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XANTHIDAE OF IFALUK ATOLL, CAROLINE ISLANDS, COLLECTED IN 1953 BY D. P. ABBOTT AND F. M. BAYER WITH SPECIAL REFERENCE TO CORAL COMMENSALS

John S. Garth

ABSTRACT

Although the collection of xanthid crabs obtained by D. P. Abbott and F. M. Bayer at Ifaluk Atoll contained less than 40 species, it was remarkable in including an almost complete suite of obligate coral commensals of the genera *Trapezia* and *Tetralia*, although the representation of *Cymo* and *Domecia* was less complete. This was due to the extensive collecting of living corals by Bayer and their segregation by species. Host preference of *Trapezia* species for pocilloporid corals and of *Tetralia* species for acroporid corals was upheld, although evidence concerning host preference of *Cymo* and *Domecia* species was inconclusive. From numerous washings of dead coral and algae by Abbott a complete suite of *Chlorodiella* species was obtained, and the existence of a core of xanthid genera, among them *Chlorodiella, Paraxanthias, Phymodius,* and *Pilodius,* serving as facultative symbionts of corals and algae was demonstrated. Large xanthids from beach rock, such as *Eriphia, Etisus, Leptodius,* and *Xantho,* were not represented in the Ifaluk collection; otherwise, it compares well with collections made later at Enewetak in the Marshall Islands, allowing for certain substitutions. The coral reef habitat and its associated infauna extends throughout the Indo-west Pacific, and several of its commensal crabs occur in the eastern Pacific also, when preferred host corals occur.

This study takes us back to the decade of the 1950's, following the termination of World War II, which saw a resurgence of interest in the United States in western Pacific islands formerly mandated to Japan, and, before World War I, to Germany. Their scientific exploration was undertaken by the Pacific Science Board of the National Research Council, under the direction of the late Dr. Harold Coolidge, which dispatched teams of scientists to Arno Atoll in the southern Marshall Islands in 1950, to Onotoa in the southern Gilbert Islands in 1951, and to Raroia in the Tuamotu Islands in 1952. The Brachyura of these expeditions were studied by Holthuis (1953). In the same year, 1953, the Pacific Science Board dispatched a team of scientists to Ifaluk Atoll in the western Caroline Islands, of which the late Donald P. Abbott was a member, and, following the departure of Marston Bates, the leader. Two popular accounts emanating from this expedition were the article, "Ifalik (sic), Lonely Paradise of the South Seas," by Marston Bates (1956), and the book, "Coral Island, Portrait of an Atoll," by Marston Bates and Donald P. Abbott (1958).

The Xanthidae from Ifaluk Atoll collected in 1953 by Donald P. Abbott and Frederick M. Bayer, another expedition member, were among those received from the Smithsonian Institution in 1962 as part of its since discontinued AEC/ONR Project, in which the National Museum sought to have its unworked crustacean collections from the tropical Indo-Pacific identified by selected systematists, of whom I was one. My reasons for undertaking this formidable assignment were to increase my knowledge of the immensely rich tropical Indo-west Pacific fauna, to which I had been introduced at Enewetak Atoll in the Marshall Islands under the auspices of the AEC in 1957 and 1959, and to use the modest stipend offered to visit museums in Europe in which type material of Indo-west Pacific xanthid crabs was located. I therefore quickly identified and returned to the National

Museum the easy half of the specimens, reserving the difficult half for later years. One of the smaller collections kept intact as worthy of separate report was the Ifaluk collection. My intention was to compare it with the earlier Pacific Science Board collections (Holthuis, 1953), and with my own Enewetak collections (Garth, 1964), and those of my former graduate students, Jens W. Knudsen and Alan D. Havens (Garth et al., 1987).

