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Blow Flies from Samoa with Description of a New Species of *Chrysomya* (Diptera, Calliphoridae)[1)]

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Abstract Ten species of the family Calliphoridae are reported from Samoa. *Chrysomya pacifica* sp. nov. is described as new to science from Western Samoa. Two species, *Hemipyrellia ligurriens* (WIEDEMANN) and *C. varipes* (MACQUART) are newly recorded from the area. A key is provided with ten Samoan species. Hypopygia of *Hemipyrellia rhodocera* BEZZI, *Chrysomya megacephala* (FABRICIUS) and *C. pacifica* sp. nov. are illustrated.

Key words: Calliphoridae; Diptera; new species; Samoa; fauna.

Introduction

The calliphorid flies collected during the expedition to Western Samoa, 11–21 March, 1978 (Tokyo Medical and Dental University Overseas Scientific Research Project, 1977) were studied. I also had a chance to examine some specimens on loan from UNDP/FAO, Suva. Out of these specimens and previous records, ten species were represented. One of these species was new to science and two were discovered from Samoa for the first time. BEZZI (1927) reported five Samoan calliphorid flies including three new species, *Calliphora leucosticta*, *Paurothrix bisetosa*, *P. xiphophora* and *Hemipyrellia rhodocera*. MALLOCH (1930) also described *Paurothrix auriceps* and recorded three previously known species from Samoa. KURAHASHI (1970) revised the genus *Melinda* ROB.-DESVOIDY, 1830 of the Indo-Australian region and synonymized *Paurothrix* BEZZI, 1927, with the former taxon. KURAHASHI (1971) changed the subgeneric state of *Calliphora leucosticta* BEZZI from *Calliphora* to *Paracalliphora* which is common in the South Pacific area. During the expedition, I failed to find the 5 endemic species which were described by BEZZI (1927) and MALLOCH (1930), but fortunately had an opportunity to examine the type material of *Melinda bisetosa* preserved in the B. P. Bishop Museum, Honolulu. The calliphorid fauna of Samoa seems to be poor but characterized by the pronounced dominance of the endemic forms (5 spp., 50% of the total). The endemic elements include *Calliphora leucosticta*, *Melinda auriceps*, *M. bisetosa*, *M. xiphophora* and *Hemipyrellia rhodocera*. The Australian elements (20%) is *Chrysomya varipes* (MACQUART) and one new species

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belonging to the same genus which is described hereinafter. The Indo-Australian elements (3 spp.) make up 30% of the total blow fly fauna in Samoa.

Abbreviations for institutions housing specimens are as follows: B. P. Bishop Museum, Honolulu (BPBM); UNDP/FAO Pests and Diseases Survey, Suva (USDA/FAO); National Institute of Health, Tokyo (NIHJ); National Science Museum, Tokyo (NSMT).

Key to the species of Samoan Calliphoridae

1. Stem vein bare ..... Subfam. Calliphorinae 2
— Stem vein setulose above 6
2. Thoracic squama more or less hairy on upper surface ..... Tribe Calliphorini, *Calliphora leucosticta* BEZZI
— Thoracic squama distinctly bare 3
3. Suprasquamal ridge without posterior parasquamal tuft of hairs; abdomen almost blackish shining 4
— Suprasquamal ridge with posterior parasquamal tuft; abdomen metallic green; supraspiracular convexity clothed with fine erect hairs ..... *Hemipyrellia rhodocera* BEZZI
4. Presutural *ac* 2 ..... *Melinda auriceps* (MALLOCH)
— Presutural *ac* 1 5
5. Antennae brownish; palpi brown; *st* 1+1 ..... *Melinda xiphophora* (BEZZI)
— Antennae blackish; palpi dark brown; *st* 1−2+1 ..... *Melinda bisetosa* (BEZZI)
6. Prothoracic spiracle white 7
— Prothoracic spiracle fuscous 8
7. Legs metallic black; parafacialia fuscous, densely silver dusted; wings hyaline in ♂ and ♀; fore femur in ♂ with no conspicuous white hairs ..... *Chrysomya rufifacies* (MACQUART)
— Legs testaceous yellow in part; parafacialia orange, densely yellow dusted; fore femur in ♂ with dense erect white hairs on dorsal 2/3 ..... *Chrysomya varipes* (MACQUART)
8. Body stout, but rather elongate, submetallic dark blue; thoracic squama largely blackish; vibrissaria, medianae and facialia with black hairs ..... *Chrysomya pacifica* sp. nov.
— Body stout and rounded, metallic green; thoracic squama largely brownish; vibrissaria, medianae and facialia only with yellow hairs ..... *Chrysomya megacephala* (FABRICIUS)

