

Fig. 11. *Geothelphusa candidiensis* Bott, 1967. Male, 28.0 by 21.9 mm (NTOU F10090). a: dorsal view; b: frontal view; c: ventral view of right G1; d: dorsal view of right G1; e, f: terminal segment of G1; g: ventral view of right G2. Scale = 1.0 mm.

epibranchial tooth small. Fingers of chela forming long, wide gape when closed. G1 almost straight, outer proximal margin of subterminal segment almost entire or with a very weak tooth; terminal segment short, straight or slightly curved inwards, with scattered spinules on about distal one-third (Fig. 11c-f).

**Coloration.** - Anterior half of carapace brown, posterior part and ambulatory legs greenish-brown to light orange, chelae yellowish-orange, all with darker coloured spots.

**Habitat.** - Lives under stones and boulders of streams.

**Size.** - Largest male 28.0 by 21.9 mm (NTOU F10090); largest female 24.7 by 18.8 mm (NTOU F10087); smallest mature female 17.2 by 13.1 mm (NTOU F10089).

**Distribution.** - Northwestern Taiwan.

**Remarks.** - The identity of *G. candidiensis* has been rather problematic because it is supposed to have a very wide distribution in Taiwan (Bott, 1970; Minei, 1974) and has also been reported from the Ryukyu islands (Minei, 1973). The good series of specimens presently available, as well as topotypic material from Lake Candidus (= Sun Moon Lake) allows us to define the species more accurately. The G1 of the holotype as figured by Bott (1967: fig. 12; 1970: pl. 40 figs. 62, 63) is very misleading as it seem to show a very slender, gently tapering and elongated terminal segment. Bott apparently, had not positioned the G1 horizontally and it had been figured from the inner marginal view. From the ventral or dorsal planes, the G1 terminal segment of the present specimens of *G. candidiensis* s. str. is very short, but appears elongate from the inner marginal view. This probably led to workers (e.g. Minei, 1973) to misinterpret Bott's figures and incorrectly identify their specimens.

The present study also shows that what is generally called "*G. candidiensis*" in Taiwan actually consists of several species, including a good number of new ones. *Geothelphusa candidiensis* s. str. is perhaps most closely allied to *G. nanhsi*, but it is most easily distinguished by the anterolateral region of carapace having small granules. Other differences have been discussed under the *Remarks* for *G. nanhsi*.

Specimens from Japan (Ryukyu islands) referred to *G. candidiensis* by Minei (1973) are not this species. We have examined specimens from the Ryukyus and there are two species, both undescribed. It seems possible that once more collections from the Ryukyus become available, there might perhaps be more than two species. The new Japanese species will be described elsewhere at a later date.

### *Geothelphusa ferruginea*, new species

(Fig. 12)

**Material examined.** - Holotype - Male, 16.3 by 12.9 mm (NTOU F10202), PINGTUNG HSIEN: Manchow, Jeouperng, coll. J.Y. Shy & P.H. Ho, 6.v.1992.

Paratypes - PINGTUNG HSIEN: Manchow, Jeouperng - 1 male (NTOU F10105), coll. J.Y. Shy & P.H. Ho, 6.v.1992. — Manchow, Jeouperng - 3 males, 1 female (NTOU F10107), coll. J.Y. Shy & P.H. Ho, 22.i.1992.

Others - PINGTUNG HSIEN: Manchow, Jeouperng - 1 male (NTOU F10106), coll. P.H. Ho, 19.iii.1992. — Manchow, Nanren Lake - 1 male, 1 female [ovigerous] (NTOU F10108), coll. J.Y. Shy & C.L. Lee, 7.vii.1992.

