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THE BENTHIC FAUNA OF COCKBURN SOUND,
WESTERN AUSTRALIA

PART I : PROSOBRANCH GASTROPOD AND
BIVALVE MOLLUSCS

Barry R. Wilson,
George W. Kendrick and
Anne Brearley.

Unpublished report submitted to the W.A. Department of
Conservation and Environment.

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Western Australia - Part I,
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INTRODUCTION

From 1956 to 1960 the Marine Group of the Western Australian Naturalists' Club conducted a survey of the marine invertebrate benthos of Cockburn Sound, the outer harbour of the port of Fremantle, Western Australia. The survey was undertaken initially because it had been noted that this faunistically rich area seemed to support a surprisingly high proportion of 'tropical' northern Australian species, particularly among the molluscs and corals. Being a spare-time project involving a number of professional and amateur naturalists over a period of years, the sampling programme was sporadic and the sampling effort rather inconsistent. Nevertheless, a large body of data was obtained. Now, twenty years later, these data take on new significance.

When the original sampling was done the only major industrial establishment on the shores of Cockburn Sound was the then new British Petroleum refinery. Today the Sound is surrounded by industrial complexes of many kinds, many of which discharge effluents into its waters. What is hard to assess is the extent to which the marine fauna and flora have been affected. Information on the variety, abundance and distribution of species in the Sound before industrialization began is necessary. Although they were not collected quantitatively or with sufficient rigour for a truly scientific assessment, the Naturalists' Club Survey data are now seen to be of great value in this context.

During the course of the 1956-1960 survey two of the authors (B.R.W. & G.W.K.) with the assistance of other Naturalists' Club members, built up a card index of the prosobranch gastropods and bivalves of Cockburn Sound and recorded data on species distribution and relative abundance. These data form the basis of the present paper. There has been some further collecting done in Cockburn Sound since the original survey and these later records have been included here but distinguished from the earlier ones.

A total of 119 prosobranch gastropod species and 157 bivalve species have been recorded so far from Cockburn Sound. The list is still not complete. Many species of "micro-molluscs" (i.e. less than 2 mm) are known to live in Cockburn Sound but the collecting techniques used so far have not sampled them and few of them are included in this list.

The higher category classifications used in this check-list follow the systems given in the "Treatise on Invertebrate Palaeontology" (ed. Moore, 1960, 1969, 1971) for the bivalves, and archaeogastropods. The classifications used for the mesogastropods and neogastropods follows various recent authors.

Molluscs of other groups were also collected during the surveys but because of the nomenclatural difficulties these have not been included in this report. There is, in fact, a large fauna of chitons and opisthobranch gastropods in Cockburn Sound. Reports on these may follow in later contributions to the series.

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The original survey of 1956-60 was done with the assistance of the members of the Western Australian Naturalists' Club and we are grateful for their hard work and enthusiasm. In particular we wish to acknowledge the meticulous record-keeping of Mrs L.M. Marsh. The Department of Fisheries and Wildlife generously made available the Patrol Vessels "Misty Isle" and "Silver Gull" and the Research Vessel "Lancelin" which made the dredging operations possible.

Equipment and preservation stores were provided by the Department of Zoology, University of Western Australia and the Western Australian Museum. Dr E.P. Hodgkin gave advice and practical help in many ways.

A grant from the Western Australian Department of Conservation and Environment has enabled us to update these data for publication.

METHODS

A grid of squares, each 30 seconds longitude x 30 seconds latitude, was drawn on a chart of Cockburn Sound (Australian Hydrographic Service, Chart Aus 77, June, 1947) delimiting 178 blocks (Figure 1). These blocks were numbered and became the survey stations. Samples were taken from the approximate centre of each block by means of dredging, scuba diving or shore collecting. Position was determined by compass and land-marks and was generally fairly accurate because there were ample navigational aids and land marks in most areas.

Not all stations were sampled, either during the 1956-60 survey or subsequently. Those sampled are shown in Figure 2.

The dredges used were simple iron-frame, wire-mesh "oyster" dredges and tows were usually of about 15 minute duration. Scuba divers sampled macro-benthos within a 20 yard radius of the anchor positioned as close as possible to the centre of the block. The data obtained were not quantitative but an attempt was made at each station to rank each species on a scale of relative abundance from 1 to 4, based simply on the observers' subjective assessment. Within groups such as bivalves these data probably give a reasonable comparison of the relative abundance of species.

Data were recorded on data sheets. Voucher specimens were kept as considered necessary to confirm the identity of species. The data sheets and the specimens are preserved in the Western Australian Museum.

Benthic habitats in Cockburn Sound

Cockburn Sound (Figure 1) is a large marine basin formed about 6-7000 years ago when the Flandrian transgression flooded a depression

between two high, north-south ridges of coastal aeolianite (Churchill, 1959). Long sandy beaches and low limestone cliffs form its eastern and southern mainland shores. The western shore of narrow sheltered beaches is formed by Garden Island which is part of a ridge of aeolianite forming a chain of islands, rocks and shoaling reefs from Point Peron to Rottnest Island. The Sound is open to the north but barred by the shallows of Parmelia Bank. There is also a wide but shallow passage in the south-western corner between Point Peron and the southern end of Garden Island.

Several distinct physiographic regions may be recognized within the Sound and these provide very different marine benthic habitats.

1. Peripheral sills, spits and banks

Except for the section of the shore between James Point and Woodman Point, the Sound is bordered by intertidal sills and shallow banks (1-2 fathoms) of calcareous sands. In the intertidal zone much of the sand is bare and unvegetated. The major banks are Parmelia Bank and the Southern Flats and on these also there are large areas of bare unvegetated sand on the sea-floor. The banks and the lower intertidal zone on the sills are often densely vegetated by sea-grasses, particularly species of the genus Posidonia, Zostera muelleri, Halophila ovalis and Amphibolus antarcticus. These sandy areas and sea-grass meadows provide very different habitats each supporting a distinctive community of molluscs and other invertebrates.

a) Sea-grass meadows

The 1956-60 Naturalists' Club survey did not adequately sample the stations where sea-grasses dominated. However, in 1966 the University of Western Australia Marine Science Club made a survey of the Southern Flats (Jones et. al., 1966) and its data, added to the 1956-60 survey data, are sufficient to characterize the mollusc fauna of the sea-grass beds of Cockburn Sound.

A number of small, browsing archaeogastropod snails, which crawl in abundance on the sea-grass fronds, together with several carnivorous prosobranchs, form a community of molluscs peculiar to this habitat in sheltered bays of Southwestern Australia. The typical suite of species which characterize this community are as follows:-

Archaeogastropods:

Thalotia conica

Thalotia chlorostoma

Phasianotrochus irisodontes

'Cantharidus' lepidus

Cantharidus lehmani

Gibbula preissiana

Astraea squamifera

Neogastropods:

Pyrene scripta

Dentimitrella lincolnensis

Cominella tasmanica

Nassarius pyrrhus

The archaeogastropods are all of the Super-family Trochacea (Families Trochidae and Turbinidae). They crawl on the fronds of the sea-grasses apparently feeding on epiphytes (and epizooites?). The neogastropods are browsers or predators although their food is unknown. Cominella tasmanica has been reported to prey on the small trochids (Jones, 1966). Pyrene scripta and Dentimitrella lincolnensis are normally found on the sea-grass fronds but Cominella tasmanica and Nassarius pyrrhus crawl and burrow among the roots and in sandy patches on the sea-floor.

In Cockburn Sound the most abundant of these species, and the most frequently occurring were Thalotia conica, 'Cantharidus' lepidus and Pyrene scripta during the 1959-60 and 1966 surveys. There was some evidence that abundance varied seasonally, lower densities being recorded in the winter months (Jones, 1966).

At several localities (e.g. stations 8, 159) dense beds of the mussel Mytilus edulis planulatus occurred in the sea-grass meadows. At others (e.g. station 9) there were beds of the Razor-clam Pinna bicolor. In these situations there was generally an abundant and varied community of molluscs making use of the hard substrate and hiding places provided by the living and dead bivalves.

The matted roots of Posidonia makes a micro-habitat peculiar to beds of this sea-grass. The deep burrowing bivalves Lutraria rhynchaena and Epicodakia bella were found there. Nestling at or just below the surface the mytilids Modiolus areolatus and Lioberus victoriae were often very common there also (e.g. at station 10).

(b) Intertidal sand flats

In 1956-60 there were wide intertidal flats of clean, well sorted calcareous sands around the shores of Careening Cove (stations 136, 137) terminating in a long sand spit, running southeastward from Perkins Point (station 153). Similar, but narrower sand flats fringed the mainland shore from Kwinana to Point Peron and another long intertidal sand-spit jutted seaward from the shore at the old 'Turtle Factory Jetty' (stations 167, 171, 178). South of Woodman Point (stations 10, 11) there was also a broad sand flat, surrounded by sea-grass beds, which was exposed at low water springs. Woodman Spit ran westward from Woodman Point out onto Parmelia Bank (stations 10, 9). These intertidal sandy substrates supported a varied fauna of burrowing gastropods and bivalves. The Careening Bay sand spit was exceptionally rich. Commonly occurring species in this habitat were as follows:-

Bivalves:

Solemya australis
Glycymeris striatularis
Epicodakia bella
Wallucina assimilis
Divalucina cumingi
Fulvia tenuicostata
Mactra pura
Mactra cumingi
Tellina perna
Tellina sowerbyii
Sanguinolaria biradiata

Circe sulcata
Callista planatella
Dosinia incisa
Gomphina undulosa
Paphia crassisulca

Prosobranchs:

Polinices conicus
Nassarius pyrrhus (adjacent to sea-grass)
Nassarius rufula
Cominella tasmanica (adjacent to sea-grass)
Oliva australis

In addition to the listed prosobranchs several opisthobranch gastropods were common components of the intertidal sand flat fauna, for example Liloa brevis (Quoy & Gaimard, 1833), Philine angasi (Crosse & Fischer, 1865), and Bulla tenuissima Sowerby, 1868. Epitonium imperialis was reasonably common buried in the sand in association with the anemone Radianthus concinnata.

(c) Sandy patches on the deeper banks (2-4m)

At many localities on Parmelia Bank and the Southern Flats there are broad areas of coarse calcareous sand which are unstable and often ripple-marked. This is a difficult habitat for burrowing molluscs and its fauna is not varied although some of the species capable of living there are often abundant. For example the bivalves Gomphina undulosa and Glycymeris striatularis are sometimes extremely abundant.

2. The central basin

Within the Sound there is a wide, deep, central basin with a comparatively level bottom at 10-12 fathoms. Previously the basin was completely enclosed by banks with a maximum depth of 5 fathoms but the dredged shipping channel through Parmelia Bank now provides direct contact between the bottom waters of the Sound and the open ocean. The bottom sediments at the northern end of the Sound are of very fine calcareous sand with patches of shelly gravel. At the southern end in Mangles Bay the sediment is thick grey mud. There is a gradient in grain size of the sediment from north to south.

Distribution and abundance of benthic species within the central basin appeared to be not uniform and determined to some extent by the nature of the substrate.

This habitat is unique on the central west coast of Western Australia. Nowhere else between Cape Leeuwin and Shark Bay is there an enclosed marine gulf with such extensive soft substrate. Geographically, Cockburn Sound is located near the centre of a long transitional (overlap) zone between the tropical fauna of the north and the temperate fauna of the south (Wilson & Gillett, 1971; Wilson & Stevenson, 1977). The individual tropical and temperate species of infaunal and epifaunal organisms of the Sound are also found at other localities but the communities they form together in the soft-substrates of Cockburn Sound's central basin are unique.

At the time of this survey there was an abundant infaunal community of burrowing annelids, molluscs and echinoderms. Infaunal bivalves were particularly abundant at some stations and constituted a major component of the middle order trophic level food resources of the community. Visually, however, scuba divers were more likely to be impressed by the abundant epifaunal detrital-feeding echinoderms Temnopleuris michaelsoni, Peronella lesueri and Stellaster inspinus and several unidentified species of sea-pen.

The bivalve and prosobranch gastropod molluscs which characterized this community at the time of the 1956-60 survey were as follows:

Bivalves:

Nuculana verconis
Pecten modestus
Chlamys asperrimus
Musculista glaberrima
Malleus meridionalis
Anomia trigonopsis
Fulvia aperta
Megacardita incrassata
Circe sulcata
Dosinia incisa
Paphia crassisulca
Tellina sp.

Prosobranchs:

Bedeve paviae
Polinices conicus

All of these species were widely distributed in the soft sediments of the central basin in 1956-60. The most abundant of the infaunal bivalves were Nuculana verconis, Musculista glaberrima and Dosinia incisa. However, the distribution and abundance records for Nuculana should be treated cautiously because it was often difficult to determine whether specimens of this species with paired valves were alive or dead. There is some evidence that density of living populations may fluctuate seasonally or from one year to another. If this is so records of dead specimens could be misleading in the context of long-term changes in benthic community composition.

Three of the bivalves were common epifaunal members of the central basin benthos but not confined to it. Anomia trigonopsis was often found attached to stones and dead shells. It was also a fouling organism of jetties and other structures on the shores and common on shells and rubble in the sea-grass meadows and on the dead-coral submerged reefs. Malleus meridionalis was also common, especially on shelly gravel patches at the northern end of the Sound. It too occurred on rubble substrate around the dead coral reefs and in sea-grass beds on the peripheral banks and sills. Similarly, the scallop Chlamys asperrimus was common and widely distributed in the central basin but common also in sea-grass beds and on jetty pilings in the shallows.

The scallop Pecten modestus was present in commercial quantities, though very patchy, in the central basin during the 1956-60 period. Particularly high densities occurred not far from the B.P. refinery jetty at stations 129 and 144. This species was subsequently fished very heavily (1970-1971) until stocks were depleted. Heald (1973, Fig. 4) shows densities of this species encountered during a dredge - haul survey during the period August 1972 to January 1973 and the areas commercially fished in 1970 and 1971.

The most frequent prosobranch predators in the central basin benthos were the muricid Bedeva paviae and the naticid Polinices conicus.

Neither of these two species were confined to the central basin although they were perhaps most abundant there.

3. The slopes

The sides of the central basin are steeply inclined and probably close to the "slip slope" angle. Posidonia extended down the slopes to a depth of 10 - 12 m in many places but below that depth the slopes were of bare sediment, usually fine calcareous sand. Burrowing infauna was rarely abundant in this habitat but detrital-feeding epifaunal arachaeogastropod Monilea callifera and the echinoderms Temnopleuris michaelsoni and Peronella leseuri were often extraordinarily abundant.

4. Hard substrates

Rocky shores are uncommon in Cockburn Sound. On the mainland only along the foot of the low limestone cliffs north of Naval Base (stations 37, 60, 61), at Point Peron (station 169), are there small areas of naturally occurring rocks on the shore. On the eastern side of Garden Island there are rocky shores only at the southern end (Collie Head, station 154), at Cliff Pt. (station 74) and the northern end (Beacon and Second Heads, station 48). However, there were several man-made groynes along the eastern shore in 1956-60, which provided hard substrate habitats for such intertidal molluscs as limpets, Haliotis roei, Xenostrobus pulex, Brachidontes usulatus, Dicathais textilosa and Lepsiella flindersi.

Of special interest in Cockburn Sound are "submerged reefs" of dead coral (mostly Turbinaria sp.) which form important sublittoral habitats at several localities. These take the form of "lumps" varying from about 5 to 20m or more in diam., rising to a depth of 2-3m. Presumably the lumps have a solid coral-rock core but their tops and sides are covered with loose slabs of dead coral and silt.

There was a large one of these lumps of about 10m diam., rising from the slope in Careening Cove (station 137) and another of larger size in Sulphur Bay (station 75), Garden Island. On the eastern side of Cockburn Sound there were many dead coral submerged reefs of this character (Figure 1). A series of them occurred along the ridge between James Point and Woodman Point which divides the north-eastern shelf from the central basin. There are many small ones scattered over the shelf itself and one very large one known as Jervoise Bank (station 34).