Earlier Explorations

The United States Exploring Expedition, under the command of Charles Wilkes, during the years 1838–1842, apparently did not visit the Caroline Islands. Also, according to Dana (1852), "The unfortunate wreck of the Peacock on the Columbia Bar sacrificed all the collections made through two seasons in the South Pacific, ranging . . . from the Paumotus [Tuamotus] to the Navigator Islands [Samoa], and also to the Kingsmill [Gilbert Islands] group." This disaster notwithstanding, it is upon the remaining collections from this remarkable expedition that our knowledge of the systematics of many invertebrate groups, including the brachyuran crustaceans, of Pacific islands and atolls largely depends.

The Pacific Expedition of Dr. Sixten Bock, during the years 1917–1918, visited the Fiji, Gilbert, Ellice, and Marshall islands, but not the Caroline Islands. However, according to Balss (1938), "Die von den beiden Forschern [Dr. Bock and Dr. Christian Hessle] gemachten Sammlungen zeigen die typiche Korallriffauna, wie sie sich von der Ostküste Afrikas bis nach Hawai und den Polynesischen Inseln erstreckt; die Hauptmenge der Arten gehört dementsprechend der schwierigen Gruppe der Xanthiden an . . ." From this we learn of the continuity of the coral reef habitat from East Africa to Hawaii and Polynesia, and of the preponderance therein of the xanthid crabs, a group that Balss considered difficult. (He was not alone in this assessment.)

The Micronesian Expedition of Prof. Teiso Esaki, during the years 1937–1938, was restricted to the Marianas (Saipan, Rota) and the western Carolines (Yap, Palau), according to Miyake (1938). However, the Checklist that resulted from this expedition (Miyake, 1939) formed the basis for further work in Micronesia by the Japanese (Miyake and Takeda, 1968), and by the Americans, who assumed responsibility for the governance of these islands following World War II. Thus Saipan, which lies 800 nautical miles north of Ifaluk, and Yap, which lies 600 nautical miles northwest of Ifaluk, can be said to have been the islands closest to Ifaluk about which anything concerning their invertebrate fauna was known when the Pacific Science Board decided to investigate it in 1953.

Scope of the Collection

The number of xanthid species collected by D. P. Abbott and F. M. Bayer at Ifaluk Atoll is not large: 35 species (40 if unidentified *Pilumnus* species are included). However, it is remarkable in at least two particulars: it contains an almost complete suite of coral commensals of the genera *Trapezia* and *Tetralia* (an incomplete suite of *Cymo* and *Domecia*), and a complete suite of the genus *Chlorodiella*. The completeness of the coral commensal xanthids is due to the extensive collecting of living corals and their segregation, together with their associated infauna, by Bayer; the completeness of the *Chlorodiella* suite is due to the numerous washings of dead (and sometimes live) corals and algae by Abbott. Together, these two activities account for most of the xanthid crabs collected, for *Liomera* (formerly *Carpilodes*) and *Liocarpilodes, Actaea* (sensu lato) and *Actumnus,* are often found in living corals, although not exclusively so, while *Chlorodiella, Para-*

xanthias, Phymodius, and *Pilodius* (formerly *Chlorodopsis*) occur in rubbly substrate, in which dead coral and coralline algae predominate. Large xanthids obtainable from beach rock, such as *Eriphia, Etisus, Leptodius,* and *Xantho,* were not present in the collection sent for identification, although it is possible that such well known and easily recognized xanthids were identified and shelved on arrival by Smithsonian curators.

Collections Made from Living Corals

Sixty species of corals were collected at Ifaluk Atoll, Caroline Islands, by Bayer and Abbott in 1953. As identified by Dr. J. W. Wells, Department of Geology, Cornell University, Ithaca, N.Y. (manuscript dated 7 March 1960 filed with the Smithsonian Institution and made available by Dr. R. B. Manning), these were: Anthozoa Scleractinia: 56 species belonging to 9 families and 24 genera; Anthozoa Alcyonaria: one species of one family and genus; Hydrozoa Milleporina: two species of one family and genus; Hydrozoa Stylasterina: one species of one family and genus.