Calliphora leucosticta BEZZI

Calliphora (*Calliphora*) *leucosticta* BEZZI, 1927, Bull. ent. Res., 17: 243.

Calliphora leucosticta: MALLOCH, 1930, Ins. Samoa, 6: 234.
Calliphora (*Paracalliphora*) *leucosticta*: KURAHASHI, 1971, Pacif. Ins., 13: 169.

No available material.
Length: 8.0–20.0 mm.
Bionomics. Unknown.
Distribution. W. Samoa (Upolu I. and Savaii I.).

Melinda auriceps (MALLOCH)

Paurothrix auriceps MALLOCH, 1930, Ins. Samoa, 6: 236.
Melinda auriceps: KURAHASHI, 1970, Pacif. Ins., 12: 538.

No avairable material.
Length: 9.0 mm.
Bionomics. Unknown.
Distribution. Samoa (locality?).

Melinda bisetosa (BEZZI)

Paurothrix bisetosa BEZZI, 1927, Bull. ent. Res., 17: 239.-MALLOCH, 1930, Ins. Samoa, 6: 235.
Melinda bisetosa: KURAHASHI, 1970, Pacif. Ins., 12: 538.

Length: 5.5–9.0 mm.
Specimens examined. W. Samoa (Upolu I.): Cotype ♀, Vaea, 330 m, 25.IV.1924, E. H. BRYAN, Jr. (BPBM). W. Samoa (Savaii I.): Paratype ♀, Salailua, 23.V.1924, E. H. BRYAN (BPBM).
Bionomics. Unknown.
Distribution. W. Samoa (Savaii I. and Upolu I.).

Melinda xiphophora (BEZZI)

Paurothrix xiphophora BEZZI, 1927, Bull. ent. Res., 17: 239.-MALLOCH, 1930, Ins. Samoa, 6: 235.
Melinda xiphophora: KURAHASHI, 1970, Pacif. Ins., 12: 538.

No avariable material.
Length: 7.0–8.0 mm.
Bionomics. Unknown.
Distribution. W. Samoa (Savaii I.).

Hemipyrellia ligurriens (WIEDEMANN)

Musca ligurriens WIEDEMANN, 1830, Ausser. Zweifl. Ins., 2: 655.

New record.

