

A study of the *Tersilochine* parasites of vegetable weevils of the genus *Listroderes*

(Hym., Ichneumonidae)

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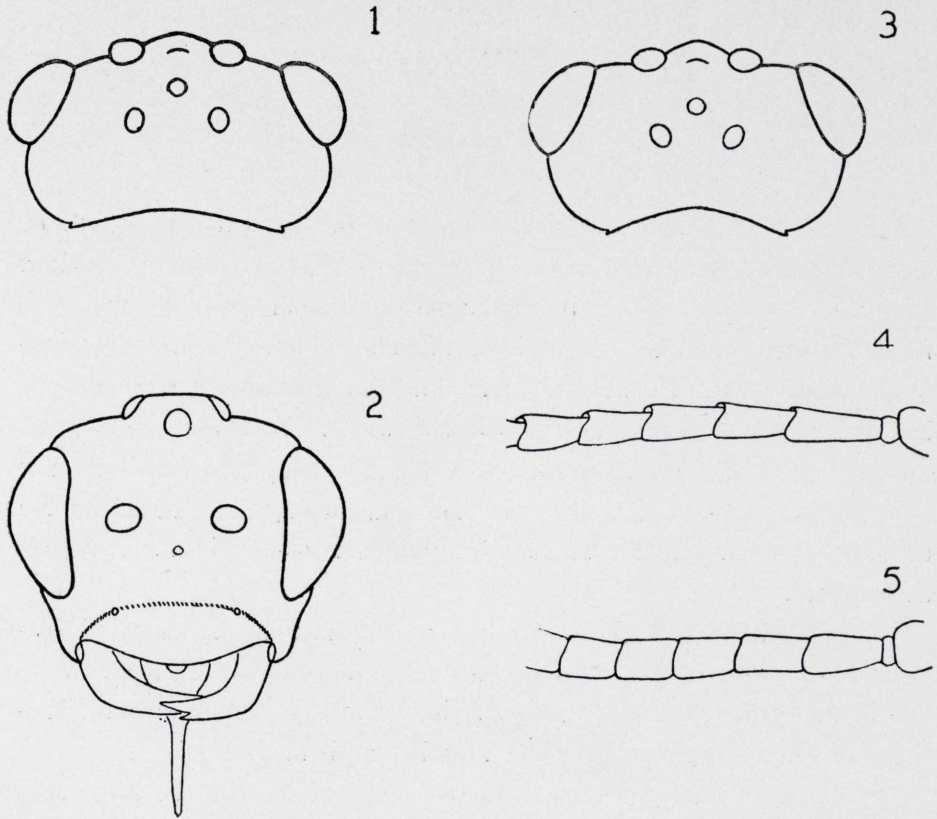
In 1942-45, a field study was made of the parasites of vegetable weevils of the genus *Listroderes* in Argentina and Uruguay (Parker, Berry & Silveria 1950), with the object of rearing suitable parasites for the control of these weevils in California. Three *Tersilochine Ichneumonidae* were recorded, of which the two commoner were described as *Porizon parkeri* and *argentinensis* spp. n. by Blanchard (1945), and the third was not determined to genus. The "*Porizon*" species were not successfully established in California owing, it is stated, to the difficulty of changing the seasonal rhythm established in the southern hemisphere.

In 1957, Mr Frank Wilson imported *Tersilochine* parasites of *Listroderes* from South America to Australia, for the control of the weevils in that country, and he sent specimens to the Commonwealth Institute of Entomology to have the identity confirmed.

The present author reported that he believed there to be three species among the material submitted. He sent some of the specimens on to Washington, where Miss Luella Walkley very kindly compared them with authentic material of Blanchard's species. Miss Walkley organized the loan of most of the Washington specimens for further study in London, observing that the species would be better placed in *Tersilochus* than in *Porizon* (auctt.). Two of the specimens had been placed by Dr Blanchard as a manuscript third species. Some specimens were kindly sent also by Dr D. C. Lloyd, who had been concerned with the introductions to California.

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After rearing the *Tersilochines* for two years in Australia, Mr Wilson sent much longer series to the Commonwealth Institute of Entomology, with the request that the new species be described and the Blanchard species redescribed. Study of this much larger material



Figs. 1-5.—1) Head of *Tersilochus argentinensis* (Blchd.), seen from above; 2) The same, in facial view; 3) Head of *Tersilochus parkeri* (Blchd.), seen from above; 4) Part of pedicellus and basal segments of flagellum of *T. argentinensis* (Blchd.) in sinistro-lateral view; 5) The same, of *T. parkeri* (Blchd.).

shows, however, that the characters adduced for the separation of the species are even less stable than had at first been thought, and that the supposed third species could not be maintained on morphological grounds. The two Blanchard species can, however, be separated by a good series of characters which generally hold, and of which the majority can be expected to hold in any specimen, but only one of which, a variable colour character, has been found to hold absolutely.