Xanthid crabs were collected at Ifaluk from the coral families, genera, and species listed in Table 1. Table 1 shows that (1) species of the crab genus *Trapezia* are confined to the coral family Pocilloporidae, whereas species of *Tetralia* are confined to the family Acroporidae, both families of Scleractinian corals. This separation has proven consistent wherever both crabs and corals have been studied, whether in the Red Sea, Indian Ocean, or western Pacific Ocean. (2) Host preference at the generic level is lacking, *Trapezia cymodoce,* for example, occurring in *Stylophora, Seriatopora,* and *Pocillopora,* as does also *Trapezia guttata.* (3) Host preference at the species level is also lacking, *Trapezia cymodoce* occurring in *Pocillopora danae, elegans,* and *setchelli,* as does also *Trapezia digitalis.* This is also consistent with what is known to occur elsewhere. (4) The single occurrence of *Domecia glabra* in *Acropora surculosa,* but not of *Domecia hispida* Eydoux and Souleyet, known elsewhere from corals of the family Pocilloporidae, upholds in part the divided preference of *Domecia* species: of *D. glabra* for an acroporid, of *D. hispida* for a pocilloporid coral.

Comparison with Enewetak Atoll

The corals and their commensals collected at Ifaluk Atoll by Abbott and Bayer in 1953 can best be compared with the corals and commensals collected at Enewetak Atoll by J. S. Garth in 1959, the first year in which corals there were segregated by species, and by E. S. Reese in 1960 and 1961, whose corals were further segregated by individual heads (Garth, 1964). These segregated collections numbered 30 and included 10 species of Acroporidae and six species of Pocilloporidae, as well as one species each of Dendrophyllidae, Poritidae, Helioporidae, and Thamnasteriidae. Corals were identified by E. C. Allison, Geology Department, San Diego State College, and Museum of Paleontology, U.C. Berkeley, who undoubtedly used Wells (1954) as a reference.

Of the four species of *Pocillopora* collected at Ifaluk and the five species collected at Enewetak, only one, *P. elegans,* was common to both collections, as was the single species of *Seriatopora, S. hystrix,* also family Pocilloporidae. Of the eight species of *Acropora* collected at Ifaluk and the 10 species collected at Enewetak, only one, *A. corymbosa,* was common to both collections. However, when the commensal crabs from these corals are compared, the same suite of *Trapezia* species was present at both Ifaluk and Enewetak, although *Domecia hispida* was found only at Enewetak. *Tetralia glaberrima* was present at both localities, al-

Table 1. Host preferences of commensal crabs for coral families, genera, species

	Pocilloporidae					Acroporidae		
	Stylo-pora pistillata (Esper)	*Seriato-pora hystrix* Dana	*Pocil-lopora danae* Verrill	*Pocil-lopora elegans* Dana	*Pocil-lopora setchelli* Hoff.	*Acropora disticha* (Brook)	*Acropora nasuta* (Dana)	*Acropora surculosa* (Dana)
Trapezia areolata Dana	x	x	x					
Trapezia cymodoce (Herbst)	x	x	x	x	x			
Trapezia digitalis Latreille			x	x	x			
Trapezia ferruginea Latreille			x	x				
Trapezia guttata Rüppell	x	x	x					
Trapezia rufopunctata (Herbst)	x							
Trapezia speciosa Dana		x	x	x	x			
Tetralia glaberrima (Herbst)						x	x	x
Domecia glabra Alcock								x

though *T. heterodactyla* (currently known as *Tetraloides nigrifrons*) was found only at Enewetak.