Further north, beyond the limits of Cockburn Sound as here defined, there are more of these dead coral reefs, for example, Fish Rocks on Success Bank, Beagle Rocks at the entrance to Fremantle Harbour, and Hall Bank north of the harbour entrance.

The age of these dead corals is unknown. Neither is it known what killed them. The purpose here is to draw attention to the importance of these dead coral reefs as habitat for molluscs. Algae growing on the dead coral substrate provides food for a number of browsing archaeogastropods. The many crevices under and among the coral-rock slabs provide shelter for a large variety of gastropods, chitons and bivalves. A list of the most common species of bivalves and prosobranch gastropods is as follows:-

Bivalves:

Barbatia pistachia
Barbatia plicata
Gregariella barbata
Lithophaga teres
Lithophaga sp.
Botula silicula
Malleus meridionalis

Chlamys aktinos
Spondylus tenellus
Anomia trigonopsis
Lima nimbifer
Chama ruderalis
Arcopagia victoriae
Irus exoticus
Petricola lucinalis
Gastrochaena frondosa
Hiatella australis

Prosobranchs:

Haliotis semiplicata
Haliotis scalaris
Notomella candida
Tugali cicatricosa
Euchelus aspersa
Angaria tyria
Tectus pyramis
Clanculus denticulatus
Clanculus ringens
Clanculus cf gatliffi
Stomatella auricula
Granata imbricata
Astraea tentorium
Astraea squamifera
Ninella torquata
Hipponix foliaceus
Diala lauta
Bittium granarium

The majority of the bivalves live attached by the byssus to the underside or in crevices of the dead coral slabs. Maileus meridionalis and Anomia trigonopsis attach to rubble and dead shells in the open. Five of these common species bore into the dead coral itself, i.e. Lithophaga teres, Lithophaga sp., Botula silicula, Gastrochaena frondosa and Petricola lucinalis. The majority of the prosobranchs live under the dead coral slabs or in crevices although several of the larger species, i.e. Tectus pyramis, Astraea tentorium,

Angaria tyria, and Ninella torquata, are conspicuous crawling about on the algal growth on the tops of the dead coral patches.

5. The North-eastern Shelf

From James Point at Kwinana to Parmelia Bank just west of Woodman Point there is a ridge rising to an average depth of about 4 fathoms with patches at 2 or 3 fathoms. Its western slopes descend steeply to the soft substrates of the central basin. To the east, i.e. between the ridge and the mainland shore in the vicinity of Naval Base, there is a wide shelf with an average depth of about 5 fathoms (Figure 1).

The sediments of the north-eastern shelf consist mainly of medium to coarse grained calcareous sand. At the time of the original survey much of the sea-bed had a sparse cover of the marine angiosperm Posidonia but there were extensive patches of coarse sand and shelly rubble. Sponges and small living coral colonies were common.

Because of its varied habitats this large area of the Sound did not have a distinctive molluscan community, although a very large number of species occurred there. Rather, it supported a mixed community of species typical of the sandy banks, sea-grass meadows, hard substrates, and even the central basin soft substrate faunas. Few, if any, of the many species of molluscs found on the northeastern shelf were confined to it.

Summary of data on geographic distribution
of species

Several different systems of biogeographical classification of the Australian coastal marine fauna and flora have been proposed by various authors. Wilson & Gillett (1971) suggested a simplified system recognizing a southern temperate fauna and a northern tropical one, with long transition or overlap zones on the eastern and western coasts.

The 'Western Overlap Zone' of Wilson and Gillett extends from Cape Leeuwin to North West Cape. Cockburn Sound is located toward the southern end of this zone and, as expected, its bivalve and prosobranch gastropod fauna is comprised principally (69%) of southern species (Table 3). Only 14% of the identified species of these groups are tropical species distributed along the northern Australia coast. Another 14% are species endemic to the Western Australian coast, confined, or nearly so, to the Western Overlap Zone. A few species (3%) are found all around the Australian coast.

Bennett and Pope (1953 : 141) argued that "species normally inhabiting warmer seas can extend their geographical ranges into colder latitudes by living in inlets where waters are shallow, with the consequent effect of the warming in summer of the water lying over the flats". This argument was used to justify the exclusion of estuarine faunas from their discussion of Australian biogeographical provinces. The data provided in this report for the Cockburn Sound bivalve and prosobranch molluscs suggest that the argument does not apply in this region. Only 14% of all the species are "tropical". Although there are no comparable data for exposed rocky shores in the area it is predicted here that the proportion of northern species on the rocky shores of Rottnest Island, for example, will be higher than this.

Rocky shores on the western end of Rottneest Island are known to support a variety of intertidal and shallow sublittoral tropical species. It is believed that offshore, southerly flowing currents of warm water during late summer, autumn and winter are responsible for this phenomenon. These warm currents do not penetrate Cockburn Sound. Any warming effects in the shallows of the Sound seem likely to be a relatively unimportant factor.

When the data for the four distributional categories are broken up into bivalve and prosobranch groups significant differences become apparent (Table 3). The proportion of southern species in the total bivalve fauna, and the proportion of southern species in the total prosobranch fauna are much the same (66% and 71% respectively). There are striking differences, however, between the two groups in respect to the relative proportions of northern species and endemic west coast species. Of the bivalves 24% are northern species but only 6% of the prosobranchs have a northern distribution. Conversely, there are only 5% endemic bivalves but 20% endemic prosobranchs. At this time no explanation can be offered for this surprising observation, except to suggest that the explanation probably lies in the differing reproductive strategies and dispersal abilities of the two groups.

Tables 1 and 2 give the numbers of species of bivalves and prosobranchs respectively which have been allocated to the four distribution categories and two ecological categories.

Table 1 shows that about one third of all the species live on or in hard substrates, either boring or attached by a byssus, while two thirds are burrowing forms in soft substrates. These proportions are much the same for northern and southern components of the bivalve fauna, i.e. there is no evidence that tropical bivalves as a group favour any particular habitat.

Table 2 shows that about one quarter of the prosobranch species in Cockburn Sound are infaunal or epifaunal soft substrate dwellers, while three

quarters live on hard substrates or on marine plants. These proportions seem fairly typical of marine prosobranchs differing substantially, as expected, from the equivalent figures for bivalves. The data also show that about half the west coast endemic and northern tropical species are soft substrate dwellers, i.e. a greater preference for this life style than is exhibited by the southern prosobranchs.

	Hard substrate (boring or attached by byssus)	Soft substrate (burrowing or epifaunal)	Totals
Southern	23	48	71
Northern	8	18	26
Western endemic	2	4	6
All Australian States	2	3	5
<u>Totals</u>	35	73	108

Table 1: The number of identified bivalve species recorded in Cockburn Sound, allocated to ecological and geographical distributional categories. (Only those identified species whose habitat and distribution are known have been included.)

	On hard substrates or plants	Soft substrates	Totals
Southern	82	22	104
Northern	5	4	9
Western Endemic	21	9	30
All Australian States	2	2	4
<u>Totals</u>	110	37	147

Table 2: The number of identified prosobranch gastropod species recorded in Cockburn Sound, allocated to ecological and geographical distribution categories. (Only identified species whose habitat and distribution are known have been included.)

	Bivalves + Prosobranchs	Bivalves	Prosobranchs
Southern	69%	66%	71%
Northern	14%	24%	6%
Western endemic	14%	5%	20%
All Australian States	3%	5%	3%

Table 3: The percentage of identified bivalve and prosobranch species recorded in Cockburn Sound, allocated to distributional categories. (Only identified species of known distribution are included.)

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SYSTEMATIC LIST

Information for each identified species is given in the following order:

1. Name of the genus to which the species author assigned it in the original description, when this differs from the generic placement used here. (In these cases the names of the authors and dates of the original descriptions are given in parenthesis.)
2. The reference to the original description of the species.
3. The type locality where this is known.
4. A recent reference or reference to a figure when the species was not figured or not adequately figured in the original description.
5. The geographic range of the species beyond Cockburn Sound.
6. The habitat and depth range of the species in Cockburn Sound.
7. The numbers of the stations (Figure 2) within Cockburn Sound where the species was recorded during the 1956-60 Naturalist Club survey or subsequently. A subjective assessment of relative abundance is indicated for each station, viz.:
 - + single record
 - ++ 2-4 records
 - +++ common
 - ++++ abundant

[N.B. It was the original intention to include only living specimens in the abundance assessment but, in retrospect, it seems likely that 'dead' shells were sometimes included.]

Class : BIVALVIA

Order : NUCULOIDA Dall, 1889

Family : NUCULIDAE Gray, 1824

Genus : NUCULA Lamarck, 1799

NUCULA (N.) PUSILLA Angas, 1877

Proc. zool. Soc. Lond. 1877 : 177, pl. 26, fig 26.

Type loc. : "Port Jackson, N.S.W." Range : northern- ?
Australia; Cockburn Sound to N.S.W.

Mud; 7 m.

Stations: (Post 1960): 137+++.

Family : NUCULANIDAE Adams & Adams, 1858

Genus : NUCULANA Link, 1807

Subgenus: SCAEOLEDA Iredale, 1929

NUCULANA (SCAEOLEDA) VERCONIS (Tate, 1891)

Leda. Trans. R. Soc. Aust., 14 : 264, pl. 11, fig. 4.

Type loc. : "Yankalilla Bay, [S. Aust.] dredged".

Rec. ref. : Cotton, 1961: 38, fig. 18. Range: southern
Australia; S.A. to Rottne I., W.A.

Mud; 10-22 m.

Stations: (1956-60) 4++, 18+, 19++, 28++++, 31, 42+,
43+, 44++++, 55+, 80+, 86+, 93+, 95+, 96+, 117+, 118++,
119+, 124+d, 125+++ , 126+, 129++, 130+, 131+, 132++,
137++, 138+, 140+++ , 141+, 144++, 148++, 149+, 160+,
161++, 164+. (Post 1960) 19+, 93+, 129++, 143+, 144++d,
176+.

Order : SOLEMYOIDA Dall, 1889

Family : SOLEMYIDAE Adams & Adams, 1840

Genus : SOLEMYA Lamarck, 1818

Subgenus: SOLEMYARINA Iredale, 1931

SOLEMYA (SOLEMYARINA) AUSTRALIS Lamarck, 1818

Histoire naturelle des animaux sans vertèbres, 5 : 489.

Type loc. : [King George Sound, W.A.]. Rec. ref.:

Macpherson & Gabriel, 1962 : 273-274, fig. 312.

Range: Southern Australia; Vict. to Fremantle, W.A.

Sand; 0-1 m.

Stations: (1956-60) 137+.

(Post 1960) 137+, 154+.

SOLEMYA (SOLEMYARINA) cf. VELESIANA Iredale, 1931

Rec. Aust. Mus. 18 : 201 (not figured).

Type loc. : "dredge dump Dundas, Sydney Harbour."

Range: ?

Mud; 10 m.

Stations: (1956-60) 137+.

Order : ARCOIDA Stoliczka, 1871

Family : ARCIDAE Lamarck, 1809

Genus : BARBATIA Gray, 1842

Subgenus
[] — BARBATIA (B.) PISTACHIA (Lamarck, 1819)

[] — Arca. Histoire naturelle des animaux sans vertebres,
6 : 41. Type loc. : King I., [Bass Strait]. Rec.
ref. : Macpherson & Gabriel, 1962 : 275-277, fig. 314.

Range: Southern Australia; N.S.W. to Horrock Beach
(Northampton), W.A.

Under rocks and dead coral; 1-10 m.

Stations: (1958-60) 34+, 36+, 41+, 112+, 137+, 169+,
176+. (Post 1960) 9+, 47+++.

Subgenus: ACAR Gray, 1857

[] — BARBATIA (ACAR) PLICATA (Dillwyn, 1817)

[] — Arca. A descriptive catalogue of recent shells,
arranged according to the Linnaean method; with
particular attention to the synonymy. 1 : 227.

Type loc. : [Red Sea]. Rec. ref. : Macpherson
& Gabriel 1962 : 277, fig. 315. as B. squamosa
Lamarck. Range : Indo-west Pacific; Australia
all states.

Under and in rocks and dead coral; 0-10 m.

Stations: (1958-60) 9+. (Post 1960) 47+, 137+d, 170+.

Family : NOETIIDAE Stewart, 1930

Genus : ARCOPSIS Koenen, 1885

ARCOPSIS AFRA (Gmelin, 1791)

[] — Arca. in Linnaeus, Systema naturae, 13.ed.: 3308.

Type loc. : ? range : Indo-west Pacific; south to
Fremantle, W.A.

Under rocks and dead corals; 0-10 m.

Stations: (1958-60) 16+, 36+. (Post 1960) 1+.

Family : LIMOPSIDAE Dall, 1895

Genus : LIMOPSIS Sassi, 1827

LIMOPSIS TENUIRADIATA Cotton, 1930

Rec. S. Aust. Mus., 4 (2) : 231. Type loc.:
"Encounter Bay, S.A." Rec. ref.: Cotton 1961 : 49-50,
fig. 31. Range: Southern Australia; S.A. to Fremantle,
W.A.

Sand; 8 m.
Stations; (1958-60) 24+.

Family : GLYCYMERIDIDAE

Genus : GLYCYMERIS Da Costa, 1778.

GLYCYMERIS STRIATULARIS (Lamarck, 1819)

[Pectunculus], Histoire naturelle de animaux sans
vertèbres, 6 : 52. Type loc.: [King George Sound,
W.A.]. Rec. ref.: Macpherson & Gabriel, 1962 : 278,
fig. 317. Range: Southern Australia; N.S.W. to
Geraldton, W.A.

Sand patches among Posidonia; 0-7 m.
Stations: (1958-60) 10+, 20+, 24+, 29+, 38+, 61+, 86+++,
137+++, 146+, 153+. (Post 1960) 10+, 86+.

Order : MYTILOIDA Ferussac, 1822

Family : MYTILIDAE Rafinesque, 1815

Genus : MYTILUS Linnaeus, 1758

MYTILUS EDULIS PLANULATUS Lamarck, 1819

Histoire naturelle des animaux sans vertèbres, 6 (1) : 125.
Type loc.: [King George Sound, W.A.]. Rec. ref.:
Macpherson & Gabriel, 1962 : 293-294, fig. 335.
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Seagrass beds, pilings, rocky substrate, a
fouling species; 0-7 m.
Stations: (1956-60) 9+++ , 36+++ , 137+++ . (Post 1960)
9+++ .

Genus : XENOSTROBUS Wilson, 1967

XENOSTROBUS PULEX (Lamarck, 1819)

Modiola. Histoire naturelle des animaux sans vertèbres, 6 (1) : 112. Type loc. : [King George Sound]. Rec. ref. : Wilson, 1967 : 288-289, text fig. 2c, 3c, pl. 37, figs 2-3. See also Wilson & Hodgkin (1967) for breeding data in Cockburn Sound. Range: New Zealand, southern Australia; N.S.W. to Yanchep, W.A.

Rocks and pilings. A fouling species in Cockburn Sound; intertidal.

Stations: (1956-60) 9++++, 11++++, 36++++, 129++++, 48++++.

Genus : MODIOLUS Lamarck, 1799

MODIOLUS AREOLATUS (Gould, 1850)

Modiola. Proc. Boston Soc. nat Hist. 3 : 343. Type loc. : "New Zealand". Rec. ref. : Macpherson & Gabriel, 1962 : 285-6, fig. 325, as M. cottoni Laseron 1956. Range: New Zealand and southern Australia; Sydney, N.S.W. to Fremantle, W.A.

Sea grass beds, on rocks, on shells in mud; 0-2 cm.

Stations: (1956-60) 9+, 31+, 36+d, 38++, 42+, 55+, 93+, 96+, 132++, 141+.

Genus : BRACHIDONTES Swainson, 1840

BRACHIDONTES USTULATUS (Lamarck, 1819)

Mytilus. Histoire naturelle des animaux sans vertèbres, 6 (1) : 122. Type loc. : Seas of Brazil : believed to be in error. Rec. ref. : Dr V. C. Kenk, pers. comm. 1977. See Wilson & Hodgkin, 1967 for breeding data in Cockburn Sound - under the name "B. cf. variabilis Krauss, 1848." Range: W.A. from Kimberley to King George Sound, also S.A.