Blanchard described both species at some length; but his descriptions are in no way comparative and he gives no indication of the

range of variation, in particular, his long series of measurements would seem to have been made from single specimens. He gave figures of the apex of the ovipositor in the two species, which show what might well be expected to be a good species difference: examination of a long series of specimens shows, however, that in *argentinensis* the dorsal notch is approximately as figured, but that in *parkeri* it varies from about the condition figured for that species to one much nearer that occurring in *argentinensis*.

The present author has not succeeded in finding a difference between the two species in the form of the male genitalia.

Parker *et al.* (1950) described and figured the immature stages of *Porizon parkeri*, and stated that they could not with certainty distinguish those of *argentinensis*. They found occasionally a different primary larva which could not have been *argentinensis* but might, presumably, have been the undetermined *Tersilochine*.

SYSTEMATIC POSITION OF THE SPECIES.

South American species of *Tersilochus* reared from *Listroderes* do not fit in well with any group as understood in Europe. They differ from the *jocator* group (Thomson's Section 2 group D) in having the head not thus characteristically broad and narrowed behind the eyes (figs. 1, 3), from the *moderator* group (Thomson's group E) in not having the area basalis of the propodeum very narrow or obsolete, from the *saltator* group (Thomson's group F) in not having temples so shining, and from the *triangularis* group in not having especially long cheeks (fig. 2) and thick antennae. Moreover, in all three, the first and second abscissi of the radius are situated at a decidedly obtuse angle with each other (fig. 6),

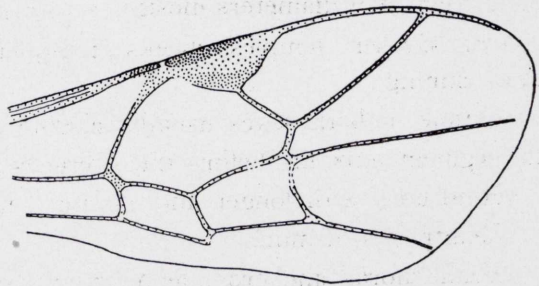


Fig. 6.—Right fore-wing (except basal portion) of *T. argentinensis* (Blchd.).

whereas in the four European species mentioned they are at about a

right angle. In both, the thyridia are elongate and very distinct, and are situated at about their own length from the hind margin of the first tergite.

REDESCRIPTIONS OF THE SPECIES.

Tersilochus argentinensis (Blanchard).

Head from above (fig. 1) little narrowed behind eyes, moderately emarginate behind. Cheeks of moderate length and slightly or very slightly incurved (fig. 2). Pilosity on lower face very dense. Eyes weakly and sparsely hairy.

Antennal flagellum relatively slender: postannellus about 3 times length of its greatest breadth, and fifth antennal segment hardly broader (fig. 4).

Notauli distinctly impressed for about half length of mesoscutum, usually sharply so for a considerable length, but occasionally the sharp part almost punctiform. Scutellum usually rather flat, margined about half way to apex; with keels in basal furrows strong: metascutellum a little raised. Mesopleura with scrobal suture longer, extending usually for nearly whole length of pleuron but at least about half way across. Metascutellum a little raised. Area superomedia rather elongate, seldom strongly margined in female though more often so in male.

Head above, dorsum of thorax, and propodeum with dense coriaceous sculpture, matt, beset with rather small punctures separated by about their own diameters mostly, but on pronotum denser and on propodeum sparser; temples, cheeks, mesopleura and mesosternum rather more shining.

Petiole in both sexes usually sharply margined laterally to where the segment expands before the spiracles.

Hind tarsi with longer and stouter setae than in the other species. Length 4 to 6 mm.

Head, thorax and propodeum greyish-black, with less or more brownish-red coloration: in female this is sometimes confined to narrow genal margins above the mandibles, the pronotum narrowly, the region of notauli and mesopleural margins, but is usually much more widespread on thorax, though the mesoprescutum, scutellum and ster-

num are always mainly black: in male it is nearly always restricted to narrow genal, pronotal and mesopleural margins. Mouth-parts, tegulae and normally about half of clypeus testaceous, occasionally much paler, the mandibular and usually clypeal apices blackened. Antennae red-brown, slightly darkened in female and considerably so in male. Legs testaceous, to a lesser or greater extent darkened, the mid and hind coxae red-brown to greyish-black: on average the male more darkened than the female.

Tersilochus parkeri (Blanchard).