The presence of the same suite of *Trapezia* species at both atolls in a total of nine species of *Pocillopora,* only one of which was common to both, emphasizes host specificity at the generic level, which the occurrence of *Trapezia* in the single *Seriatopora* species, also Pocilloporidae, raises to the familial level. The occurrence of *Tetralia glaberrima* at both atolls in a total of 17 *Acropora* species, only one of which was common to both, emphasizes the same. The absence of *Domecia hispida* at Ifaluk, where only *D. glabra* was collected, as also of *Tetralia heterodactyla* (= *Tetraloides nigrifrons*), where only *T. glaberrima* was collected, could be attributed to inadequate sampling, as neither species is abundant, and both are easily overlooked. The absence from the Ifaluk collection of host data concerning the single species of *Cymo, C. quadrilobatus,* makes it impossible to compare host preferences of this crab genus at Ifaluk and at Enewetak, where *C. andreossyi* was found in *Pocillopora* and *C. deplanatus* and *C. melanodactylus* were found in *Acropora* (Garth, 1964).

In conclusion, the Ifalukian evidence confirms, but does not extend, our knowledge of host specificity of coral commensals as determined at Enewetak.

Collections Made from Other Substrates

A total of 18 species of xanthid crabs was washed from algae or turtle grass, or from dead coral, by D. P. Abbott. Species washed from algae or from turtlegrass included *Actaea* sp. nr. *tumulosa* (twice), *Actumnus tomentosus* (once each from *Halimeda* and from turtle grass), *Actumnus* sp. (once), *Chlorodiella barbata* (once, from turtle grass), *C. corallicola* (twice), *C. cytherea* (twice), *C. laevissima* (five times, including once also with coral), *C. nigra* (once, from *Halimeda*), *Liocarpilodes armiger pacificus* (twice, including once with dead coral present), *Liomera bella* (once, from *Udotea*), *Paraxanthias notatus* (seven times, with dead coral present twice), *Phymodius monticulosus* (once), *Pilodius pilumnoides* (three times), *Platypodia actaeodes* (once), *Tetralia glaberrima* (once, without mention of associated coral), *Trapezia digitalis* (three times, also without mention of associated coral, but with *Halimeda* once), *Xanthias lamarcki* (twice). Species washed from dead coral alone included *Chlorodiella laevissima* (once), *Paraxanthias notatus* (twice), and *Pilodius spinipes* (once).

The 18 species of xanthid crabs washed from algae or turtle grass, or from dead

Table 2. Crabs washed from algae, turtle grass, or dead coral, with number of occurrences in each

	From algae				From turtle grass	From dead coral
	Unspecified	*Caulerpa*	*Halimeda*	*Udotea*		
Actaea sp. nr. *tumulosa*	2					
Actumnus tomentosus			1		1	
Actumnus sp.	1					
Chlorodiella barbata					1	
Chlorodiella corallicola	2					
Chlorodiella cytherea	2					
Chlorodiella laevissima	5					1 (1)
Chlorodiella nigra			1			
Liocarpilodes armiger	2					(1)
Liomera bella				1		
Paraxanthias notatus	7					2 (1)
Phymodius monticulosus	1					
Pilodius pilumnoides	3					
Pilodius spinipes	3					
Platypodia actaeodes	1					
Tetralia glaberrima	1					
Trapezia digitalis	3		(1)			
Xanthias lamarckii	2					

coral (Table 2), include all 4 previously recognized *Chlorodiella* species (Forest and Guinot, 1961), plus the later described *C. corallicola,* Miyake and Takeda (1968).