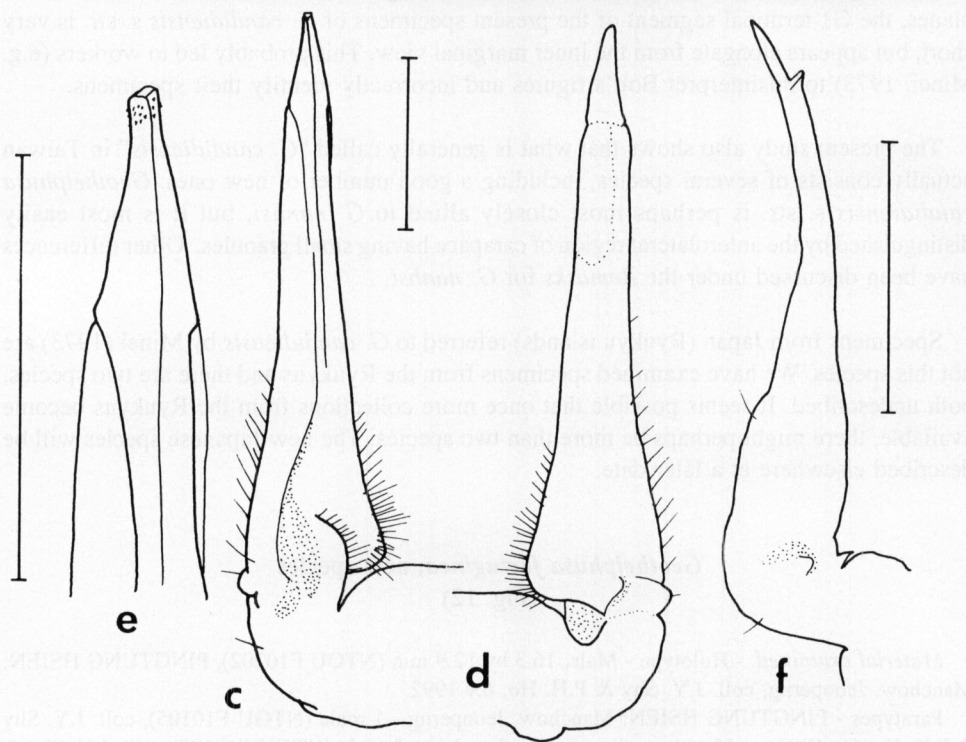
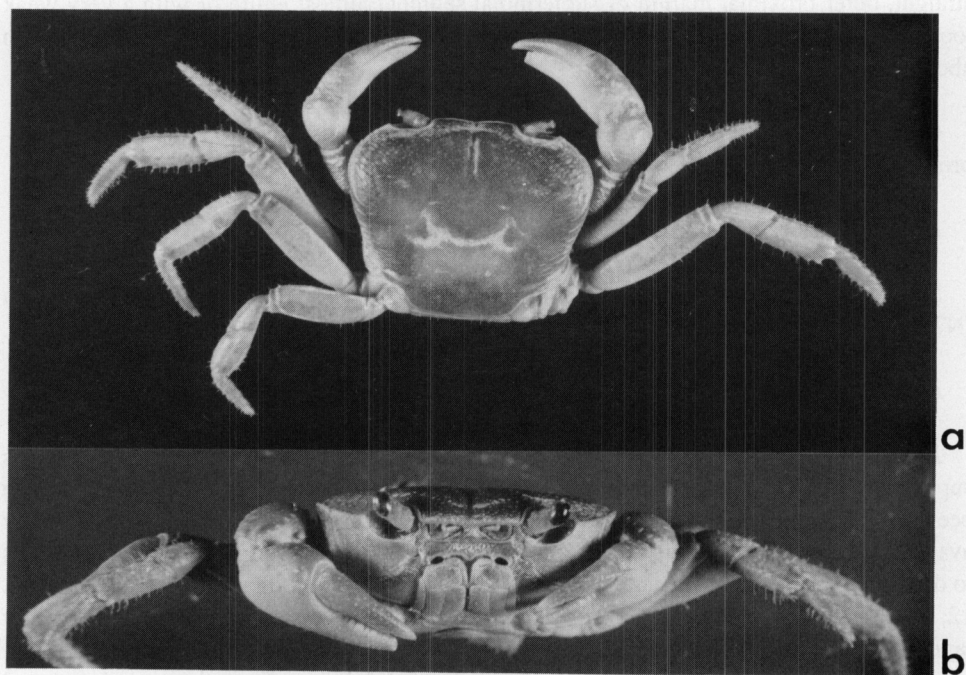


Fig. 12. *Geothelphusa ferruginea*, new species. Holotype male, 16.3 by 12.9 mm. a: dorsal view; b: frontal view; c: ventral view of right G1; d: dorsal view of right G1; e: terminal segment of G1; f: ventral view of right G2. Scale = 1.0 mm.

**Diagnosis.** - Carapace with fine concave pits, width and length about 2.3 and 1.8 times depth. Gastric region smooth, anterolateral region rough, with striae. Anterolateral crista distinct, lined with small granules. Distance between tip of male abdomen and anterior margin of sternite 4 about equal to length of sternites 1-3. Outer surface of chelae rough, lined with small granules; fingers of chela forming long, oval gape when closed. Second ambulatory leg about 2.1 times carapace length. Male abdominal segment 7 moderately bell-shaped. G1 subterminal segment straight, outer proximal margin with a tooth; synovial membrane length about 3.8 times width; terminal segment slightly curved inwards, with spinules on distal one-tenth (Fig. 12c-e).

**Coloration.** - Carapace and ambulatory legs brown. Chelae reddish-brown.

**Habitat.** - Lives under boulders of streams or in shallow burrows nearby.

**Size.** - Largest male 19.6 by 15.7 mm (NTOU F10202); largest female 21.0 by 16.7 mm (NTOU F10107); smallest mature female 20.3 by 15.9 mm (NTOU F10108).

**Distribution.** - Southern Taiwan.

**Remarks.** - This species is allied to *G. lutao*, but it distinguished by the following aspects: 1. the carapace is flatter than that of *G. lutao*, and the distance of the tip of the male abdomen and anterior margin of sternite 4 is about equal to that of the length of sternites 1-3; 2. the G1 is more slender, the total length being about 3.9 times that of the subterminal segment (about 3.0 times in *G. lutao*); and 3. the outer proximal margin of the G1 subterminal segment has a tooth and the terminal segment is distinctly curved outwards.

**Etymology.** - The name is derived from the Latin for rust-coloured, with reference to the general colour of the carapace of the species.

### ***Geothelphusa tali*, new species**

(Fig. 13)

**Material examined.** - Holotype - Male, 14.9 by 11.3 mm (NTOU F10187), ILAN HSIEN: Tali, coll. J.Y. Shy & W.L. Tsay, 4.ix.1993.

Paratypes - ILAN HSIEN: Tali - 8 males, 7 females (NTOU F10187), coll. J.Y. Shy & W.L. Tsay, 4.ix.1993.

**Diagnosis.** - Carapace rough, flat, with fine concave pits, width and length about 2.4 and 1.8 times depth respectively. Anterolateral region rough, with striae. Anterolateral crista distinct, lined with granules, without epibranchial tooth. Length of second ambulatory leg about 2.0 times carapace length; length of dactylus equal to that of propodus. Male abdominal segment 7 bell-shaped. G1 sinuous, outer proximal margin of subterminal segment with a tooth, inner proximal margin dilated; distal part of G1 terminal segment almost straight or slightly curved inwards (Fig. 13c-e).

**Coloration.** - Carapace olive to greenish-orange, palm and dactylus of chelae orange; ambulatory legs yellowish-gray, with scattered, darker-coloured stripes.

**Habitat.** - Lives under boulders of streams.