Head from above (fig. 3) moderately narrowed behind eyes, moderately emarginate behind. Pilosity on lower face less dense than in *argentinensis* (Blchd.). Cheeks more sharply narrowed to mouth than in *argentinensis* (Blchd.).

Antennal flagellum relatively stout: postannellus only about twice as long as broad, the fifth antennal segment scarcely broader (fig. 5).

Notauli weakly impressed but usually containing a sharp punctiform impression. Scutellum more often flatter and margined well over half way to apex; with keels in basal furrow weak; metascutellum scarcely raised. Mesopleura with scrobal suture shorter and often narrower, extending for not more than about half way across the pleuron, usually less. Metascutellum scarcely raised. Areolation of propodeum very variable.

Head, thorax and propodeum with dense coriaceous sculpture, but at least somewhat more shining than in *argentinensis* (Blchd.), especially on the parapsides, and with the punctation sparser.

Petiole in female usually not sharply margined laterally.

Size similar to that of *argentinensis* (Blchd.).

Head, thorax and propodeum greyish-black as in *argentinensis* (Blchd.), but without such brownish-red coloration except narrowly on mesopleural margins. Clypeus normally mainly blackened, pale castaneous near apex. Antennae of female mostly more darkened than in *argentinensis* (Blchd.).

Tersilochus sp.

Whereas specimens labelled as Blanchard's manuscript third species, and specimens earlier thought by the present author to belong to a third species, are agreed by Mr Wilson to be forms of *parkeri*, a parthenogenetic race has been reared in Australia which was thought there to be a, or the, third species. It has been distinguished in the field and in the museum by having the gaster largely blackish, not red.

A series of 26 specimens of this strain is characterized as follows. Head from above more often shaped as in *argentinensis*, but not always so. Cheeks more sharply narrowed, as in *parkeri*: this seems to be not or not much correlated with the last character. Notauli short and punctiform as in *parkeri*. Mesoscutum rather seldom shining as in *parkeri*. Scutellum as described for *parkeri*. Area superomedia not greatly longer than broad, and almost always strongly margined at base (in *parkeri* frequently but not generally like this). Gaster mainly black, with pale segmental margins.

The two described species do not appear to be separated by such good and constant characters as have recently been found valid in some *Cremastini* (Kerrich, 1959) and, in these circumstances, the features found in this series must be considered such as would characterize a strain. Until further information is available, the series can only be treated as a strain of *parkeri* (Blchd.).

KEY TO THESE SPECIES.

1. Head little narrowed behind eyes (fig. 1): pilosity on lower face very dense: cheeks as in fig. 2: antennal flagellum of female relatively slender, the postannellus nearly three times length of its greatest breadth, the basal segments rather strongly emarginate above at apex (fig. 4): head above, pronotum and mesoscutum with dense, coriaceous sculpture, matt: notauli usually impressed for about one-third length of mesoscutum: mesopleura with scrobal suture generally longer, extending usually for nearly whole length of pleuron but at least about half way across: female with at least some reddish-brown coloration on genal margins above mandibles, on pronotum and region of notauli as well as on mesopleural margins, and male occasionally with some of this coloration **argentinensis** (Blchd.).

- Head usually more strongly narrowed (fig. 3): pilosity on lower face less dense: cheeks more sharply narrowed to mouth: antennal flagellum of female stouter, the postannellus usually little more than twice length of its greatest breadth, the basal segments much less emarginate above at apex (fig. 5): sculpture of parts mentioned at least somewhat more shining, notably on parapsides: notauli consisting of a weak general impression, generally containing a sharp, punctiform impression: mesopleura with scrobal suture generally shorter and often narrower, extending for not more than about half way across the pleuron, usually less: red-brown coloration of thorax confined to mesopleural margins **parkeri** (Blchd.) 2.
2. Gaster, beyond petiolar segment, mainly red **parkeri**, normal bisexual form.
- Gaster mainly black, with pale segmental margins **parkeri**, parthenogenetic race.

References.

- BLANCHARD, E. E.
1945. Dos nuevos Ichneumonidos, parásitos de *Listroderes* (Hym., Ichneum.).
Rev. Soc. ent. argent., 12: 305-9.
- KERRICH, G. J.
1959. Description of new *Cremastine Ichneumonidae* (Hym.) from Australia, New Zealand and Thailand, with a consideration of the generic categories. *Ann. Mag. nat. Hist.* (13), 2: 48-64.
- PARKER, H. L., BERRY, P. A. & SILVERIA, A.
1950. Vegetable weevils and their natural enemies in Argentina and Uruguay.
Tech. Bull. U. S. Dep. Agric., 1016: 1-28.