It is difficult to compare crab collections made at Enewetak from organic substrates other than living corals with those made at Ifaluk by Abbott and Bayer because at Enewetak only dead or overgrown coral were considered as a contrasting habitat to living coral, whereas, at Ifaluk, algae, turtle grass, and dead coral were considered, and the alga from which washings were made was occasionally specified as *Halimeda, Caulerpa,* or *Udotea.* However, the fact that overgrown coral was mentioned at Enewetak indicates that algae were, in fact, present as overgrowth. In studying the crab-coral relationships at Enewetak, Garth (1964) listed species found exclusively in living coral (9), species found in living coral, but also in other environments (9), and species found exclusively in dead or overgrown coral (17). When these lists are compared with lists of species found by Abbott and Bayer at Ifaluk in these habitats (Table 3), it is apparent that (a) the same suite of inhabitants of living corals, *i.e.,* the obligate symbionts or commensals, except for *Tetralia heterodactyla* (= *Tetraloides nigrifrons*), occurs at both localities, *Trapezia guttata,* occurring at Ifaluk, having been recognized at Enewetak subsequent to 1964 (Garth et al., 1987). (b) When the suite of species washed from algae, turtle grass, and dead coral at Ifaluk is compared with the other two lists at Enewetak, it compares better with the list of species found in coral, but not exclusively so, at Enewetak than with the list of species found there in dead or overgrown coral. Species common to the first list are five in number: *Chlorodiella laevissima, C. nigra, Liomera bella, Pilodius pilumnoides,* and *Paraxanthias notatus*; whereas, species in common with the second list number only three: *Chlorodopsis spinipes, Liocarpilodes armiger pacificus,* and *Phymodius nitidus-monticulosus.* The comparison demonstrates, however, that, regardless of occasional replacement species of the same genera, there exists throughout the region, as elsewhere in the Indo-west Pacific, a core of xanthid genera, such as *Chlorodiella, Pilodius* (formerly *Chlorodopsis*), *Paraxanthias,* and *Phymodius,* that

Table 3. Occurrence of coral commensals at Ifaluk and Enewetak compared

Ifaluk	Enewetak
In living coral only:	Same:
Cymo quadrilobatus	*Cymo melanodactylus*
Domecia glabra	*Domecia glabra*
	Domecia hispida
Tetralia glaberrima	*Tetralia glaberrima*
	Tetralia heterodactyla
Trapezia cymodoce	*Trapezia cymodoce*
Trapezia danai	*Trapezia danai*
Trapezia digitalis	*Trapezia digitalis*
Trapezia guttata	(*Trapezia guttata*)
Trapezia rufopunctata	*Trapezia rufopunctata*
Trapezia speciosa	*Trapezia speciosa*
From algae or dead coral:	Not found exclusively in live coral:
	Actaea superciliaris
Chlorodiella barbata	
Chlorodiella corallicola	
Chlorodiella cytherea	[*Chlorodiella cytherea*]
Chlorodiella laevissima	*Chlorodiella laevissima*
Chlorodiella nigra	*Chlorodiella nigra*
	Pilodius areolatus
Liomera bella	*Liomera bella*
Pilodius spinipes	*Pilodius pilumnoides*
Paraxanthias notatus	*Paraxanthias notatus*
Phymodius monticulosus	*Phymodius ungulatus*
	Zozymodes biunguis
Xanthias lamarckii	
In dead coral:	In dead or overgrown coral (list of 17):
Pilodius spinipes	*Pilodius spinipes*
Liocarpilodes armiger	*Liocarpilodes armiger*
Phymodius monticulosus	*Phymodius nitidus*

may be called facultative symbionts or commensals, being found in living corals, but not restricted to them.

Distribution of Coral Commensals

To give this paper a global dimension, and to justify its inclusion in a biogeographical session, something should be said of the distribution of the coral commensal crabs beyond the Caroline and Marshall islands. This will of necessity be brief, as the subject was considered extensively in an earlier paper (Garth, 1974). The continuity of the Indo-west Pacific fauna from the Red Sea and East Africa to Hawaii and the Tuamotu Islands has been mentioned. This continuity applies to coral species and their commensal crabs alike. What is remarkable, however, is that several of the coral commensals, both crabs and shrimps, have transgressed the Pacific Oceanic Barrier and are firmly established in the eastern Pacific as well. This is true of the *Trapezia* species, *T. ferruginea* and *T. digitalis,* which were able to establish themselves in the eastern Pacific because of the presence of pocilloporid corals. It is not true of the *Tetralia* species, because acroporid corals are not found in the eastern Pacific. And, in the case of the *Domecia* species, it is *D. hispida,* the pocilloporid-dweller, rather than *D. glabra,* the acroporid-dweller, that is found in the eastern Pacific. Assuming that the larval stages of

both genera disperse with equal facility, it is the established presence of the preferred coral host in the new environment that assures their survival.