Mat forming on rocky shores. A fouling species in Cockburn Sound; intertidal.

Stations: (1956-60) 37++++, 129++++, 170++++, 154++++, 25++++.

Genus : GREGARIELLA Monterosato, 1883

GREGARIELLA BARBATA (Reeve, 1858)

Lithodomus. Conchologia iconica, 10, pl. 5, f. 27. Type loc. : "Sydney". Rec. ref. : Macpherson & Gabriel, 1962 : 293, fig. 334. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Crevices under rocks and dead corals; 7 m.

Stations: (1956-60) 137+.

Genus : MUSCULUS Roding, 1798

MUSCULUS PAULUCCIAE (Cross, 1863)

Crenella J. Conch. Paris 11 : 89, pl. 1, fig. 8.
Type loc. : "St Vincent Gulf". Rec. ref. : Cotton,
1961 : 132-133, fig. 122. Range: Southern Australia;
Vict. to Fremantle, W.A.

Algae and sea-grass beds among rocks etc.; 1-7 m.
Stations: (1956-60) 137+. (Post 1960) 137++, 154+.

MUSCULUS NANULUS Theile, 1930

Die Fauna Südwest - Australiens; ed. by W. Michaelsen
and R. Hartmeyer. V 590, pl. 4, fig. 70. Type loc. :
Shark Bay. Range: South Western Australia;
Fremantle, W.A.

Sand, near weed.
Stations: (Post 1960) 154+.

Subgenus: RYENELLA Fleming, 1959

MUSCULUS (RYENELLA) CUMMINGIANUS (Reeve, 1857)

Mytilus, Conchologia iconica, 10 : pl. 9, fig. 50
Type loc. : "Moreton Bay" [Qld.] Rec. ref. :
Macpherson & Gabriel, 1962 : 291-292, fig. 333.
(as Lanistina impacta Hermann, 1782). Range: All
Australian states. Remarks: Musculus nanus Dunker
is a synonym. Reynella impacta (Hermann, 1782) is
a New Zealand species at one time thought to be
conspecific with the Australian M.(R.) cumingianus.

Lives embedded in test of ascidians; 0-7 m.
Stations: (1956-60) 9d, 36d, 138d. (Post 1960) 72d,
137d, 175++.

Genus : MUSCULISTA Yamamoto & Habe, 1958

MUSCULISTA GLABERRIMA (Dunker, 1857)

VolSELLA. Proc. zool. Soc. Lond., 1850 : 363
Type loc. : [Sydney]. Rec. ref. : Laseyron, 1956 :
272, figs 39-41. See also Wilson & Hodgkin, 1967
as Amygdalum glaberrimum. Range: Northern Australia,
(South East Asia?); Sydney N.S.W. to Fremantle, W.A.

Fine sand and mud substrates, builds an enclosing bag
of byssal threads and mucus; 0-22 m.

Stations: (1956-60) 19+, 28++++, 29++++, 31++, 41+++,
70+++, 86+, 92+, 93+, 101+, 113++++, 114+++,
115+++,
116++++, 117++++, 118+++,
119+++,
124++, 125++++,
126+++,
129+, 130+++,
131+++,
138++++,
142++, 143++++,
144++++,
148++++,
149+++,
160+++,
161+++,
164+++.
(Post 1960) 129+, 130++d, 140+++d, 144d.

Genus : LIOBERUS Dall, 1898

LIOBERUS VICTORIAE (Pritchard & Gatliff, 1903)

Modiola. Proc. R. Soc. Vict., 16 : 93, figs 1 & 2
Type loc. : "Rhyll, Western Port, Victoria 6 fths".
Rec. ref. : Macpherson & Gabriel, 1962 : 286-288,
fig. 328. As Modiola victoriae. Range: Southern
Australia; twofold Bay, N.S.W. to Fremantle, W.A.

Among Posidonia roots and in masses of Modiolus
areaolatus; 1-7 m.

Stations: (1956-60) 10+. (Post 1960) 10++, 11d.

Genus : LITHOPHAGA Röding, 1798

LITHOPHAGA TERES (Philippi, 1846)

Modiola. Abbildungen... Beschreibungen nuer...
Conchylien 3 : 145, pl. 1, fig. 3. Type loc. :
Pacific Ocean. Rec. ref. : Wilson, Rec. Aust. Mus
(in press). Range: Indo West Pacific; Northern
Australia, N.S.W. to Albany W.A.

Boring in dead corals; 1-7 m.

Stations: (1956-60) 9++, 34+, 36+++, 41++, 72++, 112+,
137++.

LITHOPHAGA SP. ? complete

Range: Western Australia. Recorded at many localities
from Fremantle to Dampier Archipelago.

Boring in dead corals, lithothamnia and other
calcareous rocks; 1-7 m.

Stations: (1956-60) 9++, 34+, 36++, 72++, 137++.

Genus BOTULA Mörch, 1853

BOTULA SILICULA (Lamarck, 1819)

Modiola. Histoire naturelle des animaux sans
vertèbres, 6 : 115. Type loc. : New Holland.
Rec. ref.: Iredale, 1939, pl. 6, fig. 26 (as Botulopa
silicula infra). Range: Indo-west Pacific, Queensland
to Fremantle, W.A.

Bores in dead corals and calcareous rocks; 0-8 m.

Stations: (1956-60) 37++, 137++. (Post 1960): 1+,
112++.

Family : PINNIDAE Leach, 1819

Genus : PINNA Linnaeus, 1758

PINNA BICOLOR Gmelin, 1791

in Linnaeus Systema naturae, 13. ed. : 3366.

Type loc. : "in mari rubra [Red Sea]."

Rec. ref. : Rosewater, 1961 : 193-199, pls. 147-153.

Range: Indo-west Pacific; W.A. south to Albany.

Among Posidonia, sometimes forming dense beds, especially on Parmelia bank; 0-10 m.

Stations (1958-60) 29+, 34+d, 36++, 41++d, 43++d, 61+, 86+, 119+, 121+, 125+, 127+++ , 137+, 144+++ , 147+, 148+, 153+. (Post 1960) 6+++ , 7+++ , 8+++ , 9+.

Genus : ATRINA Gray, 1842

Subgenus: SERVATRINA Iredale, 1939

ATRINA (SERVATRINA) TASMANICA (Tenison-Woods, 1876)

[Pinna] Proc. R. Soc. Tas. 1875 : 161. Type loc. : north coast of Tasmania .

Rec. ref. : Rosewater J. 1961 : 218-220, pls. 166, 167.

Range: Southern Australia; N.S.W. to Fremantle, W.A.

Fine muddy sand; 20 m.

Stations: 4+ or 5+. Northern part of sound exact locality unknown.

Order : PTERCIDA Newell, 1965

Family : PTERIIDAE Gray, 1847

Genus : ELECTROMA Stoliczka, 1871

ELECTROMA GEORGIANA (Quoy & Gaimard, 1835)

[Avicula] Voyage de ... L'Astrolobe... pendant ... 1826-29, Zoology 3 : 457, pl. 77, figs. 10-11.

Type loc. : King George Sound. Rec. ref. : Cotton, 1961 : 76, fig. 65. Range: Southern Australia; N.S.W. (?) Victoria to Fremantle, W.A.

Attached, seagrass beds and algae; 0-22 m.

Stations: (1958-60) 21+fd, 36+fd, 44-45++, 94?, 176+.

Genus : PINCTADA Röding, 1798

PINCTADA FUCATA (Gould, 1850)

Avicula. Proc. Boston Soc. nat. Hist., 3 : 309
Type loc. : "Feejee" [Fiji] Islands? Rec. ref. :
Hynd, 1955 : 113-117, pl. 1-4, figs 1 & 2, pl. 5,
figs 1-3. Range: Northern Australia; Victoria
northwards to Cockburn Sound, Western Australia.

Attached to hard substrate also weed; 0-8 m.
Stations: (1958-60) 9+, 96+, 137+ (Post 1960) 9+, 38+.

Family : ISOGNOMONIDAE Woodring, 1925

Genus : CREMATULA Lamarck, 1803

CREMATULA MODIOLARIS Lamarck, 1819

Histoire naturelle des animaux sans vertèbres, 6 (1) :
137. figured in Delessert, Recueil de coquilles
décrites par Lamarck ... : pl. 14, fig. 2a, 2b.
Type loc. : "Les mers de la Nouvelle Hollande, a
l'île Maria. Range: Northern Australia; Queensland,
south to Fremantle, W.A.

On piling and amongst Posidonia; 0-10 m.
Stations: (1958-60) 10++. (Post 1960) 38+++.

Family : MALLEIDAE Lamarck, 1819

Genus : MALLEUS Lamarck, 1799

MALLEUS MERIDIONALIS Cotton, 1930

Rec. S. Aust. Mus. 4 (2) : 232. Type loc. : "Wallaroo"
[S.A.]. Rec. ref. : Cotton, 1961 : 74-75, fig. 63.
Range: Southern Australia; S. Aust. to Fremantle,
W.A.

Byssal attached to Epifaunal, among Posidonia, dead
corals, mud bottom; 0-20 m.

Stations: (1958-60) 9++, 19++, 21+, 28+, 36+, 41+,
42++, 45+++, 46+, 52+++, 55+, 67+, 70+, 77+, 91+, 93+,
94++, 111+, 114++, 115+, 117+, 126++++, 127+++, 136+,
137+++, 146+d, 147+, 176+. (Post 1960) 9+, 130+, 176+.

Genus : VULSELLA Röding, 1798

VULSELLA SPONGIARUM Lamarck, 1819

Histoire naturelle des animaux sans vertèbres 6 : 222.
Type loc.: Indian Ocean. Rec. ref. : Macpherson &
Gabriel, 1962 : 294-296, fig. 357. Range: Indo-west
Pacific; All Australian states.

In sponges; 1-20 m.
Stations: (1958-60) 36+, 45+, 136+, 137+, 169+, 176+.
(Post 1960) 176+.

Family : PECTINIDAE Rafinesque, 1815

→ Genus : Pecten CHLAMYS Röding, 1798

CHLAMYS (CHLAMYS) ASPERRIMUS (Lamarck, 1819)

Pecten. Histoire naturelle des animaux sans vertèbres
6 : 174. Type loc. : Tasmania. Rec. ref. :
Macpherson & Gabriel, 1962 : 303, fig. 344.
Range: Southern Australia; N.S.W. to Shark Bay, W.A.

Among Posidonia, on pilings and bottom of ships.
Epifaunal, often encased in red sponge; 0-22 m.
Stations: (1958-60) 9++, 18+d, 19++, 22++, 24+, 29+,
31+, 36+, 45+d, 46++, 52+, 55+, 66+, 67++, 69++, 70+,
77++, 80++, 92++++, 93++++, 94+++ , 104+, 129+d, 132+,
137+, 140juv, 149+, 160+, 164+. (Post 1960) 7+, 8+, 9+,
143d.

CHLAMYS (CHLAMYS) AKTINOS (Petterd, 1886)

Pecten. Proc. R. Soc. Tas. 1886 : 329. Type loc.:
N.W. Coast Tasmania. Rec. ref.: Macpherson & Gabriel,
1962 : 303, fig. 345. Range: Southern Australia;
N.S.W. to Yanchep, W.A.

Underside of rocks and dead coral; 0-10 m.
Stations: (1958-60) 29+, 36+, 41+, 86++, 176+.
(Post 1960) 47+.

Genus : SEMIPALLIUM Jousseaume, 1928

Subgenus: MESOPEPLUM Iredale, 1929

SEMIPALLIUM (MESOPEPLUM) ANGUINEUS (Finlay, 1927)

Chlamys Trans. N.Z. Inst. 57 : 527. Type loc. :
"S.W. Australia". Rec. ref. : Cotton, 1961 : 98-99,
fig. 83. Range: Southern Australia; N.S.W. to
Dongara, W.A.

Among sea grass in shallows, also dredged from
deeper water, whence no habitat details available.
Only dead collected; 0-20 m.
Stations: (1958-60) 9+d, 21+fd.

Genus : PECTEN Muller, 1776

first listed

PECTEN MODESTUS Reeve, 1852

agree!

Conch. Icon. 8: Pecten pl. 11, Sp 41.

Type loc.: "Swan River" (designated by Fleming, 1950, J. Conch. Paris 90 : 279). Range: Western Australia, King George Sound to Carnarvon area.

Remarks: The taxonomic relationships of the Western Australian Pecten to other southern Australian Populations needs reassessment.

Esperance?

Mud and sand, 2-22m.

Stations: (1956-60): 17+, 19+, 28+, 29+, 42++, 43++, 44+, 45+, 52+, 55++, 71+, 80+, 93+, 96+, 113+, 117+, 125++, 126++, 129+++, 132+, 139+++, 140++, 141+, 142+, 143++, 144++, 147++, 148+, 149++, 164++. (Post 1960): 15+.

listonymy of all Aust. records.

Family : SPONDYLIDAE Gray, 1826

Genus : SPONDYLUS Linnaeus, 1758

SPONDYLUS TENELLUS Reeve, 1856

Conchologia iconica 9 : pl. 18, fig. 67.
Type loc. : [Rapid Bay, South Australia] teste
Cotton, 1961. Rec. ref. : Macpherson & Gabriel, 1962 :
306-308, fig. 349. Range: Southern Australia;
N.S.W. to Fremantle, W.A.

Underside of rocks and dead coral slabs.
Stations: (1958-60) 36+d.

Family : ANOMIIDAE Rafinesque, 1815

Genus : ANOMIA Linnaeus, 1758

ANOMIA TRIGONOPSIS Hutton, 1877

Trans. N.Z. Inst. 9 : 598. Type loc. : White Rock
River, South Canterbury (Awamoan) Lower Miocene.
Rec. ref. : Beu, 1967 : 229, text fig. 1b and 3b, c, e,
and i. Range: New Zealand and Southern Australia;
Vict. to Fremantle, W.A.

Attached to rock, shells, stakes etc., among
Posidonia in shallows; 0-20 m.
Stations: (1958-60) 9++, 29+, 46+, 55+, 80+, 86+,
95+, 96++, 121+, 13+, 146+d, 148+d, 149+d, 153+, 176+.
(Post 1960) 8+, 9++, 38++, 112, 129+d.

Family : LIMIDAE Rafinesque, 1815

Genus : LIMA Bruguiere, 1797

LIMA NIMBIFER Iredale, 1924

Proc. Linn. Soc. N.S.W., 49 : 195, pl. 34, figs 1-4.
Type loc. : "Twofold Bay", N.S.W. Rec. ref.: Macpherson &
Gabriel 1962 : 309, fig. 351. Range: Southern Australia;
N.S.W. to Fremantle, W.A.

Attached by byssal threads in crevices under rocks and dead
corals.
Stations: (Post 1960) 9+d, 36+, 137+.

Genus : LIMARIA Link, 1807

LIMARIA ORIENTALIS (Adams and Reeve, 1848)

Lima. Voyage of the Samarang : 75, pl. 21, fig. 7.
Type loc. : "Philippine Archipelago". Rec. ref.
Cotton, 1961 : 111-112, fig. 98. Range: Southern
Australia; N.S.W. to Fremantle, W.A.

Underside of rocks and dead coral; 0-20 m.
Stations: (1958-60) 36+, 96+. (Post 1960) 137+,
154+.

Family : OSTREIDAE Rafinesque, 1815

Genus : OSTREA Linne, 1758

OSTREA ANGASSI Sowerby, 1871

Ostrea, in Reeve. Conchologia iconica 18, pl. 13, species 27. Type loc. : "Port Jackson", N.S.W.
Rec. ref.: Thomson, 1954 : 143-5, pl. 1, fig. 1-3.
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Mud, and sometimes attached; 0-20 m.

Stations: (1958-60) 36++, 45+, 96+, 137+, 146++.

