PALLOPTERA ANDERSSONI SP. N. FROM SCOTLAND AND FINLAND (DIPTERA: PALLOPTERIDAE)

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In April 1995 one of us (IM) reared a pallopteran species similar to *Palloptera ustulata* Fallén from under bark of fallen branches of lime, *Tilia europaea* L., at Battleby, Perthshire, Scotland. A conspicuous difference between *P. ustulata* and this material was the lack of shading which is typically present at the tip of the wing in *P. ustulata* (Figs. 255–7 in Morge (1967)). In April of the following year, clear-winged specimens were again encountered, this time reared from under bark of fallen oak branches, *Quercus* sp., at Meikleour, Perthshire. Finally, in March 1997 at Balnaguard, Perthshire, we found acalypterate larvae within bark of fallen birch branches, *Betula* sp. From these larvae we reared more examples of a clear-winged *Palloptera* species.

The consistency of clear wings in all this material was striking, and shading did not develop as specimens aged, suggesting that lack of shading was not a teneral feature, as is sometimes the case with *Palloptera* (Morge, 1967; Stubbs, 1969; P. J. Chandler, pers. comm.). Andersson (1990) recognized female clear-winged specimens from Sweden similar to but possibly distinct from *P. ustulata*, referring to them as var. b. Earlier, Malloch in Malloch and McAtee (1925) described *P. claripennis*, a clear-winged species similar to *P. ustulata*, from California, USA, to which European clear-winged material might be referrable. However, on comparing our clear-winged material with *P. ustulata* from Sweden and *P. claripennis* from California, we were able to determine that an apparently unrecognized species exists. The adult and puparium of this new species is described here.

PALLOPTERA ANDERSSONI SP. N.

Type Material. Holotype, ♂: SCOTLAND, Perthshire, Balnaguard, larva in bark of fallen *Betula* sp. branch, collected 20.iii.1997, emerged vi.1997, G. E. Rotheray. Paratypes, 11♂, 11♀ as follows: 2♂, 1♀: SCOTLAND, Perthshire, Battleby, larvae under bark of fallen lime, *Tilia europaea* L., collected April 1995, Iain MacGowan; 6♂, 10♀: SCOTLAND, Perthshire, Balnaguard, larvae in bark of fallen *Betula* sp. branch, collected 20.iii.1997, emerged vi.1997, G. E. Rotheray; 1♂: SCOTLAND, Perthshire, Killiecrankie, larva under bark of *Acer pseudoplatanus* L., emerged 6.vi.1997, Iain MacGowan; 1♂: SCOTLAND, Angus, Glen Clova, larva under bark of *Betula* sp., emerged 3.vi.1997, Iain MacGowan; 1♂: FINLAND, near Lempola, 3.x.1979, P. J. Chandler. Holotype and all but one male paratype in the National Museums of Scotland, Edinburgh. One male paratype in the private collection of P. J. Chandler.

Etymology—Palloptera anderssoni is named after Hugo Andersson, who first drew attention to the taxonomic distinctiveness of clear-winged specimens similar to *Palloptera ustulata*.

Description

Male.—length (tip of frons to tip of abdomen) 2.25–3.00 mm; thorax including humeri black and almost completely grey-dusted except for the anterior margin of scutum and bases of bristles which lack dusting and the scutellum which is yellow; abdomen mottled yellow and brown; head with black, grey-dusted occiput and ocellar triangle; front of frons yellow, cheeks yellow with white dusting; legs, palpi and halteres yellow; wings clear without shading; bristles black, antennae orange and brown with dark arista bearing short setae (Fig. 1); mesopleuron bare; anterior crossvein meeting discal cell before the middle; dorsal margin of sternopleuron with an isolated row of 4 setae anterior to sternopleural bristle (Fig. 2); aedeagus with curled stipe and setal fringe longer than stipe is wide; glans sclerotized black with equally long accompanying vesicle; apical filaments consisting of an elongate oval section and a longer section widening towards a bifurcated tip of which one arm is longer than the other (Fig. 3a).