Nomenclatural Note

Important name changes have been made affecting the coral-inhabiting crabs since Garth (1964). The subfamily Trapeziinae of the family XANTHIDAE is now generally accorded family rank: TRAPEZIIDAE; the family XANTHIDAE, as formerly understood, becomes the superfamily XANTHOIDEA. The correct name for *Tetralia heterodactyla,* as formerly used by this writer, is *Tetraloides nigrifrons* (Dana) (see Galil, 1985). The correct name for *Trapezia danai* Ward is *T. intermedia* Miers (see Galil, pers. comm.). Reverting to an earlier name, the genus *Carpilodes* is now known as *Liomera*; the genus *Chlorodopsis* is now known as *Pilodius* (Forest and Guinot, 1961), and the genus *Actaea* has been subdivided into half a dozen smaller genera (Guinot, 1971). With this explanation, it is hoped that readers will be able to reconcile names used for Enewetak crabs in Garth (1964) with those used in Garth et al. (1987), and for Ifaluk crabs, in the following Systematic List (See Appendix).

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ADDRESS: *Allan Hancock Foundation, University of Southern California, University Park, Los Angeles, California 90089-0372.*

APPENDIX

Brachyura from Ifaluk Atoll, Caroline Islands, collected by D. P. Abbott and F. M. Bayer in 1953

Family XANTHIDAE

Actaea sp., nr, *tumulosa* Odhner. Abbott 58-F-3, from algae, 2 yg; 130-C-4, from algae, 1 yg.
Actumnus tomentosus Dana. Abbott 114-E, from algae, 1 yg; 176-G-3, from turtle grass, *Halimeda*, 1 yg.
Actumnus sp., not *antelmi* Ward. Abbott 50-E-2, from algae, 1♂.
Chlorodiella barbata (Borradaile). Abbott 113-G-1, from turtle grass, 1♂, 1 yg.
Chlorodiella corallicola Miyake and Takeda. Abbott 98-D-2, from algae, 1♀; 138-E-1, from algae, 1♂. Bayer 576, substrate not given, 1♀.
Chlorodiella cytherea (Dana). Abbott 32-G-2, from algae, 1♂; 73-G-3, from algae, 1 yg.
Chlorodiella laevissima (Dana). Abbott 39-C, substrate not given, 1♂; 42-F-1, from algae, 1 yg; 68-E, from algae, 1♀; 130-C-4, from algae, 1 yg; 146-151-H-2, from dead coral, algae, 5 yg; 160-165-J-3, from algae, 1 yg.
Chlorodiella nigra (Forskål). Abbott 99-D, from *Halimeda*, 1♂.
Cycloxanthops cavatus Rathbun. Bayer 433, from *Pocillopora danae*, 2♀.
Cymo quadrilobatus Miers. Natives, 1 yg. Bayer, substrate not given, 1 yg.
Domecia glabra Alcock. Bayer 423, from *Acropora surculosa*, 1♂.
Liocarpilodes armiger pacificus Balss. Abbott 132-E-1, from algae, dead coral, 1♂; 141-D-1, from algae, 1♀.
Liomera bella (Dana). Abbott 95-D-1, intertidal, 1 yg; 158-159-D-3, from algae (*Udotea*), 1 yg.
Paraxanthias elegans (Stimpson). Abbott 141-D-1, from algae, 1 yg; 179-184-M-3, beyond turtle grass beds, 1♀.
Paraxanthias notatus (Dana). Abbott 9-C-3, intertidal, 1 yg; 30-C-1, from algae, 4 yg; 32-G-2, from algae, 1 yg; 41-D-2, from algae, chela, legs; 69-E-6, from algae, corals, 3 yg; 75-D-5, from rock, algae, 1 yg; 190-E-2, from octopus, 1 yg; 208-C-5, from algae, 2 yg.
Phymodius monticulosus (Dana). Abbott 155-157-G-6, from algae, 1 yg; Bayer 768, substrate not given, 1 yg; 784a, substrate not given, 1 yg.
Pilodius pilumnoides (White). Abbott 8-B-3, from algae, 1 yg ♂; 39-C, intertidal, chela, legs; 73-G-3, from algae, 1 yg; 74-B, from algae, 1♂.
Pilodius spinipes (Heller). Abbott 78-G, from dead coral, 1♂.
Pilodius spp. (further identification not attempted). Abbott 72-G-2, intertidal, 3 yg; 126-C-8, from algae and dead coral (*Heliopora*), 1 yg; 137-E-5, from algae (*Halimeda*). Bayer 529, substrate not given, 1 specimen.
Pilumnus ?andersoni de Man. Natives, 1♂. Abbott 26-F-1, 1 yg; 39-C, 1 yg; 42-F-1, 4 yg; 50-E-2, 1 yg; 69-E-6, 2 yg; 113-G-1, 1♂; 117-B, 1♂.
Pilumnus longicornis Hilgendorf. Bayer 380, 1 yg.
Pilumnus purpureus A. Milne Edwards. Bayer 358, 1♂.
Pilumnus spp. (further identification not attempted). Abbott 46-E-1, 1 yg; 44-D-2, 2 yg; 67-D-4, 1 yg.
Platypodia actaeodes (A. Milne Edwards). Abbott 128-C-2, from algae, 1 yg.
Platypodia semigranosa (Heller). Abbott 166-G-1, from *Tridacna*, 1 yg.
Tetralia glaberrima (Herbst). Natives, substrate not given, 2♂, 1♀ov; same, 1♂, 2♀(1 ov). Abbott 16-B, from *Acropora disticha*, 1♂; 22-D-4, intertidal, substrate not given, 1♀ov; 41-D-2, from algae,