(Post 1960) 9++, 155

sp. cf. O.
OSTREA cf FOLIUM Linnaeus, 1758

Systema naturae 10. ed. : 534. Type loc. : Indian Ocean. Rec. ref. : Thomson, J.M., 1954 : 146-149, pl. 2, figs 3 & 4. Range: Indo Pacific, Northern Australia; N.S.W. to Mandurah, W.A.

Stations: (Post 1960) 63+, 137

→ Dendostrea

Order : VENEROIDA Adams & Adams, 1856

Family : LUCINIDAE Fleming, 1828

Genus : CALLUCINA Dall, 1901

Subgenus : PSEUDOLUCINISCA Chavan, 1959

CALLUCINA (PSEUDOLUCINISCA) LACTEOLA (Tate, 1897)

Lucina. Trans. R. Soc. S. Aust. 21 : 48. Type loc. : "Swan River". type loc. for L. lactea Angas, 1855 which according to Tate is this species. Rec. ref. : Cotton, 1961 : 219, fig. 226. Range: Southern Australia; Victoria? to Geraldton, W.A.

Dead shells beach and sandy shallows.

Stations: (1958-60) 9+d, 86+d, 176+d.

is this preoccupied?

Genus : EPICODAKIA Iredale, 1930

EPICODAKIA BELLA Conrad, 1837

Journ. Acad. Nat. Sci., Phil., VII : 254, pl. 19, fig. 11. Type loc. : Hawaiian Islands. Rec. ref. : Dall, Bartsch & Rehder, 1938 : 129, pl. 35, figs 1-8. Range: Indo-west Pacific, northern Australia; Qld to Fremantle, W.A.

Sand among Posidonia roots; 1-10 m.

Stations: (1958-60) 9++, 137++. (Post 1960) 8+, 9+, 47 48 154+.

Genus : WALLUCINA Iredale, 1930

WALLUCINA ASSIMILIS (Angas, 1868)

Loripes. Proc. zool. Soc. Lond. 1867 : 910, pl. 44, fig. 8. Type loc. : "N.S.W.; and Hobson's Bay Port Phillip". Rec. ref. : Macpherson & Gabriel, 1962: 328-330, fig. 374. Range: Southern Australia; N.S.W. to Geraldton, W.A.

Mud and sand; 0-20 m.

Stations: (1958-60) 9+, 18+, 21+++, 24+, 36++, 55+++, 93+++, 124+d, 137+. (Post 1960) 8++, 154++.

WALLUCINA SP.

Sand/mud; 10 m.

Stations: (1958-60) 9+d, 137+.

sp. cf. W. jacksonensis (Smith)

range in W.A.

Genus : ANODONTIA Link, 1807

Subgenus : CAVATIDENS Iredale, 1930

ANODONTIA (CAVATIDENS) PERPLEXA (Cotton & Godfrey, 1938)

Cavatidens. Molluscs of South Australia I. Pelecypoda : 199, fig. 208. Type loc. : "Robe, South Australia". Rec. ref. : Macpherson & Gabriel, 1962 : 330, fig. 375. Range: Southern Australia; Vict. to Fremantle, W.A.

Sand and mud; 1-7 m.

Stations: (1958-60) 154+, 176+. (Post 1960) 9+d, 137+.

Genus : DIVALUCINA Iredale, 1936

DIVALUCINA CUMINGI (Adams & Angas, 1864)

Lucina. Proc. zool. Soc. Lond. 1863 : 426, pl. 37, fig. 20. Type loc. : "St Vincents Gulf, South Australia". Rec. ref. : Macpherson & Gabriel, 1962 : 328, fig. 373. Range: Southern Australia; N.S.W. to Shark Bay, W.A.

Sand; 0-7 m.

Stations: (1958-60) 9+++, 21+, 86+, 110+, 137+, 176+. (Post 1960) 8+, 9+, 137+.

A.K

Family : UNGULINIDAE Adams & Adams, 1857

Genus : FELANIELLA Dall, 1899

FELANIELLA GLOBULARIS (Lamarck, 1819)

[Lucina]. Histoire naturelle des animaux sans vertèbres,
5 : 544. Type loc. : King George Sound. Rec. ref. :
Cotton, 1961 : 223, fig. 229 as Zemysia globularis
Range: Southern Australia; Beachport, Vict. to
Fremantle, W.A.

Sandy mud; 10 m.

Stations: (Post 1960) 137+.

Family : CHAMIDAE Lamarck 1809

Genus : CHAMA Linnaeus, 1758

CHAMA RUDERALIS Lamarck, 1819

Histoire naturelle des animaux sans vertèbres 6 : 96.
Type loc. : Australian seas. [Gulf St. Vincent, South
Australia] teste Cotton, 1961. Rec. ref. : Cotton,
1961 : 209, fig. 213. Range: Southern Australia; to
Fremantle, W.A.

Jetty pilings, rocks and other hard substrates; 0-10 m.

Stations: (1958-60) 9++, 19+, 21+, 24+, 31++, 42+.

(Post 1960) 9+, 47+, 112+.

Family : LEPTONIDAE Gray, 1847

Sub Family MYLLITINAE Iredale & McMichael, 1962

Genus : MYLLITA d'Orbigny & Récluz, 1850

MYLLITA DESHAYESI d'Orbigny and Récluz, 1850

J. Conch. Paris 1 : 292, pl. 11, figs 12, 13, pl. 14.

Type loc. : Australia, Gulf St. Vincent. "La
Nouvelle Hollande sur les plages sablonneux".

Rec. ref. : Cotton, 1961 : 232, fig. 244. Range:
Southern Australia; Victoria to Fremantle, W.A.

On beach.

Stations: (Post-1960) 169+.

Family : LASAEIDAE Gray, 1847

Genus : LASAEA Brown, 1827

LASAEA AUSTRALIS (Lamarck, 1818)

[Cyclas]. Histoire naturelle des animaux sans vertèbres,
5 : 560. Type loc. : King George Sound. Rec. ref. :
Macpherson & Gabriel, 1962 : 332, fig. 378, [as Kellia]
Range: Southern Australia; N.S.W. to Yanchee, W.A.

Among byssal threads of mytilids; intertidal.

Stations: (1958-60)

why this?
correct!
WFP

LASAEID SP A.

Range: Cockburn Sound.

Mud; 10 m.

Stations: (1958-60) 137+.

LASAEID SP B.

Range: Cockburn Sound.

Stations: (Post 1960) 47+.

Genus : KELLIA Turton, 1822

KELLIA cf ROTUNDA (Deshayes, 1856)

Erycina. Proc. zool. Soc. Lond. 1855 : 181.

Type loc. : "Moreton Bay", Qld. Rec. ref. : Laseron,
1956 : 8, fig. 1a, b, c. Macpherson & Gabriel,
1962 : 334, fig. 380. as Marikellia. Range: Southern
Australia; south Qld to Fremantle, W.A.

Crevices underside of rocks and dead corals, and
inside dead bivalve shells; 0-10 m.

Stations: (1958-60) 36+, 86+, 112+, 137+.

KELLIA SP.

Range: Cockburn Sound.

0-2 m.

Stations: (1958-60) 169+. (Post 1960) 8+d, 137+d,
169+.

Genus : MYSELLA Angas, 1877

MYSELLA DONACIFORMIS Angas, 1879

Proc. zool. Soc. Lond. 1878 : 863, pl. 54, fig. 13.

Type loc. : "Holdfast and Aldinga Bay, Gulf St. Vincent".

Rec. ref: Cotton, 1961 : 238, fig. 253. Range:
Southern Australia; Vict to Fremantle, W.A.

Beach.

Stations (1958-60) 9+d, 36+d, 137+d.

Genus MONTACUTA Turton, 1822

MONTACUTA ? SP. ?

Range: Cockburn Sound.

Sand, weed; 8 m.

Stations: (Post-1960) 36+d.

Family : GALEOMMATIDAE Gray, 1840

Genus : EPHIPPODONTA Tate, 1889

EPHIPPODONTA MACDOUGALLI Tate, 1886

Trans. R. Soc. S. Aust. 11 : 64, figs 5a, 5b.
Type loc. : "Edithburgh, S.A." Rec. ref. : Cotton,
1961 : 235, fig. 248. Range: Southern Australia;
South Australia to Fremantle, W.A.

In mud burrows of callianassid shrimp among sandy
tube mass of colonial polychaete Family Sabellariidae
among sea grass; 2 m.
Stations: (1958-60) 169+.

EPHIPPODONTA LUNATA (Tate, 1886)

Scintilla. Proc. R. Soc. S. Aust. 9 : 69, pl. 4,
fig. 8. Type loc : "Edithburgh, S.A." Rec. ref. :
Cotton, 1961 : 234, fig. 249. Range: Southern
Australia; Victoria to Fremantle, W.A.

In mud burrows of callianassid shrimp among sandy
tube mass of colonial polychaete Family Sabellariidae
among sea-grass; 2 m.
Stations: (1958-60) 169+.

Family : CARDITIDAE Fleming, 1828

Genus : MEGACARDITA Sacco, 1899

MEGACARDITA INCRASSATA (Sowerby, 1825)

Cardita. A catalogue of the shells contained in the
collection of the late Earl of Tankerville together
with an appendix, containing descriptions of many
new species. Type loc. : New Holland. Range: South
western Australia; King George Sound to Abrolhos, W.A.

Sandy shallows, amongst Posidonia and in mud; 0-20 m.
Stations: (1958-60) 4+, 9+, 18+++ , 19+, 28+, 42+++ , 43+,
44++++ , 45+, 47+, 52++ , 55+, 67+, 70+, 80+d, 86+, 92+,
93+, 94+, 95++ , 96+, 97+, 112+ , 121+ , 129+ , 139+ , 141+d,
144+ , 153+ , 176+ . (Post 1960) 18+ , 29+ , 64+ , 144++ , 169+ .

Genus : CARDITA Bruguiere, 1792

CARDITA CRASSICOSTA Lamarck, 1819

Histoire naturelle des animaux sans vertèbres 6 : 22.
Type loc. : Gulf St. Vincent. Rec. ref.: Macpherson
& Gabriel, 962 : 320, fig. 365. Range: Northern and
southern shores of Australia apparently absent from
Tasmania.

Among dead corals; 0-10 m.

Stations: (1958-60) 137+ . (Post 1960) 8+ , 47++ , 137+ .

Thalassinid
or
Callianassa

Sabellidae?

Family : CRASSATELLIDAE Férrussac, 1822

Genus : EUCRASSATELLA Iredale, 1924

EUCRASSATELLA DECIPIENS (Reeve, 1842)

Crassatella. Proc. zool. Soc. Lond. 1842 : 42.
Figured in Reeve, 1843, Conchologia iconica 1 : pl. 1
fig. 4. Type loc. : New Holland. Rec. ref. : Darragh,
1964 : 6, pl. 1, fig. 3. Range: South western
Australia; Esperance to Fremantle, W.A.

Sand, mud also in Posidonia; 0-20 m.

Stations: (1958-60) 9+, 21+, 22+, 24+, 61+, 86+, 147+.
(Post 1960) 8+.

Family : CARDIIDAE Lamarck, 1809

Genus : FULVIA Gray, 1853

FULVIA APERTA (Bruguiere, 1789)

Cardium. Encyclopedie Methodique 1 : 226; figured
Bruguiere, 1789, ibid, 21 : pl. 296, figs 5a, 5b.
Type loc. : Asiatic oceans. Rec. ref. : Wilson &
Stevenson, 1977 : 52, pl. 3, figs 4-7. Range: Indo-
West Pacific; W.A. south to Geographe Bay.

Mud and sand and amongst Posidonia; 0-20 m.

Stations: (1958-60) 9+, 18+, 19++, 21+, 24+, 28+d,
29+++ , 31+, 42+d, 43+, 44+, 47, 80+d, 86+, 93++, 95+,
96+, 101+, 104+, 113+, 125++d 126+d, 130+, 131+d, 136+,
139+, 140++, 141+d, 142+d, 143+, 144+, 148+, 149+,
161+, 164+.

FULVIA TENUICOSTATA (Lamarck, 1819)

Cardium. Histoire naturelle des animaux sans vertèbres,
6 : 5. Type loc. : "Nouvelle Hollande" (also with
erroneous reference to Timor). Rec. ref. : Wilson &
Stevenson, 1977 : 54, pl. 3, fig 1-3; text fig. 5.
Range: Southern Australia; from Sydney, N.S.W. to
Fremantle, W.A.

Sand; 0-10 m.

Stations: (1958-60) 9+d, 136+, 137+, 146+d, 153+.
(Post 1960) 113+, 136+.

Genus : ACROSTERIGMA Dall, 1900

ACROSTERIGMA REEVEANUM (Dunker, 1852)

Cardium. Z. Malakozool, 9 : 54. Type loc.: New Holland
[Western Australia]. Rec. ref. : Wilson & Stevenson,
1977 : 80, pl. 5, figs 5-7; text fig. 13. Range:
Western, northern and eastern Australia; south to
Geographe Bay in W.A. and Sydney, N.S.W.

Sand; 0-8 m.

Stations: (1958-60) 24+, 36+. (Post 1960) 8+d.

ACROSTERIGMA CYGNORUM (Deshayes, 1855)

Cardium. Proc. zool. Soc. Lond. 1854 : 331.
Type loc.: "Swan River". [= Fremantle, W.A.].
Rec. ref. : Wilson and Stevenson, 1977 : 89, pl. 6, fig. 25-27; text fig. 15. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand; 0-7 m.

Stations: (1958-60) 36+, 136+. (Post 1960) 61+.

Subfamily : HEMIDONACINAE Iredale & McMichael, 1962

Genus : HEMIDONAX Mörch, 1870

HEMIDONAX CHAPMANI Gatliff & Gabriel, 1923

Vict. Nat. 40 : 10, pl. 2. Type loc. : San Remo, ocean beach Victoria. Rec. ref.: Macpherson & Gabriel, 1962 : 368-370, fig. 430. Range: Southern Australia; Victoria to Geraldton, W.A.

Sand; intertidal

Stations: (1958-60) 61+. (Post 1960) 9+d.

Family : MACTRIDAE Lamarck, 1809

Genus : MACTRA Linnaeus, 1767

MACTRA AUSTRALIS Lamarck, 1818

Histoire naturelle des animaux sans vertèbres, 5 : 475
Type loc. : King George Sound. Rec. ref. : Cotton, 1961 : 290, fig. 318. Range: Southern Australia; Victoria to Geraldton, W.A.

Sand; 0-8 m.

Stations: (1958-60) 176+.

MACTRA PURA Deshayes, 1854

Proc. zool. Soc. Lond. 1853 : 15. Type loc. : in Australia [Spencer Gulf], teste Cotton. Rec. ref. : Cotton, 1961 : 289-370, fig. 317. Range: Southern and western Australia; Victoria to Dampier Arch., W.A.

Sand; 0-3 m.

Stations: (1958-60) 137+, 153+d. (Post 1960) 9+d, 8+d.

Subgenus : NANNOMACTRA Iredale, 1930

MACTRA (NANNOMACTRA) JACKSONIENSIS Smith, 1885

Rep. Sci. Res. Challenger, Zool., 13 : 62, pl. 5, fig. 9. Type loc. : Port Jackson, N.S.W., 2-10 fm. Rec. ref. : Listed McMichael & Iredale, 1962; Macpherson & Gabriel 1962 : 366, fig. 426. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand; 0-2 m.

Stations: (Post 1960) 8++d, 9+d, 36+, 137+.

Subgenus : MACTRINULA Gray, 1853

MACTRA (MACTRINULA) EXPLANATA Reeve, 1854

Conchologia iconica, 8 : pl. 14, fig. 70.
Type loc. : "Swan River Australia". Rec. ref. :
Hedley, 1916 : 19. Range: Western Australia;
Cape Naturaliste to Fremantle, W.A.

Sand; depth ?
Stations: (1958-60) 136+d.

Subgenus: MACTROTOMA Dall, 1894

MACTRA (MACTROTOMA) OVALINA Lamarck, 1818

Histoire naturelle des animaux sans vertèbres, 5 : 477.
Type loc.: "Indian Ocean?" Rec. ref.: Cotton, 1961
: 291, fig. 321, 293 (as Electromactra findersi
Cotton & Godfrey). Range: Indo West Pacific; all
Australian states except possibly Tasmania.