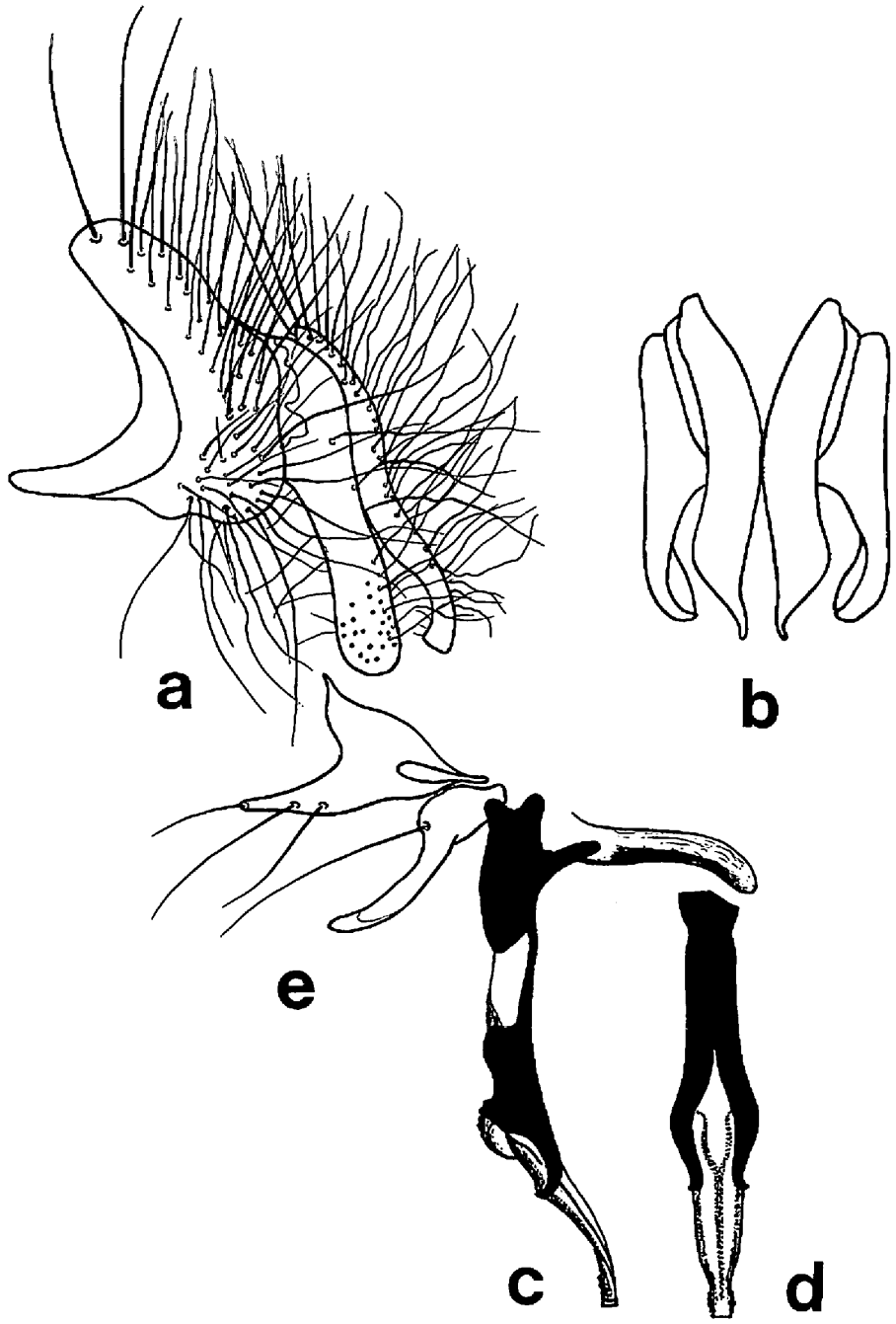

Fig. 1. *Hemipyrellia rhodocera* BEZZI, male hypopygium; a, epandrium, cercus and paralobus, lateral view; b, cerci and paralobi, caudal view; c, aedeagus, lateral view; d, aedeagus, posterior view; e, anterior and posterior parameres, lateral view.

Length: 6.0-10.0 mm.

Specimens examined. W. Samoa (Upolu I.): 1 ♂ 3 ♀, Apia, 14-16.III.1978, S. SHINONAGA and H. SHIMA (NSMT).

Bionomics. Adults were found on garbages in town.

Distribution. W. Samoa (Upolu I.), Dyaul, Manus, New Ireland, New Britain, Amboina, New Guinea (JAMES, 1971; KURAHASHI, 1987), China, Korea, Japan, widely distributed in the Oriental and Australasian Regions.

Hemipyrellia rhodocera BEZZI

Lucilia (*Hemipyrellia*) *rhodocera* BEZZI, 1927, Bull. ent. Res., 17: 237.

Male genitalia is first illustrated in Fig. 1.

Length: 7.5-9.5 mm.