1♀ov. Bayer 418, from *Acropora surculosa,* 1♂, 1♀ov; 419, same host, 1♀ov; 421, from *Acropora disticha,* 1♂, 1♀ov; 422, same host, 1♂, 1♀ov.

Trapezia areolata Dana. Bayer 396, substrate not given, 1♂, 1♀ov; 415-B, from *Stylophora pistillata,* 1♂, 1♀ov; 768, from *Pocillopora danae,* 1♂, 1♀ov, 1 yg; 789, same host, 1♂, 1♀.

Trapezia cymodoce (Herbst). Abbott 57-C, from *Stylophora pistillata,* 1♂, 1♀, 1 yg ♀. Bayer 327, from *Pocillopora danae,* 1 yg ♀; 328, same host, 1♂, 1♀ov; 376, same host, 1♀ov; 380, from *Pocillopora elegans,* 1♂, 1♀ov; 381, host unspecified, 1♂, 1♀ov; 395, from *Pocillopora danae,* 2♂, 3♀ (2 ov); 396, from *Seriatopora hystrix,* 1♂, 1♀ov, 1 intersex; 401, same host, 2♂; 415, from *Stylophora pistillata,* 2♂, 3♀ov; 416, from *Pocillopora elegans,* 1♂; 417, same host, 1♂, 1♀ov; 432, from *Pocillopora setchelli,* 1♂; 433, from *Pocillopora danae,* 1♀; 640, host unspecified, 2♀; 641, same, 2♀; 687, same, 2♂; 741, same, 1♀ov; 755, same, 1♀ov; 780, same, 1♂, 1♀ov; 782B, from *Pocillopora danae,* 1♂, 1♀ov; 783B, same host, 1♂, 3♀ov; 783D, same host, 1 yg; 783E, same host, 1♂, 1 yg ♀; 784B, same host, 1♂, 1♀ov; 784E, same host, 1♂, 1♀ov; 785B, same host, 1♂, 1♀ov; 786, same host, 1♂, 2♀(lov), 1 yg; 787, from *Seriatopora hystrix,* 1♂, 1♀ov; 788, from *Pocillopora danae,* 1♂, 1♀ov; 789, same host, 2♂, 2♀ov, 2 yg; 791, same host, 2♂, 4♀ov; 804, host unspecified, 1♀ov; 812, same, 1♂, 2♀.