Remarks: E. flindersi Cotton & Godfrey and E.
antecedens Iredale are believed to be synonyms of
ovalina Lamarck.

Sand; 0-10 m.
Stations: (1958-60) 136+. (Post 1960) 8+, 9+d.

Subgenus: COELOMACTRA Dall, 1895

MACTRA (COELOMACTRA) CUMINGI Reeve, 1854

Conchologia iconica, 8 : pl. b, fig. 24.
Type loc. : "Molluccas". Range: Central Indo
West Pacific?; W.A. south to Fremantle.

Sand; 0-3 m.?
Stations: (1958-60) 36+, 137+.

Genus : SPISULA Gray, 1837

Subgenus: NOTOSPISULA Iredale, 1930

SPISULA (NOTOSPISULA) TRIGONELLA (Lamarck, 1818)

Maetra. Histoire naturelle des animaux sans vertèbres,
5 : 479. Type loc. : Shark Bay, W.A. Rec. ref.:
Wilson and Kendrick, 1968 : 25-31 pl. 2. Range:
All Australian states.

not confirmed

Sand; 0-1 m.
Stations: (Post 1960) 136+.

Genus : LUTRARIA Lamarck, 1799

LUTRARIA RHYNCHAENA Jonas, 1844

Z. Malakozool., 1 : 34. Type loc.: New Holland.
Rec. ref.: Cotton, 1961 : 296-297, fig. 326. Range:
Southern Australia; N.S.W. to Shark Bay, W.A.

Sand among roots Posidonia; 1-3 m.
Stations: (1958-60) 137+. (Post 1960) 8+d, 9+d, 61+d.

Genus : RAETA Gray, 1853

RAETA MERIDIONALIS (Tate, 1886)

Montacuta. Trans R. Soc. S. Aust. 9 : 68, pl. 5, fig. 4. Type loc.: Aldinga Bay, South Australia. Rec. ref.: Cotton, 1961 : 295-296, fig. 327. Range: Southern Australia; South Australia to Fremantle, W.A. Sand; Stations: (Post 1960) 137+d.

Family : MESODESMATIDAE Gray, 1839

Genus : TARIA Gray, 1853

or Paphies
TARIA ANGUSTA (Reeve, 1854)

Paphies. Conchologia iconica, 8 : pl. 1, fig. 3. Type loc. : Reeve gives no locality but cites Deshayes, 1855 as the author of the species, Deshayes gives a locality of "Northern Australia". Rec. refs: Iredale & McMichael, 1962, "Northern Australia" (= N.S.W.). Rec. ref. : Beu, 1971 : 117-120, fig. 5. Range: Southern Australia; N.S.W. to Fremantle, W.A. Sandy beaches; intertidal. Stations: (1958-60) 86++++, 137+. (Post 1960) 9++.

Family : CULTELLIDAE Davies, 1935

Genus : PHAXAS Gray, 1852

Subgenus : ENSICULUS H. Adams, 1860

PHAXAS (ENSICULUS) CULTELLUS (Linnaeus, 1758)

Solen. Systema naturae, 10 ed. : 673, no. 27. Type loc. : "In Amboinae littoribus arenosis" Rec. ref. : Allen, 1950 : 347, pl. 40, fig. 5. Range: Southern Australia; Southern Qld to Point Samson, W.A.

Sand and mud; 0-20 m.

Stations: (1958-60) 3+, 18+, 19+, 28+, 92+, 96+, 104+, 113+, 125+, 126+, 129+, 130+, 137+, 140+, 143+, 144+, 147+d, 148+, 149+, 161+, 164+. (Post 1960) 20++d.

Family : TELLINIDAE de Blainville, 1814

Subfamily : TELLININAE de Blainville, 1814

Genus : TELLINA Linnaeus, 1758

Subgenus : PHARONELLA Lamy, 1918

TELLINA (PHARONELLA) PERNA (Spengler, 1798)

Tellina. Skr. nat. Sesk. [Copen]. 5 (2) : 79. Type loc.: [Singapore and island of Bureas Philippines] teste Reeve. Rec. ref. : Kira, 1962 : 175, pl. 61, fig. 23. Range: Indo Pacific; Northern Australia to Fremantle, W.A.

Sand, buried deep; 1-10 m.
Stations: (1958-60) 10++, 61+, 136+, 137++,
(Post 1960) 10++++.

TELLINA (PHARONELLA) PHARAONIS Hanley, 1844

Proc. zool. Soc. Lond. 1844 : 148. Type loc. : Red
Sea. Figured : Komer, 1871 : 61, pl. 16, fig.
7-10. Range: Northern Australia; Qld to Fremantle,
W.A.

Mud; 20 m.

Stations: (1958-60) 44+d?

TELLINA (PHARONELLA) SOWERBYI Hanley, 1844

Proc. zool. Soc. Lond. 1844 : 62. Type loc. :
Rec. ref. : Hedley, 1916 : 18. Range: Western
Australia; Exmouth to Dunsborough.

Sand; intertidal.

Stations: (1958-60) 10+, 24+, 36++, 86+, 137+.
(Post 1960) 9+.

Subgenus : SEMELANGULUS Iredale, 1924

TELLINA (SEMELANGULUS) TENUILIRATUS Sowerby, 1867

Tellina, in Reeve. Conchologia iconica, 17 : pl. 39,
fig. 219. Type loc. : "Sow and Pigs Bank, Port
Jackson," N.S.W. Rec. ref. : Cotton, 1961 : 271, fig 295
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand; intertidal.

Stations: (1958-60) 29+, 61+. (Post 1960) 9+d, 137++.

Subgenus : TELLINANGULUS Thiele, 1934

TELLINA (TELLINANGULUS) SP.

Range: Cockburn Sound.

Mud; 20 m.

Stations: (Post 1960) 164?

Subgenus : TELLINIDES Lamarck, 1818

TELLINA (TELLINIDES) SP.

Range: Appears to be limited to the Fremantle area.

Sand, mud; 0-20 m.

Stations: (1958-60) 11+, 19+, 21+, 42+, 43+, 55d,
86+, 92+, 93+, 95+, 96+, 125d, 126+, 129+, 130+, 131+,
132+, 142+, 143+, 148+, 149+, 161++, 164+++.
(Post 1960) 45+, 136+, 176+.

Exotica?

describe

Genus : ARCOPAGIA T. Brown, 1827

Subgenus : PSEUDARCOPAGIA Bertin, 1878

ARCOPAGIA (PSEUDARCOPAGIA) VICTORIAE (Gatliff & Gabriel, 1914)

Tellina. Vict. Nat. 31 : 83. Type loc. : Tellina (Arcopagia) victoriae new name for Tellina decussata Lamarck, 1818, not of Wood 1815. New Holland and King George Sound. Rec. ref. : Macpherson & Gabriel, 1962 : 375, fig. 439. Range: Southern Australia; Victoria to Geraldton, W.A.

Rocky crevices, Posidonia flats; 0-7 m.

Stations: (1958-60) 36+. (Post 1960) 8+, 137+.

Subgenus : PINGUITELLINA Iredale, 1927

ARCOPAGIA (PINGUITELLINA) SP.

Range: Cockburn Sound.

Mud; 10 m.

Stations: (Post 1960) 10+, 137++.

Subfamily : MACOMINAE Olsson, 1961

Genus : MACOMA Leach, 1819

Subgenus : PINGUIMACOMA Iredale, 1936

MACOMA (PINGUIMACOMA) SP.

Range: Cockburn Sound.

Stations: (1958-60) 98+d.

Genus : HETEROMACOMA Habe, 1952

HETEROMACOMA SP.

Range: Western Australia - Cockburn Sound.

Sand and sand patches in Posidonia; 0-8 m.

Stations: (1958-60) 9++, 137+, 176+. (Post 1960) 136+.

Family : DONACIDAE Fleming, 1828

Genus : DONAX Linnaeus, 1758

Subgenus : DELTACHION Iredale, 1930

DONAX (DELTACHION) ELECTILIS (Iredale, 1930)

Deltachion. Rec. Aust. Mus., 17 : 399. Type loc. : "St. Vincents Gulf". Rec. ref.: Macpherson & Gabriel, 1962 : 370, fig. 431. Range: Southern Australia; Qld to Geraldton, W.A.

Sand; intertidal.

Stations: (1958-60) 61+. (Post 1960) 36+.

RV has a lateral tooth

Subgenus : SERRULA Mörch, 1853

Satona

DONAX (SERRULA) COLUMBELLA Lamarck, 1818

Histoire naturelle des animaux sans vertèbres, 5 (1):547.

Type loc.: New Holland, King George Sound.

Rec. ref. : Allan, 1950: 345, text fig. 80, fig. 9.

Range: South Western Australia; Pallinup to Geraldton.

Sand; intertidal.

Stations: (1958-60) 61+. (Post 1960) 10+.

River
w. loc

Family : PSAMMOBIIDAE Fleming, 1828

Genus : SANGUINOLARIA Lamarck, 1799

Subgenus : PSAMMOTELLINA Fischer, 1887

SANGUINOLARIA (PSAMMOTELLINA) BIRADIATA (Wood, 1815)

Solen. General Conchology, : 135, pl. 33, fig. 1.

Type loc. : [Australia]. Rec. ref. Macpherson &

Gabriel, 1962 : 371, fig. 433. Range: Southern Australia; N.S.W. to Kalbarri, W.A.

Sand; intertidal.

Stations: (1958-60) 10+, 86+, 154+. (Post 1960) 9++d.

Family : SEMELIDAE Stoliczka, 1870

Genus : THEORA H. Adams & A. Adams, 1856

Subgenus : ENDOPLEURA A. Adams, 1864

THEORA (ENDOPLEURA) LUBRICA Gould, 1861

Hakodate
Chalmer et al

Proc. Boston Soc. N.H. 8 : 24. Type loc. : (Hakodadi [Hadodate] Bay [Japan]) Figured : Smith, 1885: 90 and Johnson, 1964 : 104, pl. 25, fig. 5. Range: Central Indo-West Pacific, W.A. south to Cockburn Sound.

Mud; 18 m.

Stations: (1958-60) 160++, 165++, 174++.

Family : VENERIDAE Rafinesque, 1815

Subfamily : VENERINAE Rafinesque, 815

Genus : PROXICHIONE Iredale, 1929

PROXICHIONE LAQUEATA (Sowerby, 1855)

Venus. Thesaurus Conchyliorum 2 : 706, pl. 153, fig. 15.

Type loc. : Swan River, Australia. Range: Western Australia; Troughton Island, Cockburn Sound.

Sand near weed, mud; 4-20 m.

Stations: (1958-60) 9+, 11+, 19+d, 34+d, 36+d, 41+, 47+d, 52+d, 55juv, 86+, 112, 127+, 136+.

Subfamily : CIRCINAE Dall, 1896

Genus : CIRCE Schumacher, 1817

CIRCE SCRIPTA (Linnaeus, 1758)

Venus. Systema naturae 10. ed. : 689 Type loc. :
"In Indiis". Rec. ref. : Prashad, 1932 : 223-5;
Cotton, 1961 : 289, fig. 226, as Circe weedingi
Cotton. Range: Indo Pacific; Western Australia to
South Australia.

Sand; 0-8 m.

Stations: (1958-60) 24+, 44+, 70++, 92+, 96+, 136+,
16+d. (Post 1960) 36+.

CIRCE SULCATA Gray, 1838

Analyst VIII : 307.

Rec. ref. : Habe, 1964 : 188, pl. 58, fig. 2.

Range: Indo-West Pacific; W.A. to King George Sound.

Sand, mud; 1-20 m.

Stations: (1958-60) 11++, 21+, 24+, 31+, 36+, 44+,
52+++, 55+, 69+, 77+, 86+, 93+, 113+++, 114++, 115+,
118+++, 124+, 125+, 126+, 129++++, 130++, 131++, 132++,
138+, 142+, 143+, 144+++, 147++, 148+, 149++++, 153+,
160+++, 161+++, 164+++

Subfamily : PITARINAE Stewart, 1930

Genus : PITAR Römer, 1857

PITAR SP. indet Species A.

Mud; 20 m.

Stations: (Post 1960) 144+.

PITAR SP. indet Species B.

Range: Denham Shark Bay, to Fremantle, W.A.

Mud; 20 m.

Stations: (1958-60) 92+, 96+d, 164+d.

Genus : CALLISTA Poli, 1791

Subgenus : COSTACALLISTA Palmer, 1927

CALLISTA (COSTACALLISTA) PLANATELLA (Lamarck, 1818)

Cytherea. Histoire naturelle des animaux sans vertèbres,
5 : 565. Type loc. : Fide Romer, (Terra van Diemenensis
(Phil.)). Range: from King George Sound to Derby. W.A.

Sand; 1-3 m.

Stations: (1958-60) 136++, 153+, 146+.

Sub family : DOSINIINAE Deshayes, 1853

Genus : DOSINIA Scopoli, 1777

S.G. DOSINIA INCISA (Reeve, 1850)

Pectunculus.
Artemis. Conchologia iconica, 6 : pl. 3, fig. 16.
Type loc. : North Australia. Rec. ref. : Fischer-
Piette & Delmas, 1967 : 59-60, pl xi, figs 1-3.
Range: Western Australia; Broome to Fremantle.

Sand, mud; 1-20 m.

S.G.
Stations: (1958-60) 18+, 43+, 44+, 86+, 92+, 95+,
101+, 132+, L36+. (Post 1960) 9+, 29+, 136+.

DOSINIA SCULPTA (Hanley, 1845)

Artemis. Proc. zool. Soc. Lond. 1845 : 12.
Rec. ref. : Fischer- Piette & Delmas, 1967 : 61, fig. 4.
Range: Indo Pacific; Western Australia south to
Fremantle.

Sand;

Sations: (1940) 176+.

Subgenus : AUSTRODOSINIA Dall, 1902

DOSINIA (AUSTRODOSINIA) HISTRIO (Gmelin, 1791)

1+
Venus. Systema naturae 6 : 3287.

Rec. ref. : Fischer Piette & Delmas, 1967 : 52-53.

Regard Dosinia victoriae Gatliff & Gabriel, 1914 as
a synonym. Range: Indo Pacific, and southern
Australia.

Sand; 2 m.

Stations: (1958-60) 137+. (Post 1960) 9+, 155+.

A. L.
Subfamily : TAPETINAE Adams & Adams, 1857

Genus : GOMPHINA Mörch, 1853

GOMPHINA UNDULOSA (Lamarck, 1818)

Venus. Histoire naturelle des animaux sans vertèbres,
5 : 606. Type loc. "Les mers de la Nouvelle Hollande
à la baie des chiens marins et au port du Roi Georges".
Rec. ref. : Macpherson & Gabriel, 1962 : 351, fig. 404.
Range: Victoria to Dampier Arch., W.A.

Sand; 0-8 m.

Stations: (1958-60) 9+, 11+, 4+, 36+, 61++++, 136+++,
145+++ , 153+. (Post 1960) 9+, 136+.

Genus : PAPHIA Röding, 1798

Subgenus : CALLISTOTAPES Sacco, 1900

PAPHIA (CALLISTOTAPES) CRASSISULCA (Lamarck, 1819)

Venus. Histoire naturelle des animaux sans vertèbres,
5 : 594. Type loc.: "Les mers de la Nouvelle Hollande,
à la Baie de chiens marins". Rec. ref.: Fischer-Piette
and Metivier 1971 : 39-41, pl. 9, figs 7-10. Regard
P. sulcosa (Philippi) as a synonym. Range: Indo-
Pacific; Western Australia south to Cockburn Sound.

Sand, mud; 0-20 m.

Stations: (1958-60) 3+, 18+, 19+, 42+, 43+, 82+,
92+, 93+, 95+, 96+, 125+, 153+. (Post 1960) 29+,
63++, 89++, 137+, 176+.

