more or less evenly spaced teeth located in the basal third of the siphon. The siphonal tuft (1-S) is situated below the middle of the siphon with 3–8 branches. The saddle extends down to 2/3 of the sides of the anal segment, and the saddle seta (1-X) is nearly as long as the saddle. The lower anal seta (3-X) is single, the upper anal seta (2-X) has 4–9 branches, and is half as long as 3-X. The ventral brush has 15–18 tufts of cratal setae (4-X) and 1–3 precratal setae. The shape of the cratal setae is characteristic, the branching of the tufts starts far from the base, thus the stem of each tuft is very long. The anal papillae are not longer than the saddle and are tapered apically, with the ventral pair shorter than the dorsal pair.

Biology: *Oc. leucomelas* is a monocyclic snow-melt mosquito. The larvae occur early in the year after the snow-melt but seldom in extensive numbers. They are usually found at the edge of forests, in flooded meadows or reeded areas together with larvae of *Oc. cantans*, *Oc. communis*, *Oc. rusticus*, *Ae. rossicus*, and *Oc. sticticus*. In shadowed areas the number of larvae usually decreases. They also occur in slightly saline waters associated with *Oc. detritus*, *e.g.* in flooded meadows along coasts, thus the larvae are obviously tolerant to variations in the salinity of the breeding sites. The pH can be slightly acidic to alkaline (Natvig 1948). In central Europe the adults usually emerge in May and they decrease in numbers by early July.

Distribution: *Oc. leucomelas* is a European species. It is mainly distributed in northern, central, and eastern Europe and has a limited distribution in the southern European countries, where it is solely reported in Spain.

Ochlerotatus Mariae Complex

Three sibling species, *Oc. mariae*, *Oc. zammitii*, and *Oc. phoeniciae* [*Acartomyia phoeniciae*], have been recognised so far in the complex (Coluzzi and Sabatini 1968; Coluzzi and Bullini 1971; Coluzzi et al. 1976; Bullini and Coluzzi 1982). Apart from slight morphological differences between the species, a varying degree of hybrid sterility was demonstrated. The sterility involves both hybrid sexes between *Oc. phoeniciae* and the other two members of the complex, while only F_1 hybrid males were found to be sterile in the cross between *Oc. mariae* and *Oc. zammitii*. The larvae of all species have an apparently identical adaptation to breeding in rock pools along the Mediterranean coasts. The distribution range is western Mediterranean for *Oc. mariae* and eastern Mediterranean for *Oc. zammitii* and *Oc. phoeniciae*. The latter has been recorded from the coasts of Cyprus, southeastern Turkey, Lebanon and Israel (Coluzzi et al. 1974). No overlap between these distributional ranges has been recorded so far. According to the updated checklist of European mosquitoes by Ramsdale and Snow (1999), *Oc. mariae* and *Oc. zamitii* correspond to the aforementioned geographical "isolation" within the Mediterranean basin, except for the Greek record of *Oc. marie*, which most probably is *Oc. zammitii*.

Ochlerotatus (Ochlerotatus) mariae (Sergent and Sergent 1903) [*Acartomyia mariae*]

Female: The species differs from *Oc. caspius* in the ornamentation of the scutum, the black scaling of the legs, and in the absence of a longitudinal light stripe on the abdomen. The proboscis is long and slender, with dark brown scales, sometimes mixed with whitish scales in the middle, giving the impression of being ringed. The palps are 1/6 of the length of the proboscis, and covered predominantly with dark brown scales, with a white tip and some scattered whitish and cream coloured scales. The scutum is largely covered with rust brown to golden scales, usually with some whitish scales, which may sometimes form an indistinct, variable scutal pattern. The scutal setae are predominantly blackish brown. The scutellum has three groups of white sickle shaped scales and golden brown or dark setae. The pleurites have a brown integument and small patches of white scales. A postprocoxal patch of white scales is present. The ventral surfaces of the femora are white scaled, and the anterior surfaces and tibiae are predominantly dark scaled with speckled white scales. The tarsi are conspicuous by their white apical and basal rings on some tarsomeres. Tarsomere V of the fore and mid legs are whitish with some scattered dark scales, and tarsomere V of the hind leg is completely white scaled. The wing veins are covered with dark and pale scales, the pale scales more numerous on the costa (C), subcosta (Sc) and radius (R). The colouration of the abdominal segments is variable (Figs. 6.21b–d). The general appearance is dark, the terga have narrow

basal bands of pale scales which are usually widened laterally into triangular spots. The sterna are covered with whitish and cream coloured scales and dark lateral spots in the apical half, and the cerci are slightly projected.

