dimorphism in the presence or absence of small purplish marks above the subdorsal pale line. The invariable green coloration of the *pylades* pupa is something of a puzzle, the larvae are common on a small tree of the food-plant growing in my garden, but I have never found a pupa formed under its leaves and, as the pupa often undergoes a fairly long diapause, it seems likely that it is formed away from the food-plant, which is deciduous. Incidentally Talbot's statement that the pupa of *Troides* is sustained by separate lateral threads attached to a tubercle on each side of the pupa is incorrect. A little thought will show that this form of attachment is a physical impossibility as the tubercles do not exist



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