Genus : VENERUPIS Lamarck, 1818

VENERUPIS ANOMALA (Lamarck, 1818)

Venus. Histoire naturelle des animaux sans vertèbres
5 : 599. Type loc. : Australian Seas and Shark Bay.
Rec. ref. : Macpherson & Gabriel, 1962 : 355, fig 410.
as Venerupis fabagella (Deshayes), and Fischer-Piette
and Metivier, 1971 : 8-10, pl. 1, fig. 1-10, Pl. 2,
fig. 1-4. Range: Southern Australia; Sth Qld to
Fremantle, W.A.

Sand, weed; 0-8 m.

Stations: (1958-60) 9+, 4+, 36+.
(Post 1960) 10+, 36+, 136+.

Genus : IRUS Oken, 1815

IRUS cf IRUS (Linnaeus, 1758)

Donax. Systema naturae 10. ed. : 683. Type loc. :
Mediterranean. Rec. ref.: Fischer-Piette & Metivier,
1971 : 79-82, pl. 15, figs 12-14, regard the Indo-
Pacific form as conspecific.

Valves in beach wash.

Stations: (1958-60) 36+. (Post 1960) 61+, 136+.

IRUS DISTANS (Lamarck, 1818)

Venerupis. Histoire naturelle des animaux sans vertèbres,
5 : 507. Type loc.: Nuyts Archipelago, S.A.
Rec. ref.: Macpherson & Gabriel, 1962 : 365, fig. 412;
Ludbrook, 1978 : 77-78, pl. 9, figs 1, 2.
Range: Southern Australia; Victoria to Yanchep, W.A.

Attached to underside rocks and dead corals; 0-2 m.

Stations: (1958-60) 159+.

IRUS CRENATUS (Lamarck, 1818)

Venerupis. Histoire naturelle des animaux sans vertèbres, 5 : 508. Type loc.: New Holland.
Rec. ref.: Macpherson & Gabriel, 1962 : 355, fig. 409. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Among mussels and in crevices of pilings and rocks;
0-2 m.

Stations: (1958-60) 10+, 13+, 159+. (Post 1960) 36+.

IRUS IRIDESCENS (Tate, 1888)

Venerupis. Trans. R. Soc. S. Aust. 11 : 61, pl. 11, fig. 10. Type loc.: "Deepwater off Kangaroo Is. S. Aust.". Rec. ref.: Macpherson & Gabriel, 1962 : 355, fig. 410. Range: Southern Australia; Vict to Yanchee, W.A.

Valves in beach wash and among sandy tube aggregate of colonial polychaete Family Sabellariidae ;
0-2 m.

Stations: (1958-60) 36+d, 169+d. (Post 1960) 9+, 36+.

Subfamily : CHIONINAE Frizzell, 1936

Genus : TAWERA Marwick, 1927

TAWERA SP.

coelata (Menkes)

Range: Western Australia; Shark Bay to Fremantle, W.A.

"This species has previously been misidentified as Tawera gallinula (Lamarck) but comparison of local material with a wide range of specimens of Lamarck's species from south eastern Australia has shown that the two are quite distinct. The available museum records suggest that gallinula does not occur within the living Western Australian fauna." personal communication from G. W. Kendrick 17.IV. 1978.

- Sand; 0-20 m.

Stations: (1958-60) 10+, 61+.

TAWERA LAGOPUS (Lamarck, 1818)

Venus. Histoire naturelle des animaux sans vertèbres 5 : 59
Type loc.: Seas of New Holland, King George Sound.
Rec. ref.: Macpherson & Gabriel, 1962 : 347-8, fig. 399.
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand among Posidonia; 0-8 m.

Stations: (1958-60) 10+, 24+. (Post 1960) 36+.

GASTROCHAENA FRONDOSA Cotton, 1934

Rec. S. Aust. Mus., 5 (2) : 177, figs 1,2.

Type loc.: "Backstairs Passage, South Australia."

Rec. ref.: Cotton, 1961 : 306-307, fig. 337.

Range: Southern Australia; Pointe Cloates, W.A.

Boring in dead corals; 0-10 m.

Stations: (1958-60) 36++, 41++, 112+, 137++.
(Post 1960) 47++.

Family : HIATELLIDAE Gray 1824

Genus : HIATELLA Gray, 1824

HIATELLA AUSTRALIS (Lamarck, 1818)

Corbula. Histoire naturelle des animaux sans
vertèbres, 5 : 495. Type loc.: Kangaroo I., S.A.

160. Rec. ref.: Macpherson & Gabriel 1962 : 379, fig.
444. Range: All Australian States.

In sponges on sand and muddy bottom and hard substrates,
in crevices of dead corals; 1-20 m.

Stations: (1958-60) 9+, 34+, 36++, 86+, 112+, 149+, 155+,
137+. (Post 1960) 8++, 9++, 29++, 107++.

Family : PHOLADIDAE Lamarck, 1809

Genus : PHOLAS Linnaeus, 1758

PHOLAS AUSTRALASIAE Sowerby, 1849

Thesaurus Conchyliorum, 2 : 488, pl. 106, fig. 73.

160. Rec. ref.: Macpherson & Gabriel, 1962 : 385, fig. 449.

Range: All Australian States.

Valves in beach wash.

Stations: (1958-60) 9+, 136+.

Family : CLEIDOTHAERIDAE Hedley, 1819

Genus : CLEIDOTHAERUS Stutchbury, 1803

CLEIDOTHAERUS ALBIDUS (Lamarck, 1819)

Chama. Histoire naturelle des animaux sans vertèbres,
6 : 96. Type loc.: Seas of Java. Rec. ref.: Cotton,
1961 : 156-157, fig. 148. Range: New Zealand, Southern
Australia; N.S.W. to Geraldton, W.A.

Attached to rocks; 1-2 m.

Stations: (1958-60) 36++.

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Genus : TIMOCLEA Brown 1827

Subgenus : CHIONERYX Iredale, 1924

TIMOCLEA (CHIONERYX) CARDIOIDES (Lamarck, 1818)

Erycina. Histoire naturelle des animaux sans vertèbres, 5 : 486. Type loc. : New Holland, King George Sound. Rec. ref.: Macpherson & Gabriel, 1962 : 346-7, fig 397. (as Chioneryx). Range: Southern Australia; N.S.W. to Fremantle, W.A.

Mud, sand; 2-20 m.

Stations: (1958-60) 18+, 42++, 47+d, 95+d, 136++.
(Post 1960) 154+d.

TIMOCLEA (CHIONERYX) SP.

Range: Cockburn Sound.

Sand near weed; 0-1 m.

Stations: (Post 1960) 137+d.

Family : PETRICOLIDAE Deshayes, 1839

Genus : PETRICOLA Lamarck, 1801

PETRICOLA RUBIGINOSA (Adams & Angas, 1864)

Narario. Proc. zool. Soc. Lond. 1863 : 425, pl. 37, fig. 17. Type loc. : "Port Jackson, 4 fathoms, enclosed in nodule of clay". Rec. ref. : Macpherson & Gabriel, 1962 : 358 - 9, fig. 415. as Velargilla. Range: Southern Australia; N.S.W. to Fremantle, W.A.

No data.

Stations: (1958-60) 10+d.

PETRICOLA LUCINALIS Lamarck, 1819

Histoire naturelle des animaux sans vertèbres, 5 : 504. Type loc.: King George Sound. Rec. ref.: Cotton 1961 : 267, fig. 290. Range: Southern Australia; to Yanchee, Western Australia.

Boring in rock and dead coral; 0-7 m.

Stations: (1958-60) 36+, 41+, 137+ (Post 1960) 47+, 137+.

Subgenus : VELARGILLA Iredale, 1931

PETRICOLA (VELARGILLA) PARVITA (Cotton & Godfrey, 1938)

Velargilla. Molluscs of S. Aust., (1) : 249, fig. 280. Type loc.: Hardwicke Bay, S. Australia. Rec. ref.: Cotton, 1961 : 266, fig. 289. Range: South Australia; to Fremantle, W.A.

Sand beach; intertidal.

Stations: (1958-60) 20+d. (Post 1960) 136+.

Family : GASTROCHAENIDAE Gray, 1840

Genus : GASTROCHAENA Spengler, 1783

Family : LATERNULIDAE Hedley, 1918

Genus : LATERNULA Röding, 1798

af. cf. L.
LATERNULA cf CRECCINA (Reeve, 1860)

Anatina. Conchologia iconica 14 : pl. 2, fig. 12.
Type loc. : "Adelaide, South Australia, sandy mud,
10 fathoms". Rec. ref.: Cotton, 1961 : 140, fig. 129.
Range: Southern Australia, N.S.W. to Fremantle, W.A.

Sand, mud; 1-20 m.

Stations: (1958-60) 55+d, 69+, 96+, 126+, 129+, 130+d,
131+d, 139+, 141+d, 143+, 153+, 160+, 164+.

(Post 1960) 36+, 63+d, 155+.

Family : THRACIIDAE Stoliczka, 1870

Genus : THRACIOPSIS Tate & May, 1900

THRACIOPSIS SUBRECTA Cotton & Godfrey, 1938

Molluscs of South Australia, I. Pelecypoda : 138,
fig. 133. Type loc.: Spencer Gulf, S.A. Rec. ref.:
Cotton, 1961 : 147, fig. 137. Range: Southern Australia;
S.A. to Fremantle, W.A.

Valves in beach wash.

Stations: (1958-60) 61+d.

THRACIOPSIS SP.

Range: Cockburn Sound. *near angustata Angus.*

Sand; 0-3 m.

Stations: 8+d, 9+.

Family : CLAVAGELLIDAE D'Orbigny, 1843

Genus : BRECHITES Guettard 1770

Subgenus : FOEGIA Gray, 1847

BRECHITES (FOEGIA) NOVAEZELANDIAE (Bruguiere, 1789)

Penicillus. Encyclopediae methodique, 1 : 129.

Type loc.: New Zealand? (not in accordance with
recorded distribution - see Smith, 1971).

Rec. ref.: Smith, 1971 : 152-154, pl. 12, figs 20-23.

Range: Shark Bay & Cockburn Sound, W.A.: two specimens
from northern Qld.

Sand among weed; 2-4 m.

Stations: (1958-60) 10+. (Post 1960) 10+.

Class : GASTROPODA Cuvier, 1797

Subclass : PROSOBRANCHIA Milne Edwards, 1848

Order : ARCHAEOGASTROPODA Thiele, 1925

Family : SCISSURELLIDAE Gray, 1847

Genus : SCHISMOPE Jeffreys, 1856

SCHISMOPE ATKINSONI (Tenison-Woods, 1877)

Scissurella. Pap. Proc. R. Soc. Tasm., 149.
Type loc.: Blackman's Bay 6-10 fathoms, teste
Cotton, 1959. Rec. ref.: Cotton, 1959 : 42-43,
fig. 12. Range: Southern Australia; Victoria to
Fremantle, W.A.

Beachdrift.
Stations: (Post 1960) 154+.

SCHISMOPE SP. A.

Beachdrift.
Stations: (Post 1960) 154+d.

SCHISMOPE SP. B.

Beachdrift.
Stations: (Post 1960) 154+d.

SCHISMOPE SP. C.

Beachdrift.
Stations: (Post 1960) 154+d.

Family : HALIOTIDAE Rafinesque, 1815

Genus : HALIOTIS Linnaeus, 1758

HALIOTIS SCALARIS (Leach, 1814)

subgenus
Padollus. Zoological Miscellany 1 : 66, pl. 28.
Type loc. : ? Rec. ref. : Wilson and Gillett,
1971, : 24, pl. 8, fig. 4, 4a. Range: Southern
Australia; S.A. to Geraldton, W.A.

Attached to rocks, on and under; 0-10 m.
Stations: (1956-60) 9+, 36+, 137+, 169+, 176+.

HALIOTIS ROEI Gray, 1826

in King, P.P. Narrative of a survey of ... western
coasts of Australia. Appendix B, 2 : 493.
Rec. ref.: Wilson & Gillett, 1971 : 24, pl. 8, fig. 12.
Range: Southern Australia; S.A. to Greenough River mouth.
Attached to rocks in crevices; intertidal. WA.
Stations: (1956-60) 36++, 37+++.

HALIOTIS CONICOPORA Peron, 1816

Voyage de decouvertes aux Terres Australes 2 : 80

Type loc.: Pelican Lagoon, Kangaroo Is., S.A.

Rec. ref.: Wilson & Gillett, 1971 : 24, pl. 8, fig 2.

Range: Southern Australia; Vict. to Fremantle, W.A.

Rock crevices; 1 m.

Stations: (1956-60) 9+, 36+, 169+.

HALIOTIS SEMIPLICATA Menke, 1843

Molluscorum Novae Hollandiae 1843 : 32, specimen

173. Type. loc.: "in litore occidentali".

Rec. ref.: Wilson & Gillett, 1971 : 24, pl. 8.

fig. 9 & 9a. Range: South Western Australia;

Recherche Arch. to Fremantle, W.A.

In crevices and on rocks; 0-10 m.

Stations: (1956) 36+, 137+, 169+, 174+, 176+.

Family : FISSURELLIDAE Fleming, 1822

Subfamily : EMARGINULINAE Gray, 1834

Genus : NOTOMELLA Cotton, 1957

NOTOMELLA DILECTA (A. Adams, 1852)

Emarginula. Proc. zool. Soc. Lond. 1851 : 85.

Type loc.: "King George's Sound, South Australia".

Rec. ref.: Cotton, 1959 : 60 fig. 23. Range:

Southern Australia; S.A. to Fremantle, W.A.

Attached to rocks; 2 m.

Stations: (1956-60) 169+.

NOTOMELLA CANDIDA (A. Adams, 1852)

Emarginula. Proc. zool. Soc. Lond., 1851 : 85.

Type loc.: "Port Adelaide, Australia, on the sands".

Rec. ref. : Cotton, 1959 : 59, fig. 22.

Range: Southern Australia; Vict. to Fremantle, W.A.

Under stones; 0-10 m.

Stations: (1956-60) 9+, 36+, 176+.

bajula?

Genus : TUGALI Gray in Dieffenbach, 1843

TUGALI CICATRICOSA A. Adams, 1852

Proc. zool. Soc. Lond. 1851 : 89. Type loc. :
"Phillipines". Rec. ref.: Cotton, 1959 : 56,
fig. 20. Range: Southern Australia; Vict. to
Fremantle, W.A.

Under stones; 0-10 m.

Stations: (1956-60) 9+, 10+, 36+, 112+, 174+.

Genus : SCUTUS Montfort, 1810

SCUTUS ANTIPODES Montfort, 1810

Conch. Syst. 2 : 58, pl. p.57. Type loc.: New
Zealand. Range: New Zealand and southern
Australia, N.S.W. to Dongara, W.A. Rec. Refs.:
Macpherson & Gabriel, 1962, p.35, fig. 47.

Under rocks, intertidal and shallow sublittoral.

Stations: (1956-60) 10++, 36++, 37++, 154++, 176+.

Genus : CLYPIDINA Gray, 1847

Subgenus : MONTFORTULA Iredale 1915

CLYPIDINA (MONTFORTULA) RUGOSA (Quoy & Gaimard, 1834)

Emarginula. Voyage de ... l'Australabe ... pendant
1826-29 Zoology 3 : 331, pl. 68, fig. 17-18.
Type loc.: "au port du Roi Georges".

Range: Southern Australia; Vict. to Fremantle, W.A.

Under stones; 0-10 m.

Stations: (1956-60) 9+, 36++.

Subfamily: FISSURELLINAE Fleming, 1822

Genus : MACROSCHISMA G. B. Sowerby, 1839

Subgenus : FOROLEPAS Iredale, 1940

MACROSCHISMA (FOROLEPAS) cf. BAKIEI (Sowerby, 1866)

Macroschisma. Thesaurus Conchyliorum 3 : 206,
pl. 244, fig. 221. Type loc.: [Albany] designated
Cotton, 1959. Rec. ref.: Cotton, 1959 : 76, fig 37.
as Forolepas. Range: South Western Australia; Hopetoun
to Geraldton.

Only dead specimens; beach.

Stations: (Post 1960) 36+D, 176+D.

Genus : AMBLYCHILEPAS Pilsbry, 1890.