Male: The lobes of tergum IX have 4–6 long setae. The basal lobe of the gonocoxite is moderately convex, densely covered with setae, some of which may be slightly thicker and longer than the others, but strong spine-like setae are absent. The apical lobe of the gonocoxite is indistinct (Fig. 10.59). The claspette has a short and straight stem, and the filament is nearly as long as the stem, narrow and slightly curved, and without a transparent wing. The aedeagus is more or less tubular.

Larva: The antenna is shorter than the head, slightly curved, with weakly developed spicules. The antennal seta (1-A) is situated in the middle of the antennal shaft, with 6–9 branches. The postclypeal seta (4-C) is very thin and short, and branched. The inner and median frontal setae (5-C and 6-C) are single, the median frontals are situated in front of the inner frontals, and the outer frontal seta (7-C) usually has 7 branches. The comb is composed of 16–25 scales arranged in 2–3 irregular rows, each individual comb scale with a distinct median spine and a varying number of smaller spines of different size at the base (Fig. 10.60). The siphon is short, slightly tapered, and the siphonal index is 1.4–2.0. The pecten consists of 15 or more thin teeth which are longer distally, reaching to the middle of the siphon. Each pecten tooth usually has 4 or more lateral denticles at the base. The siphonal tuft (1-S) is situated slightly beyond the middle of the siphon, with 6–7 branches, which are as long as the width of the siphon at the point of its origin. The saddle is weakly developed, extending slightly to the sides of the anal segment. The saddle seta (1-X) is single. The upper anal seta (2-X) has 12–14 branches, the lower anal seta (3-X) is single, and more than twice as long as the siphon. The ventral brush has 11–13 cratal tufts (4-X) and 4–5 precratal tufts. The anal papillae are very short and spherical.

Biology: The larvae can be found exclusively in rock pools on the sea shore, often in the surf zone. The usual concentration of salt in such pools is 2–4%, but the larvae are able to tolerate a much higher concentration, up to 20% (Rioux 1958). In the Mediterranean region *Oc. mariae* has several generations per year and its larvae are commonly found from March to October. Full embryonic diapause is observed when eggs are incubated at relatively low temperatures (< 16°C) and a short photoperiod. A photoperiod also induces a remarkable change in oviposition behaviour of *Oc. mariae* females. Coluzzi et al. (1975) demonstrated that the adult females readily oviposit when originating

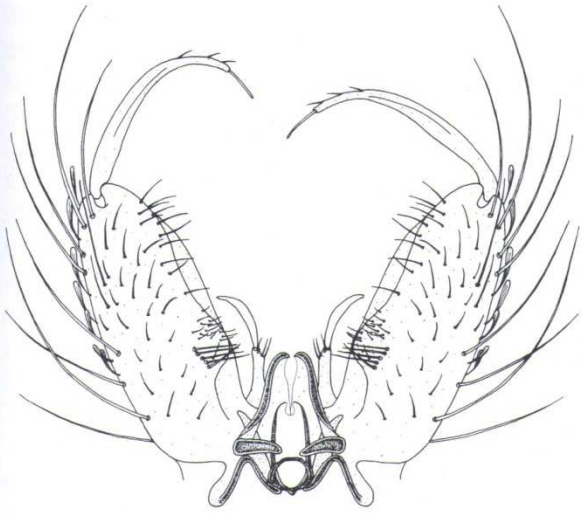

Fig.. 10.59 Hypopygium of *Oc. mariae*

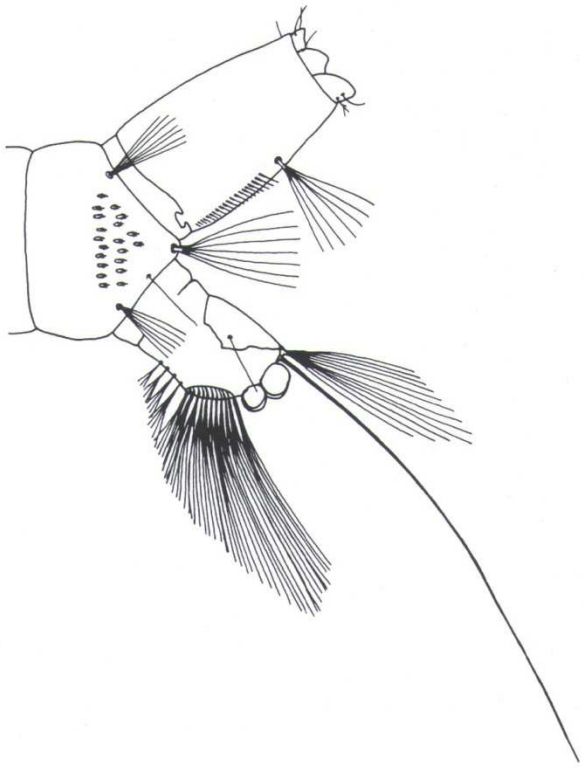

Fig. 10.60 Larva of *Oc. mariae*

from larvae reared at a long day photoperiod, whereas they are very reluctant to oviposit in the same situation when reared at a short day photoperiod. This species can frequently cause nuisance in rocky coastal Mediterranean areas.