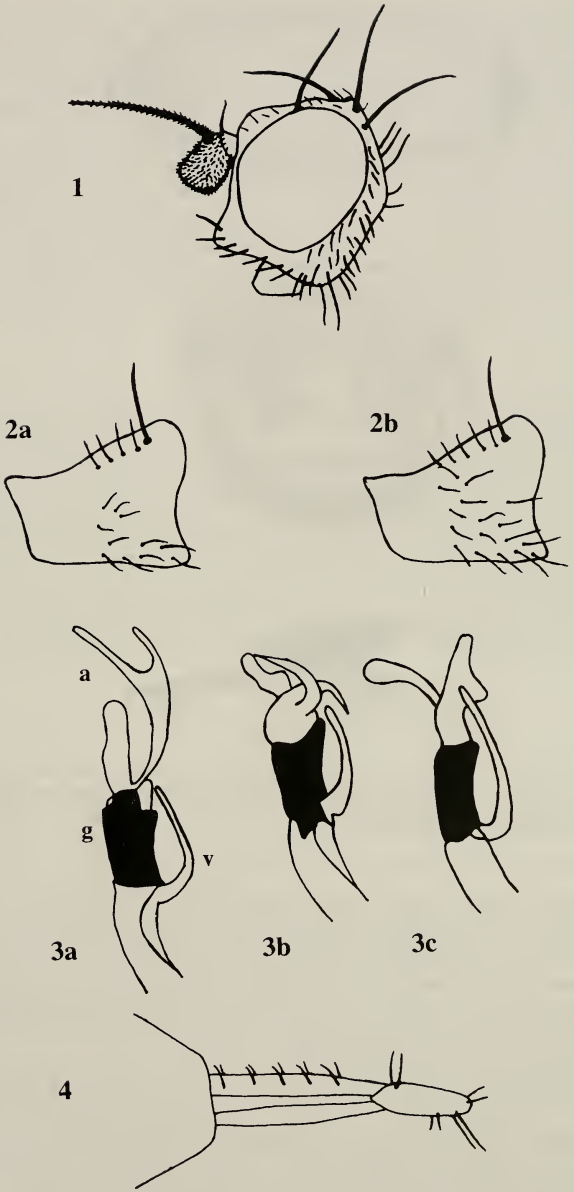
Female.—similar to male except humeri tending to be black and grey-dusted but sometimes vaguely paler and yellowish; ovipositor black, stout and lightly sclerotized with dorsal and ventral rows of setae: cerci with 4 pairs of dorsal and ventral setae (Fig. 4); two spermathecae.

Puparium.—length 2.75–3.25 mm. width 0.75–1.25 mm; subcyclindrical in cross-section becoming more rounded posteriorly; tapering anteriorly and posteriorly; surface smooth except for thorax which is coated in transverse ridges and the end segment which is heavily wrinkled (Fig. 5); no evidence of spicules on the prothorax; locomotory welts on first seven abdominal segments consisting of 6–7 complete or interrupted transverse rows of similarly-sized, backwardly-directed spicules with medial spicules of second posterior row larger; anterior spiracles fan-like with 6 lobes; posterior spiracles surrounded by wrinkles and mounted on short projection, about as long as wide; pale to dark brown (Fig. 6), three short spiracular openings; cephalopharyngeal skeleton with robust mouth-hooks (Fig. 7); accessory teeth absent; mouth-hooks with a vague anterior window; dental sclerite comma-shaped; intermediate sclerite elongate and tapering posteriorly with slight ventral projections; parastomal bar elongate and pale posteriorly; pharyngeal sclerite with a dorsal apodeme and diffusely darkened; dorsal bridge with a narrow, dark ventral margin; pharyngeal ridges present.