AMBLYCHILEPAS COMPRESSA (Thiele, 1930)

Fissurella. (Sophismalepas), Die fauna Südwest
Australiens 5 (8) : 563, fig 1a, b. Type loc. :
"Koombana Bei, Bunbury". Range: South Western
Australia; Bunbury to Fremantle.

Sand; 1-2 m.

Stations: (Post 1960) 137+.

AMBLYCHILEPAS NIGRITA (Sowerby, 1835)

Fissurella. Proc. zool. Soc. Lond., 1834 : 127

Type loc. :

Rec. ref.: Cotton, 1959 : 73, fig 34. as Sophismalepas.

Range: Southern Australia; N.S.W. to Fremantle, W.A.

Under stones; 0-4 m.

Stations: (1956-60) 154+, 169+. (Post 1960) 9+, 156+.

AMBLYCHILEPAS OBLONGA (Menke, 1843)

Fissurella. Molluscorum Novae Hollandiae : 33.

Type loc.: "ad litus occidentale".

Rec. ref.: Cotton 1959 : 74, fig. 54. as Sophismalepas.

Range: Southern Australia; S.A. to Abrolhos, W.A.

Beach.

Stations: (Post 1960) 169.

Suborder PATELLINA von Ihering, 1876

Superfamily : PATELLACEA Rafinesque, 1815

Family : ACMAEIDAE Carpenter, 1857

Genus : ACMAEA Eschscholtz, 1833

Subgenus : NOTOACMEA

ACMAEA (NOTOACMEA) ONYCHITIS (Menke, 1843)

Patella. Molluscorum Novae Hollandiae : 34.

Type loc. : "in litore occidentali". Rec. ref.:

Hodgkin et al 1966 : 27, pl. 8, fig. 7 & 7a.

Range: South Western Australia; Albany to Greenough River mouth.

On rocks and among barnacles; mid to uppertide level, and splash zone.

Stations: (1956-60) 9+++ , 36+++.

(Post 1960) 36++.

Subgenus ACTINOLEUCA Oliver, 1926

ACMAEA (ACTINOLEUCA) CALAMUS (Crosse & Fischer, 1864)

Patella. J. Conch. Paris: 348. Type loc.: S.A., Port

Lincoln on stones at low water. Rec. ref. : Cotton,

1959 : 314-5, fig. 212. Range: Southern Australia;

S.A. to Fremantle, W.A.

Subgenus NACCULA Iredale, 1924

ACMAEA (NACCULA) PUNCTATA (Quoy & Gaimard, 1834)

Patelloida. Voyage de... L'Australalabe... pendant

1826-29 Zoology 3 : 365, pl. 71, figs. 40, 41, 42.

Type loc.: "le port du Roi Georges".

Rec. ref.: Cotton, 1959 : 313, fig. 209. Range:
Southern Australia; S.A. to Fremantle, W.A.

On Posidonia; 2-3 m.

Stations: (1956-60) 36+, 137+.
(Post 1960) 154+.

Subgenus : PATELLOIDA Quoy and Gaimard, 1834

ACMAEA (PATELLOIDA) ALTICOSTATA (Angas, 1865).

Patella. Proc. zool. Soc. Lond. 1865 : 56, pl. 2,
fig. 11. Type loc.: "Port Lincoln, S.Aust."

Rec. ref.: Cotton, 1959 : 300-2, fig. 199.

Range: Southern Australia; Sth Qld to Geraldton,
W.A.

Moderate exposure; intertidal.

Stations: (1956-60) 136++, 137++. (Post 1960) 9+, 36+.

Family : PATELLIDAE Rafinesque, 1815

Subfamily : PATELLINAE Rafinesque, 1815

Genus : PATELLA Linnaeus, 1758

PATELLA PERONII Blainville, 1825

Dict. Sci. Nat., 38 : 111. Type loc.: King George
Sound. Rec. ref.: Powell, 1973 : 136-137, pl. 65,
figs 11-13; pls 109 and 113. Range: Southern
Australia; N.S.W. to Kalbarri, W.A.

On rocks; low water mark.

Stations: (Post 1960) 9+d, 36++.

Family : TROCHIDAE Rafinesque, 1815

Subfamily : MARGARITINAE Stoliczka, 1868

Genus : EUCHELUS Phillipi, 1847

Subgenus : HERPETOPOMA Pilsbry, 1889

EUCHELUS (HERPETOPOMA) FENESTRATA Tate, 1893

Trans. R. Soc. S Aust., 17 : 195, pl. 1, fig. 2.

Type loc.: "West Australia". Rec. ref. : Cotton,
1959 : 185-186, fig. 114. Range: Southern Australia;
S.A. to Dampier Arch., W.A.

Beach.

Stations (1956-60) 137+.

See Ponder

sp. ct E. (H.)
EUCHELUS (HERPETOPOMA) cf. PUMILIO (Tate, 1893)

Trans R. Soc S. Aust., 17 : 196, pl. 1, fig. 3.

Type loc.: "Fowler Bay and Head of Great Australian Bight". Rec. ref.: Cotton, 1959 : 186-187, fig. 115.

Range: Southern Australia; S.A. to Fremantle, W.A.

Beach.

Stations: (1956-60) 154+. (Post 1960) 137+.

EUCHELUS (HERPETOPOMA) ASPERSA (Philippi, 1846)

Trochus. Z. Malakazool. : 103. Type loc.:—

Rec. ref.: Cotton, 1959 : 188, fig 117.

Range: Southern Australia; Tas. to Quobba, W.A.

On weed, under and on rocks; 0-10 m.

Stations: (1956-60) 9+, 36+, 112+, 136+, 137++, 170+, 176++.

Subfamily : ANGARIINAE Thiele, 1924

Genus : ANGARIA Koken, 1896

ANGARIA TYRIA (Reeve, 1842)

Ladbrook 1978
Delphinula. Conchologia systematica 2, pl. 211, fig. 1-6. Type loc.: - . "Ad oras Novae Hollandae"

see Ladbrook
Reeve, 1843. Rec. ref.: Wilson & Gillett, 1971 : 26, pl. 9, fig. 1, 1a. Range: Central west coast, W.A.; Cockburn Sound to Shark Bay.

On rocks and coral; 0-10 m.

Stations: (1956-60) 9++, 10++, 36+, 75++, 86+, 137+, 176+. (Post 1960) 9+, 10+, 36+, 176+.

Subfamily : MONODONTINAE Cossman, 1916

Genus : MONODONTA Lamarck, 1799

MONODONTA (AUSTROCOCHLEA) CONSTRICTA Lamarck, 1822

Histoire naturelle des animaux sans vertèbres, 7 : 36.

Type loc.: "les mers de la Nouvelle-Hollande, pres de l'île de Diemen" Rec. ref. : Macpherson & Gabriel,

1962 : 69, fig. 94. Range: Southern Australia; Vict., Tas., not S.A.(?) to Fremantle, W.A.

On stones; near high water level.

Stations: (Post 1960) 9+.

MONODONTA (AUSTROCOCHLEA) RUDIS Gray, 1827

in King, P.P., Narrative of a survey of... western coasts of Australia. Appendix B, 2 : 480. Type loc.:

— . Rec. ref.: Cotton, 1959 : 164-165, fig. 95. as Fractarmilla. Range: Southern Australia; S.A. to Kalbarri, W.A.

Stations: (1958-60) 9+, 36+. (Post 1960) 36+, 154+, 169+.

Genus : BANKIVIA Krauss, 1848

Subgenus : LEIOPYRGA Adams and Adams, 1863.

BANKIVIA (LEIOPYRGA) OCTONA (Tate, 1891)

Leiopyrga. Trans. R. Soc. S. Aust. 14 ; 260, pl. 11, fig. 5. Type loc.: "S.A. Royston Head, Yorke Peninsula." Rec. ref.: Cotton, 1961 : 112-113, fig. 53. as Leiopyrga. Range: Southern Australia; Vict. to Fremantle, W.A.

Sand; beach.

Stations: (Post 1960) 154+d.

Genus : CANTHARIDUS Montfort, 1810

Subgenus : PHASIANOTROCHUS Fischer, 1885

CANTHARIDUS (PHASIANOTROCHUS) APICINUS (Menke, 1843)

Mondonta. Molluscorum Novae Hollandiae, 1843 : 15. Type loc.: South Western Australia, [Bunbury designated by Cotton, 1959]. Rec. ref.: Cotton, 1959 : 106-107, fig. 49. as Phasianotrochus. Range: Southern Australia; Vict. to Fremantle, W.A.

Beach drift.

Stations: (before 1940) 169+.

CANTHARIDUS (PHASIANOTROCHUS) BELLULUS (Dunker, 1845)

Trochus. Abbildungen... Beschreibungen neuer... Conchylien... 2 : 34, pl. 7, fig. 6. Type loc.: S.A. [Marino designated Cotton, 1959] : 107-108, fig. 50. Range: Southern Australia; Tas. to Fremantle, W.A.

Posidonia beds; 0-4 m.

Stations: (Post 1960) 4+, 36+d, 170+.

CANTHARIDUS (PHASIANOTROCHUS) EXIMIUS (Perry, 1811)

Bulimus. Conchology : pl. 30, fig. 2.

Type loc. : Tasmania. Rec. ref.: Cotton, 1959 :

105-106, fig. 48. as Phasianotrochus. Range: Southern Australia; Qld to Greenough River mouth, W.A.

Posidonia beds; 0-4 m.

Stations: (Post 1960) 137d, 153+, 154+.

CANTHARIDUS (PHASIANOTROCHUS) IRISODONTES (Quoy & Gaimard, 1834)

Trochus. Voyage de... l'Astrolabe... pendant 1826-29 Zoology 3 : 246, pl. 63, fig. 7-12.

Type loc.: "au port du Roi Georges". Rec. ref.:

Cotton 1959 : 108-109, fig. 51. as Phasianotrochus. Range: Southern Australia; S.A. to Geraldton, W.A.

Sea grass beds; 1-3 m.

Stations: (1956-60) 9+, 24+, 41+, 137+, 153+.

"CANTHARIDUS" LEPIDUS (Philippi, 1846)

Trochus. Systematisches Conchylien. Cabinet von Martini and Chemnitz 2 : 84, pl. 15, fig. 4.

Type loc.: Swan River. Rec. ref.: Hodgkin et al,

1966 : 19, pl. 4, fig. 3. as Calliostoma interrupta (Wood); Ponder 1978 : , pl. , fig. . Range: South Western Australia; Fremantle to North West Cape.

Cantharidus polychromus

On Posidonia; 0-10 m.

Stations: (1956-60) 9+, 10+, 21+, 24+, 36+, 48+, 55+, 65+, 86++, 92+, 98+, 136+, 137+, 153+. (Post 1960) 9+, 10+, 36+, 136+, 137+.

Genus : CHRYSOSTOMA Swainson, 1840

CHRYSOSTOMA ZEUS (Fischer, 1874)

Monodonta. J. Conch. Paris, 22 (1874) : 372-373.

Type loc.: unknown. Rec. ref.: Hodgkin et al, 1966 : 21, pl. 5, fig. 4. as Chrysostoma obtusa Dillwyn. Range: Western Australia; Fremantle to Shark Bay.

Sand and rubble patches among sea-grass; 1-5 m.
Stations: 10+, 36++, 37++.

Genus : THALOTIA Gray, 1847

Subgenus THALOTIA Gray, 1847

THALOTIA (THALOTIA) CONICA (Gray, 1827)

Monodonta. in King, P.P. Narrative of a survey of ... western coasts of Australia Appendix B, 2 : 479. Type loc.: -

Rec. ref.: Cotton, 1959 : 115-116, fig. 55.

Range: Southern Australia; Vict. to Geraldton, W.A.

Sea-grass beds; 0-10.

Stations: (1956-60) 5+, 8+, 9+, 10+, 21+, 36+, 61++, 65+++ , 136++, 146+++ , 153+, 169+. (Post 1960) 4+, 9+, 18+, 36+, 136+.

Subgenus PROTHALOTIA Thiele, 1930

THALOTIA (PROTHALOTIA) PULCHERRIMA (Wood 1828)

Trochus. Index Testaceologicus, Supplement, : 18, pl. 6, fig. 45. Type loc.: (Encounter Bay). teste, Cotton, 1959. Rec. ref.: Cotton, 1959 : 121, fig. 60. as Prothalotia. Range: Southern Australia; Vict. to Abrolhos, W.A.

Sea-grass beds; 1-3 m.

Stations: (1956-60) 36+.

THALOTIA (PROTHALOTIA) LEHMANI (Menke, 1843)

Trochus. Molluscorum Novae Hollandiae, : 18, no. 70.

Type loc.: "in eodom litore occidentali".

Rec. ref.: Cotton, 1959 : 120-121, fig. 59. as

Prothalotia. Range: Southern Australia; S.A. to Geraldton, W.A.

Weed; 0-3 m.

Stations: (1956-60) 4+, 9+, 24+, 36+, 136+, 137+.
(Post 1960) 4+, 112+.

Subgenus : ODONTOTROCHUS Fischer in Kiener, 1879

THALOTIA (ODONTOTROCHUS) CHLOROSTOMA (Menke, 1843)

Trochus. Molluscorum Novae Hollandiae, : 17, no.68.

Type loc.: "in litore occidentali". Rec. ref.:

Cotton, 1959 : 122, fig. 61. as Odontotrochus.

Range: Southern Australia; Vict. to Geraldton, W.A.

On weed; 0-4 m.

Stations: (Post 1960) 2+, 112+.

Subfamily: GIBBULINAE Stoliczka, 1868

Genus : GIBBULA Risso, 1826

GIBBULA (G.) PREISSIANA

[leave space]

GIBBULA LEHMANI (Menke, 1843)

Turbo. Molluscorum Novae Hollandiae, 1843 : 13.

Type loc.: "in litore prope portum Leshenault".

Rec. ref.: Cotton, 1959 : 171-172, fig 101. as

Notogibbula. Range: South Australia; Vict. to Fremantle, W.A.

0-2 m.

Stations: (1956-60) 10+. (Post 1960) 2+, 4+.

Subfamily : CALLIOSTOMATINAE Thiele, 1924

Genus : CALLIOSTOMA Swainson, 1840

CALLIOSTOMA RUBIGINOSA RUBIGINOSA (Valenciennes, 1846.)

Trochus. in Du-Petit-Thouars. Voyage Autour du Monde sur la Fregate la Venus Pendant les Annees 1836-39.

Atlas de Zoologie, Mollusques Paris : pl. 4. fig 1.

Type loc.: - Rec. ref.: Macpherson & Gabriel, 1962 : 59, fig. 80. as Calliostoma australe (Broderip).

Ponder,

C. australe is a synonym. Range: Southern Australia; Bass Strait to Fremantle.

Beach.

Stations: (1956-60) 10+d.

Subfamily: TROCHINAE Rafinesque, 1815

Genus : TECTUS Montfort, 1810

TECTUS PYRAMIS (Born, 1778)

Index Rerum Naturalium Musei Caesarei Vindobonensis

Pars Ima Testacea : 338. Type loc.: ?

Rec. ref. : Wilson & Gillett, 1971 : 26, pl. 9, fig. 12, 12a. Range: Indo West Pacific; south to Fremantle, W.A.

On rocks and dead corals; 1-10 m.

Stations: (1956-60) 9++m 34+, 36+, 37+, 41++, 63+, 65++, 75++, 112+, 136+, 137++, 153++, 176++.

(Post 1960) 36+, 112+, 170++.

Genus: CLANCULUS Montfort, 1810

Subgenus: MESOCLANCULUS Cotton & Godfrey, 1934

CLANCULUS (MESOCLANCULUS) CONSOBRINUS Tate, 1893

Trans. R. Soc. S. Aust., 17 : 193, pl. 1, figs. 1 & 1a.

Type loc.: "Holdfast and Aldinga Bays, S. Yorke

Peninsula". Rec. ref.: Cotton, 1959 : 140, fig 74.

Range: Southern Australia; S.A. to Quobba, W.A.

On and under rocks amongst weed; 0-10 m.

Stations: (1956-60) 36+, 153+. (Post 1960) 4+.