Distribution: *Oc. mariae* which belongs to the so called "Tyrrhenean" type of the complex inhabits western Mediterranean coasts, ranging from the Algarve in southern Portugal to the Italian western coast, including the western coast of Sicily. It can also be found in Tunisia, Algeria and the Balearic Islands (Coluzzi et al. 1975; Ribeiro et al. 1988).

Medical importance: According to Ribeiro et al. (1988) *Oc. mariae* is not known as a vector of any disease, but Gutsevich et al. (1974) reported that the species transmits the parasite of bird malaria, *Plasmodium relictum*.

Ochlerotatus (*Ochlerotatus*) *zammitii* (Theobald 1903) [*Acartomyia zammitii*]

Very similar to *Oc. mariae* in all stages. It seems to be somewhat more robust in appearance with a more distinct colouration pattern. Whereas the scutum of *Oc. mariae* is without special ornamentation, *Oc. zammittii* sometimes has a scutum with two light creamy white longitudinal stripes. The hypopygium of the male is identical to that of *Oc. mariae*, but the larvae differ from those of the latter species by the more numerous spicules on the antenna and the pecten teeth usually having fewer than 4 lateral denticles at the base (Seguy 1924; Darsie and Samanidou-Voyadjoglou 1997).

Distribution: Adriatic coasts, eastern coast of Sicily, the whole Island of Malta, and Ionean and Aegean coasts (Labuda 1969; Regner 1969; Coluzzi et al. 1974).

Ochlerotatus (*Ochlerotatus*) *mercurator* (Dyar 1920)

Female: The proboscis and palps are dark scaled, and sometimes the palps have a few pale scales at the tip. The pedicel has mixed pale and dark scales. The vertex is yellowish scaled, and the occiput has a pair of dark lateral spots (Fig. 6.30a). The antepronotum and lower part of the postpronotum are pale scaled, and the upper part of the postpronotum has brown scales. The scutum has a broad median stripe of dark reddish brown scales, sometimes divided by a narrow acrostichal stripe of pale scales. The posterior submedian areas are brown scaled, and all other areas of the scutum are covered with yellowish scales. A postproxocal scale patch is present, the sub- and postspiracular patches are present, but a hypostigmal patch is absent. The mesepisternum has a prealar patch and upper and lower mesepisternal patches of pale scales, the upper patch not reaching the anterior angle of the mesepisternum. Almost all of the mesepimeron is covered with pale scales. The femora and tibiae of the fore and mid legs have mixed white and dark scales on the anterior surface, and white scales predominate on the posterior surface. The hind femur is light scaled, and the hind tibia has a longitudinal light stripe. The tarsi are predominantly dark scaled with pale basal rings. Tarsomeres I of all the legs have a diffuse basal ring and scattered pale scales almost reaching to the apex. Tarsomeres II and III of all the legs have a more or less distinct basal ring, which is broadest on hind tarsomere III, where it embraces about half of the length of the tarsomere. Tarsomeres IV and V of the fore legs and tarsomere V of the mid legs are usually entirely dark scaled. Tarsomere V of the hind legs sometimes has a few white scales at the base. The tarsal claws are relatively large, and bent near the middle at some distance from the base of the subbasal tooth. The wing veins are entirely dark scaled, sometimes some isolated pale scales are present at the base of the costa (C). The terga are predominantly dark scaled, terga I and II with basal white bands reduced to the median part. The rest of the terga have fully developed transverse basal white bands, which are widened laterally into triangular patches, and are most distinct on terga VI and VII. Narrow apical bands are sometimes present on the last segments. The cerci are long and distinctly projecting.

Male: The lobes of tergum IX have 6–12 spine-like setae. The gonocoxite is elongated, with well developed basal and apical lobes (Fig. 10.61). The inner surface of the gonocoxite is covered with long inwardly directed setae, and at least several setae located just above the basal lobe do not overlap in the middle. The basal lobe is conical, and densely covered with thin setae and one medially directed very long spine-like seta which is slightly curved at the apex. The gonostylus is somewhat broadened in the middle, with a slender apical spine. The claspette filament is longer than the stem, with a long stalk, abruptly broadened into a unilateral wing beyond its middle. The paraproct is