Specimens examined. W. Samoa (Upolu I.): 5 ♂ 73 ♀, Apia, forests, 14-16.III.1978, H. KURAHASHI (NSMT).

Bionomics. Adults were found only in native forests.

Distribution. W. Samoa (Savaii I., Upolu I. & Tutuila I.).

Chrysomya megacephala (FABRICIUS)

Musca megacephala FABRICIUS, 1794, Syst. Ent., 4: 317.
Chrysomya megacephala: MALLOCH, 1930, Ins. Samoa, 6: 233.

Male genitalia is illustrated in Fig. 2 for the purpose of comparison with that of the sibling new species.

Length: 10.0 mm.

Specimens examined. W. Samoa (Upolu I.): 37 ♂ 53 ♀, Apia, town and shore, 19.VI.1969, M. J. STTELZEA (UNDP/FAO), 14-16.III.1978, H. KURAHASHI, S. SHINONAGA and H. SHIMA (NSMT); 5 ♂ 6 ♀, Alafua, ?.III.1969, A. CATLEY (UNDP/FAO).

Bionomics. Adults are commonly found on garbages in dumping ground.

Distribution. Widely distributed in the Oriental and Australasian Regions, and recently introduced into the Afrotropical and Neotropical Regions.

Chrysomya pacifica sp. nov.

Chrysomya sp. nr *megacephala*: KURAHASHI, 1980, Pacif. Ins., 22: 410.—KURAHASHI, 1981, Pacif. Ins., 23: 443.—KURAHASHI, 1982, Pacif. Ins., 24: 246.—KURAHASHI, 1987, Occasion. Pub. ent. Soc. Jpn., (1): 79.

Length: 6.0-10.5 mm. Body metallic dark blue.

♂. Head: eyes bare, holoptic, facets of upper 2/3 slightly enlarged, but not sharply demarcated from lower 1/3; frons index 0.01; frontal stripe dark brown,