Trapezia danai Ward. (See nomenclatural note.) Bayer 812, host unspecified, 1♀ov.

Trapezia digitalis Latreille. Abbott 17-E-2, from dead coral, 1♀ov; 155-157-G-6, from algae, 1 yg; 160-165-J-3, from algae, 1 yg; 167-D-2, from algae (*Halimeda*), 3 yg. Bayer 431, from *Pocillopora elegans,* 1♂, 2♀(lov); 707, host unspecified, 1♂; 791, from *Pocillopora danae,* 1♀ov.

Trapezia digitalis group. Bayer 432, from *Pocillopora setchelli,* 1♂, 1 yg ♀; 707, host unspecified, 2♂.

Trapezia ferruginea Latreille. Bayer 327, from *Pocillopora danae,* 1 ♂; 328, same host, 1♀ov, 1 yg; 376, same host, 1♂; 395, same host, 1♂, 1♀ov; 416, from *Pocillopora elegans,* 2♂; 416A, same host, 1♀ov; 417, same host, 2♂, 2♀; 687, host unspecified, 1♂, 2♀; 718, same, 1♀ov; 733, same, 1♂, 1♀ov; 741, same, 17♂, 16♀(10ov), 34 yg; 768, from *Pocillopora danae,* 1♂, 1♀ov; 782A, same host, 1♂, 1♀; 783A, same host, 1♂, 1♀ov, 1 yg; 784A, same host, 1♂, 1♀ov; 785A, same host, 1♂, 1♀ov; 788, same host, 2♂, 2♀ov; 791, same host, 1♂, 1♀ov.

Trapezia guttata Rüppell. Bayer 328, from *Pocillopora danae,* 1♀ov, 2 yg; 382, same host, 1♀; 395, same host, 2♂, 6♀(3ov); 396, from *Seriatopora hystrix,* 1♂, 1♀ov; 396, same host, 8♂, 10♀(3ov); 415, from *Stylophora pistillata,* 1♂, 1♀ov; 415-B, same host, 2♂, 2♀ov; 600, host unspecified, 1♀ov; 620, same, 2♂, 1♀; 621, same, 1♂, 640, same, 2♀; 641, same, 1♂; 687, same, 1♂, 3♀ (2ov); 755, same, 2♂, 5♀ (3ov), 5 yg; 769, from *Seriatopora hystrix,* 3♂, 3♀ (2ov), 3 yg; 780, host unspecified, 1♂; 783C, from *Pocillopora danae,* 3♂, 3♀; 784C, same host, 2♂, 2♀; 785C, same host, 2♂, 1♀ov; 786, host unspecified, 1♂, 1♀ov, 1 yg; 787, same, 1♀; 789, from *Pocillopora danae,* 2♂, 2♀ov, 2 yg; 812, host unspecified, 1♂, 1♀ov.

Trapezia rufopunctata (Herbst). Bayer 381, host unspecified, 1♂; 382, same, 1♂, 1♀ov; 640, same, 1♂, 1♀ov; 641, same, 1♂, 1♀ov; 703, from *Stylophora pistillata,* 1♂, 1♀ov; 755, host unspecified, 1♀; 745, same, 1♂, 1♀ov; 753, same, 1♀.

Trapezia speciosa Dana. Bayer 431, from *Pocillopora elegans,* 1♀; 432, from *Pocillopora setchelli,* 1♂, 1♀ov; 433, from *Pocillopora danae,* 1♂, 1♀ov.

Xanthias lamarcki (H. Milne-Edwards). Abbott 49-E-1, from algae, 1 yg; 50-E-2, from algae, 1 yg; 179-184-M-3, beyond turtle grass beds, 1 yg.