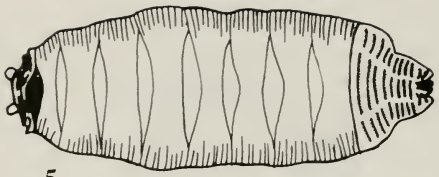
Discussion

Most *Palloptera* have patterns of shading on the wings which can be used to recognize many species (Morge, 1967). However, *P. anderssoni* is one of a small group of *Palloptera* species which lack shading on the wings. The male of *P. anderssoni* can be distinguished from males of other clear-winged species by the following combination of characters: mesopleuron bare; bristles black; wing with costal fringe consisting entirely of dark setae (pale at base in *P. claripennis*); sternopleuron with an isolated row of 4 setae anterior to sternopleural bristle (Fig. 2a), this row of setae not isolated from other setae in *P. ustulata* (Fig. 2b); male genitalia with a forked filament at the tip of the glans (Fig. 3a), apical filaments arranged differently in *P. claripennis* and *P. ustulata* (Figs 3b,c respectively).

At present female *P. anderssoni* cannot be reliably separated. One problem is the probability that some teneral *P. ustulata* lack shading at the tip of the wing and teneral *P. anderssoni* have yellowish humeri. The three females of *P. ustulata* var. b



Figs 1–4. *Palloptera* spp. 1: *Palloptera anderssoni* sp. n. ♂ holotype, head, lateral view. 2a: *P. anderssoni* holotype, sternopleuron dorsal view. 2b: *Palloptera ustulata* ♂, sternopleuron, dorsal view. 3a: *P. anderssoni* holotype, tip of the aedeagus, lateral view. 3b: *P. ustulata* ♂, tip of the aedeagus, lateral view. 3c: *P. claripennis* ♂, tip of the aedeagus, lateral view, g = glans, v = vesicle, a = apical filaments. 4: *P. anderssoni* ♀, ovipositor tip, lateral view.



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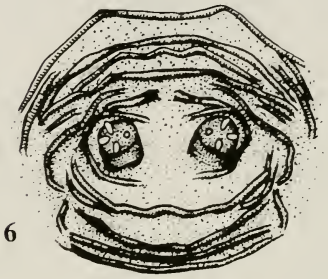

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Figs 5–7. *Palloptera anderssoni*. 5: puparium, ventral view. 6: end segment of puparium, apical view. 7: cephalopharyngeal skeleton, lateral view.

from Sweden and females reared from under bark of *Quercus* at Meikleour, Perthshire appear to be problematic in this way. They are clear-winged, as in *P. anderssoni*, but have yellowish humeri which is more like *P. ustulata*. For this reason they cannot be identified. The puparium of *P. anderssoni* is very similar to that of *P. ustulata*. There are differences in the wrinkling of the end segment and the extent of dark areas of the cephalopharyngeal skeleton, but these are tentative with only one puparium of *P. ustulata* examined.

We found considerable variation in the glans and associated filaments between *P. anderssoni*, *P. claripennis* and *P. ustulata*, and these are apparently different to other Pallopteridae such as *Palloptera usta* Meigen (Czerny, 1949; Morge, 1956) and *Toxoneura superba* (Loew) (McAlpine, 1987). The investigation of these characters appears to be neglected but they may assist in recognizing and defining species limits in other Pallopteridae.

P. anderssoni is a univoltine species breeding under or within the bark of *Acer*, *Betula*, *Tilia* and possibly *Quercus*. It is probably not, however, confined to these three species. Currently it is only known from Perthshire in Scotland, and Finland. It is possibly a species with a northern distribution in Europe. We found larvae actively

developing in March where they occurred with larvae of various *Lonchaea* spp. (Diptera, Lonchaeidae) and *Stegana* (Diptera, Drosophilidae). Morge (1956) observed the larvae of *P. usta* and *P. ustulata* attacking beetle and *Stegana* larvae respectively. However, we did not observe predatory behaviour in the larva of *P. anderssoni*. Morge (1956) also records pallopterid larvae in the absence of prey where they were probably feeding saprophagously on materials associated with decaying bark. They are probably facultative predators (Ferrar, 1987). Furthermore, the cephalopharyngeal skeletons of *P. usta* and *P. ustulata* were figured by Morge (1956) and are similar to *P. anderssoni*. They do not seem to be specialized for predation, but are of the usual saprophagous form with well developed pharyngeal ridges; neither do they posses accessory teeth which are a feature of the larva of *Palloptera quinquemaculata* (Maquart) which is phytophagous (Nye, 1958).

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