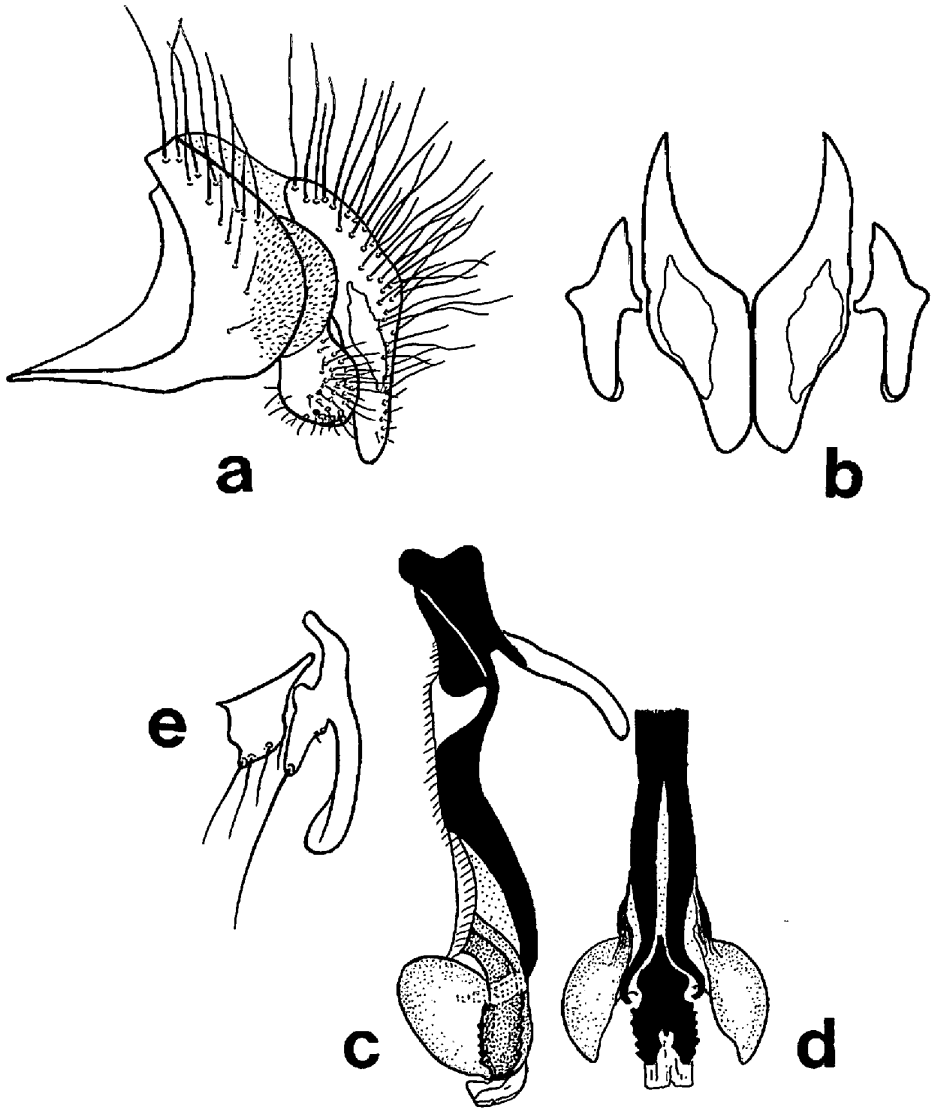

Fig. 2. *Chrysomya megacephala* (FABRICIUS), male hypopygium; a, epandrium, cercus and paralobus, lateral view; b, cerci and paralobi, caudal view; c, aedeagus, lateral wiew; d, aedeagus, posterior view; e, anterior and posterior parameres, lateral view.

obliterated at narrowest part of frons; parafrontalia narrow, fuscous, gray-dusted, with black setulae; parafacialia very narrow, yellowish-gray dusted, with black setulae above; face and facialia brown, yellowish-gray dusted; facial carina absent; epistome brown, slightly projecting forward; facialia and vibrissalia brown, entirely with black setulae; peristomal bristles black except for yellow ones on posterior 2/3; medianae brown, bare, slightly golden-dusted; genae and postgenae yellowish brown, semitranslucent, golden-dusted, clothed with brown to black hairs; occiput black, silver-gray dusted, blackish haired except for yellow hairs on large portion

of central part; antennae brownish orange, darkened dorsally on 3rd segment, the 2nd segment blackish setulose, with 1 long bristle, the 3rd segment about 4 X as long as 2nd; arista brown, long plumose, palpi orange.

Thorax: shining, dark blue, thinly covered with silver dusting; 1 lateral triangular dark spot present but not distinct in hind view; humeri and scutellum concolorous with dorsum; postalar calli largely metallic black, brownish in part; propleura with yellow fine hairs, other pleura usually clothed with black hairs; prosternum with both yellow and black hairs; supraspiracular convexity bare; postalar declivity black, with black bristly hairs; tympanic tuft of soft black hairs developed; anterior parasquamal tuft of fuscous hairs developed; posterior parasquamal portion sparsely blackish setulose; thoracic spiracles fuscous. Chaetotaxy; *ac* 0+2, as prescutellars; *dc* 2+3−4, 1 addtional bristle present between posterior pairs of *dc* and *ac*; *ia* 0+1; *h* 2−3; *ph* 0; *prs* 1, *sa* 3, *pa* 2, *n* 2, *st* 1+1, *sc* 5−6+1−2, propleural and prostigmatal bristles well developed.

Wings: hyaline; veins brown; epaulet and basicosta black; stem vein ciliated on posterodorsal surface; subcostal sclerite fuscous brown, pubecent, also with black setulae on apical and basal extremities; 3rd longitudinal vein blackish setulose above and below reaching 1/2 way to r-m; bent of 4th vein forming a right angle; R_5 open; thoracic squama largely blackish except for external portion connecting to alar one whitish and bare; alar squama bare, fuscous and translucent except for white portion connecting to thoracic one, ventral surface of this white portion with fuscous soft hairs, white portion well contrast to blackish large part of thoracic squama. Halteres fuscous brown.

Legs: black, with black hairs; fore tibia with 1 *p* on apical 1/3; mid tibia with 1 *pd*, 2 *p*, 1 *v* and 1 *ad*; hind tibia with 2 short *av*, 1 *ad* and 1 *pd*.

Abdomen: metallic dark blue, without silver dusting; abdominal hairs black; tergites 3-4 dark marginal banded, but the band not so much clear from anterior metallic discal part; tergite 3 with decumbent marginal bristles; tergite 4 with complete row of erect marginal bristles; tergite 5 with many erect bristly hairs on disc as well as marginals; the length of tergite 5 less than or subequal to that of the preceding tergite 4; hypopygium as shown in Fig. 3.

♀. Head: eyes dichoptic; frons index 0.29-0.33; frontal stripe about 2 X one of parafrontalia just in front of anterior ocellus, slightly narrowed anteriorly and posteriorly, the ratio of the width of the anterior and posterior parts 1 : 1; parafrontalia provided with ca. 10 pairs of *ori*; *ors* 2+1, these *ors* directed externally; *oc* developed; no accessory ocellar bristle; *ov* and *iv* well developed; *poc* parallel; several occipital hairs present; jowls intermixed with yellow and black hairs. Thorax: *ph* 1, weakly developed. Wings: ventral surface of white portion with whitish piles, not fuscous. Legs: fore tibia with 3-4 short *ad*. Abdomen: marginal bristles on tergites 3-4 weakly developed and decumbent. Otherwise as described for male.

Holotype: ♂, W. Samoa (Upolu I.): Apia, forests, 14-16.III.1978, H.

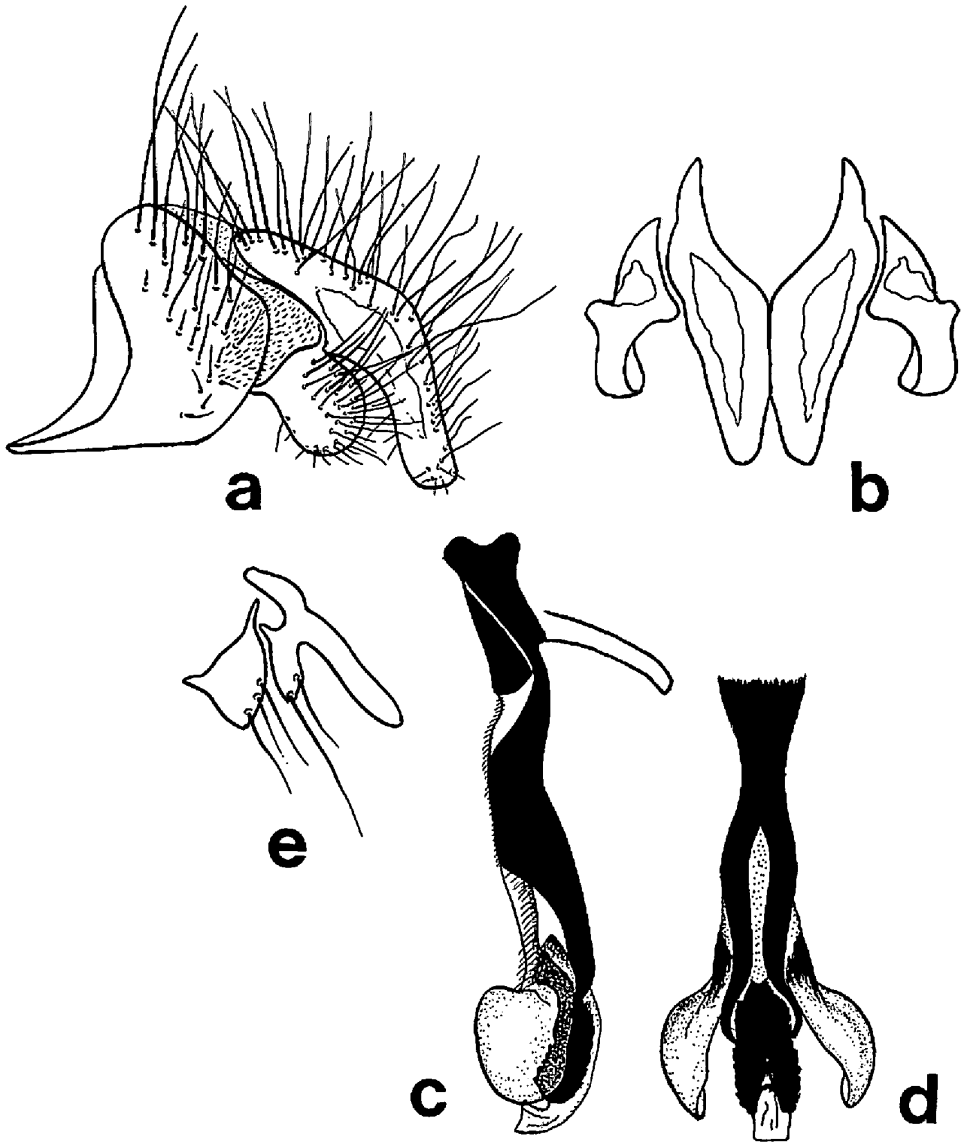

Fig. 3. *Chrysomya pacifica* sp. nov., male hypopygium; a, epandrium, cercus and paralobus, lateral view; b, cerci and paralobi, caudal view; c, aedeagus, lateral view; d, aedeagus, posterior view; e, anterior and posterior parameres, lateral view.

KURAHASHI (BPBM). Paratypes: W. Samoa (Upolu I.): 27 ♂ 15 ♀, same data as holotype (BPBM, NSMT, NIHJ); 1 ♀, Alafua, ?.V.1969, A. CATLEY (UNDP/FAO).

Remarks. This new species has been considered to be an ecological form (nf/fnf) of *Chrysomya megacephala* (FABRICIUS) in my previous works (KURAHASHI, 1982, 1984; MIHARA & KURAHASHI, 1991). In taxonomical point of view, I prefer to describe it as a new sibling species of *C. megacephala* having the

several morphological differences as given in the key.

Bionomics. Adults are commonly found in dense tropical forests and attracted to decaying animal matter. This species is feral and only found in natural forests as well as secondary ones, but not on garbages in urban areas.

Distribution. W. Samoa, Fiji (Viti Levu), New Caledonia, Vanuatu (Efate, Espiritu Santo) and Papua New Guinea (New Britain, New Ireland, Bougainville I.).

Chrysomya rufifacies MACQUART

Lucilia rufifacies MACQUART, 1843, Mem. Soc. Sci. Agr. Lille, 1842: 303 (1843: 146).
Chrysomya rufifacies: BEZZI, 1927, Bull. ent. Res., 17: 235.—MALLOCH, 1930, Ins. Samoa, 6: 234.

Length: 7.0–10.0 mm.

Specimens examined. W. Samoa (Upolu I.) 4♂10♀, Apia, sea shore, 14–18.III.1978, H. KURAHASHI (NSMT); 6♂11♀, Alafwa, 30.IV.1969, 10.VI.1969, A. CATLEY (UNDP/FAO).

Bionomics. Larvae are predacious and attack other dipteran larvae in the same breeding place. Recorded as common in Samoa (MALLOCH, 1930; BUXTON, 1935).

Distribution. Widely distributed in the Oriental and Australasian Regions.

Chrysomya varipes (MACQUART)

Lucilia varipes MACQUART, 1850, Dipt. exot., Suppl. 4: 259.

New record.

Length: 4.0–6.5 mm.

Specimens examined. W. Samoa (Upolu I.): 5♂10♀, Apia, 14–16.III.1978, H. KURAHASHI (NSMT).

Bionomics. Adults are commonly found in forests and attracted by decaying meat.

Distribution. W. Samoa (Upolu I.), Fiji, New Caledonia, New Guinea, Australia (Queensland & New South Wales).

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