CLANCULUS (MESOCLANCULUS) PERSONATUS (Philippi, 1846)

Trochus. Systematisches Conchylien - Cabinet von Martini and Chemnitz, 2 : 78, pl. 1, 4, fig. 7.

Type loc.: (South Western Australia, Rottneest)

designated Cotton, 1959. Rec. ref.: Cotton. 1959 : 129, fig. 65. as Euriclanculus. Range: Southern

Australia; S.A. to Fremantle, W.A.

Beach.

Stations: (1956-60) 10+d.

CLANCULUS

MAXILLATUS (Menke, 1843)

Monodonta. Molluscorum Novae Hollandiae: 14, no. 55.

"cum praecedentibus". Type loc.: South Western

Australia. (King George Sound designated Cotton,

1959). Rec. ref.: Cotton, 1959 : 128-129, fig. 64.

as Euriclanculus. Range: Southern Australia; S.A. to Kalbarri, W.A.

Under stones; 0-10 m.

Stations: (1956-60) 36+, 60+. (Post 1960) 4+, 36+.

CLANCULUS (MESOCLANCULUS) DENTICULATUS (Gray 1827)

Monodonta. in King, P.P. Narrative of a survey of ... western coasts of Australia Appendix B, 2 : 479.

Type loc.: [South Western Australia]. teste, Cotton, 1959. Rec. ref.: Cotton, 1959 : 141-142, fig. 76. Range: Northern Australia; Qld., N.T., W.A. to Yorke Peninsula, S.A.

Among rocks and dead corals; 0-5 m.

Stations: (1956-60) 36+, 41+, 60+, 112+.
(Post 1960) 4+.

Subgenus : ISOCLANCULUS Cotton & Godfrey, 1934

CLANCULUS (ISOCLANCULUS) RINGENS (Menke, 1843)

Monodonta. Molluscorum Novae Hollandiae:14, no. 53.

Type loc.: W. Australia [Bunbury, designated Cotton, 1959]. Rec. ref.: Cotton 1959 : 133-134, fig 68.

Range: Southern Australia; Vict. to Fremantle, W.A.

Under rocks near weed; 0-6 m.

Stations: (1956-60) 9+, 36+, 112+. (Post 1960) 4+, 9+.

Subgenus : MICROCLANCULUS Cotton & Godfrey, 1934

CLANCULUS (MICROCLANCULUS) cf GATLIFFI (Tomlin, 1924)

Clanculus. Proc. malac. Soc. Lond. 16 : 24.

Type loc.: "West Australia". Rec. ref.: Cotton, 1959 : 137, fig. 72. Range: All Australian states.

Under stones and Pinna shells in sea grass beds; 0-10 m.

Stations: (1956-60) 9++, 10++, 36++, 98+.
(Post 1960) 9++, 10+, 36+, 39+, 137+.

Subfamily : UMBONIINAE Pilsbry, 1886

Genus : UMBONIUM Link, 1807

Subgenus ETHALIA Adams & Angas, 1854

UMBONIUM (ETHALIA) SP.

Beach.

Stations: (Post 1960) 10++.

Genus : ETHMINOLIA Iredale, 1924

ETHMINOLIA VITILIGINEA (Menke, 1843)

Trochus. Molluscorum Novae Hollandiae:18, no 73.

Type loc.: "in litore occidentali". Rec. ref.: Cotton, 1959 : 101, fig. 46. Range: Southern and Western Australia; north to Dampier Arch. in W.A.

Mud or sand; 0-20 m.

Stations: (1956-60) 9+, 24+, 36+.
(Post 1960) 137+, 154+.

Genus : MONILEA Swainson, 1840

MONILEA CALLIFERA (Lamarck, 1822)

Trochus. Histoire naturelle des animaux sans vertèbres, 7 : 27. Type loc.: -. Rec. ref.: Hodgkin, (et al.), 1966 : 15, pl. 2, fig 7. Range: Western Australia; Fremantle to Dampier Arch.

Mud, sand; 0-20 m.

Stations: (1956-60) 9+, 21+, 28+, 55+, 92+, 136+, 137+, 146d+, 153+, 176+. (Post 1960) 3+, 4+, 9+.

Family : STOMATELLIDAE Gray, 1840

Genus : STOMATELLA Lamarck, 1816

STOMATELLA AURICULA Lamarck, 1816

Table Encyclopedie Methodique : 10, pl. 450, fig. 1. Type loc.: [South Western Australia, King George Sound] teste Cotton, 1959. Rec. ref.: Cotton, 1959 : 199, fig. 124. Range: Southern Australia; Vict. to Geraldton, W.A.

On weed and on and under rocks; 0-10 m.

Stations: (1956-60) 9+, 24+, 36+, 112+. (Post 1960) 4+, 9+.

STOMATELLA NIGRA Quoy & Gaimard, 1834

Voyage de...l'Astrolabe...pendant 1826-29 Zoologie, 3 : 307, pl. 66, figs 10-12. Type loc.: "Tonga-Tabou". Range: ?

Beach.

Stations (Post 1960) 9+.

Genus : GRANATA Cotton, 1957

GRANATA IMBRICATA (Lamarck, 1822)

Stomatella. Histoire naturelle des animaux sans vertèbres, 6 (2) : 209. Type loc.: "les mers de Java". Rec. ref.: Macpherson & Gabriel, 1962 : 55-57, fig. 75. as Stomatella. Range: Southern Australia; N.S.W. to Kalbarri, W.A.

In crevices and under rocks and corals; 0-10 m.

Stations: (1956-60) 36+, 170+, 176+. (Post 1960) 4+, 9+, 36+.

Family : TURBINIDAE Rafinesque, 1815

Subfamily : ASTRAEINAE Davies, 1933

Genus : ASTRAEA Röding, 1798

Subgenus : BELLASTRAEA Iredale, 1924

Australian

Astraliium

ASTRAEA (BELLASTREA) SQUAMIFERA Koch, 1844

Trochus. in Philippi Abbildungen...Beschreibungen
nuer...Conchylien 1 : 138, pl. 4, fig. 9. Type loc.:
[West Australia]. Rec. ref.: Cotton, 1959 : 254-255,
fig. 173. Range: Southern Australia; N.S.W. to
Jurien Bay, W.A.

Among weed, on stones; 0-2 m.

Stations: (1956-1960) 9+++ , 10+ , 34+ , 36+++ , 41+ ,
48+ , 61+ , 65+ , 86+ , 92+ , 112+ , 136+++ , 137++ , 146+ ,
154+ , 169+ , 176+ . (Post 1960) 4+ , 9+ , 98+ , 136+ .

Subgenus : ASTRALIUM Link, 1807

ASTRAEA (ASTRALIUM) TENTORIUM (Thiele, 1930)

Astraliium

Astraea. "Die Fauna Sudwest-Australiens" : 569, Pl. 2,
figs 7,8. Type loc.: "Stn 25, Surf Point, Outer Bay,
at entrance to South Passage, sharks (-Shark) Bay,
N.W. Australia, 0.5 - 3.5 m, sand and rocks with
coral". Rec. ref.: Hodgkin et. al. 1966 : 23, pl. 6,
fig. 6. as Bellastrea; Ponder, 1978, pl.2figs. 7, 8.
Range: Western Australia; Hopetoun to Shark Bay.

On rocks; 0-20 m.

Stations: (1956-60) 9+ , 10+++ , 34+ , 36++ , 37++ , 41+ ,
61+ , 65+ , 75++ , 112+ , 127+ , 136++ , 137++ .

Subfamily LIOTIINAE Adams & Angas, 1854

Genus : LIOTINA Fischer, 1885

Subgenus AUSTROLIOTINA Cotton, 1948

LIOTINA (AUSTROLIOTIA) BOTANICA (Hedley, 1915)

Liota. Proc. Linn. Soc. N.S.W. 39 (4) : 710, pl. 83, figs 46, 47, 48. Type loc.: "Around Sydney".
Range: Southern Australia; N.S.W. to Fremantle W.A.

In crevices and under rocks and dead corals; 1-10 m.
Stations: (1956-60) 36+. (Post 1960) 36+, 169+.

LIOTINA (AUSTROLIOTIA) MAYANA (Tate, 1899)

Liota. Trans. R. Soc. S. Aust. 23 : 227, pl. 6, fig. 5 a,b,c. Type loc.: "Tasmania". Rec. ref.: Cotton, 1959 : 209-10, fig. 128, as Munditia.

Range: Southern Australia; Vict. to Fremantle, W.A.

Beach.

Stations: (Post 1960) 154+D.

Subfamily: TURBINIDAE Rafinesque, 1815

Genus : TURBO Linne, 1758

Subgenus : DINASSOVICA Iredale, 1937

TURBO (DINASSOVICA) JOURDANI (Kiener, 1839)

Turbo. Rev. zool. 2 : 324. Type loc.: South Western Australia : teste Cotton, 1959. Rec. ref.: Wilson & Gillett, 1971 : 28, pl. 10, fig. 6 & 6a. Range: Southern Australia; S.A. to Geraldton, W.A.

Beach.

Stations: (1956-60) 136+, 174+

Subgenus : MARMAROSTOMA Swainson, 1829

TURBO (MARMAROSTOMA) INTERCOSTALIS Menke, 1843

Molluscorum Novae Hollandiae : 13, species, 46.
Type loc.: "ad litus occidentale". Rec. ref.: Wilson & Gillett, 1973 : 28, pl. 10, fig. 3.

On rocks; 1 m.

Stations: (1956-60) 10+.

US
Subgenus : NINELLA Gray 1850

TURBO (NINELLA) TORQUATA (Gmelin, 1791)

Turbo. in Linnaeus Systema naturae ed. 13 I : 3957.
Type loc.: [N.S.W.], teste, Cotton, 1959. Rec. ref.:
Wilson & Gillett, 1971 : 28, pl. 10, fig. 5a, b.
Range: Southern Australia; N.S.W. to Geraldton, W.A.
Remarks: The name *N. whitleyi* Iredale has been used
for the Western Australian form.

On algae-covered rocks and in sea-grass beds; 0-10 m.
Stations: (1956-60) 9++, 10++, 25+, 36++, 37++, 136+,
137++, 153+, 156+, 170++. (Post 1960) 4+, 9++, 10++.

Family : CYCLOSTREMATIDAE Fischer, 1885

Fam. → Subfamily : SKENEINAE Thiele, 1929

Genus : LISSOTESTA Iredale, 1915

LISSOTESTA CONTABULATA (Tate, 1899)

Cyclostrema. Trans R. Soc. S. Aust. 23 : 222, pl. 7,
fig. 6. Type loc.: "S. Aust, Streaky Bay."
Rec. ref.: Cotton, 1959 : 225-6, fig. 144.
Range: Southern Australia; Vict. to Fremantle, W.A.

Beach.

Stations: (Post 1960) 154+D.

Fam. Subfamily CYCLOSTREMATINAE Fischer, 1885

Genus : MUNDITIA Finlay, 1927

MUNDITIA SP.

Among stones.

Stations: (1956-60) 36+.

Genus : ELACHORBIS Iredale, 1915

ELACHORBIS TATEI (Angas, 1879)

Cyclostrema. Proc. zool. Soc. Lond. 1878 : 862,
864, 868, pl. 54, fig. 10. Type loc.: "Shell sand,
Holdfast Bay, alive in the estuary of the Sturt."
Rec. ref. -

Range: Southern Australia; S.A. to Shark Bay, W.A.

Mud; 20 m.

Stations: (1956-60) 95+.

Family : PHASIANELLIDAE Swainson, 1840

Genus : PHASIANELLA Lamarck, 1804

PHASIANELLA AUSTRALIS (Gmelin, 1791)

Buccinum. in Linnaeus Systema naturae ed. 13 : 3490.

Type loc.: [S.A.], teste, Cotton, 1959.

Rec. ref.: Wilson & Gillett, 1971 : 28, pl. 10,
fig. 11, 11a, 11b. Range: Southern Australia;
Vict. to Geraldton, W.A.

Sea-grass beds; 0-5 m.

Stations: 9+, 10+, 18++, 24+.

PHASIANELLA VENTRICOSA Swainson, 1822

Appendix Catalogue Collection Shells Bligh : 12

Type loc.: [Victoria] teste, Cotton, 1959.

Rec. ref.: Macpherson & Gabriel, 1962 : 83, fig. 111.

Range: Southern Australia; Vict. to Dongara, W.A.

Sea-grass beds; 3-10 m.

Stations: (Post 1960) 137+, 154+.

PHASIANELLA SPP.

Genus : GABRIELONA Iredale, 1917

GABRIELONA NEPEANENSIS (Gatliff & Gabriel, 1908)

Phasianella. Proc. R. Soc. Vic. 21 (1) : 366, pl. 21, figs 9-10. Type loc.: "Flinders, Western Port, Ocean Beach; near Point Nepean" [both Victoria, Australia]. Rec. ref.: Robertson, 1973 : 45-46, pl. 36-39. Range: Southern Australia; Vict. to Fremantle, W.A.

Beach.

Stations: (Post 1960) 154+D.

Genus : TRICOLIA Risso, 1826

TRICOLIA ROSEA (Angas, 1867)

Eutropia. Proc. zool. Soc. Lond. 1867 : 114, pl. 13, fig. 24. Type loc.: N.S.W. "shell sand Coogee Bay". Rec. ref.: Cotton, 1959 : 269, fig. 184.

Range: Southern Australia; N.S.W. to Fremantle, W.A.

Among sandy tube mass of colonial polychaete (Sabellariidae) among sea-grass; 2 m.

Stations: (1956-69) 169+d. (Post 1960) 169+d.

Superfamily : NERITACEA Rafinesque, 1815

Family : NERITIDAE Rafinesque, 1815

Subfamily : NERITINAE Rafinesque, 1815

Genus : NERITA Linnaeus, 1758

NERITA ATRAMENTOSA (Reeve, 1855)

Nerita. Conchologia iconica 9, pl. 6, fig. 25. Type loc.: "Swan River, Australia, Bacon". Rec. ref.: Wilson & Gillett, 1971 : 30, pl. 11, fig. 2, 2a. Range: Southern Australia; southern Qld to Pt. Cloates, W.A.

On rocks; intertidal.

Stations: (1956-60) 9+, 36+, 169+. (Post 1960) 9+.

melanotroques

Order : MESOGASTROPODA

Family : LITTORINIDAE Gray 1840

Genus : LITTORINA Ferussac, 1822

Subgenus : AUSTROLITTORINA Rosewater, 1970

LITTORINA (AUSTROLITTORINA) UNIFASCIATA Gray, 1826

in P.P. King, Narrative of a survey of ...western coast of Australia Appendix B, 2 : 483.

Type loc.: Australia [King George Sound, Western Australia, restricted Rosewater, 1970]. Rec. ref.: Rosewater 1970 : 467-470, pls 325, 326, 359-361. Range: Southern Australia; Qld. to Carnarvon and Barrow I., W.A.

On rocks; above high water mark.

Stations: (1956-60) 9++, 10++, 36++, 48++, 86+++, 146+++, 170++.

Genus : NODILITTORINA Von Martens, 1897

NODILITTORINA AUSTRALIS (Gray, 1826)

Littorina. in P.P. King Narrative of a Survey of... western coasts of Australia Appendix B, 2 : 483.

Type loc.: South Mole [Arthur's Head] mouth of the Swan River Fremantle, designated Rosewater, 1970.

Rec. ref.: Rosewater, 1970, 2 (11) : 485-7, pls 325, 373. Range: Western Australia; Esperance to Vansittart Bay.

On rocks; intertidal.

Stations: (Post 1960) 36+, 154+.

Genus : BEMBICIUM Phillipi 1846

BEMBICIUM MELANOSTOMUM (Gmelin, 1791)

Trochus. in Linnaeus Systema naturae ed. 13 : 3581

Type loc.: [Tasmania] teste, Cotton.

Rec. ref.: Hodgkin et al, 1966 : 33, pl. 11, fig. 3.

Range: Southern Australia; N.S.W. to Fremantle, W.A.

Under stones; intertidal.

Stations: (1960) 9+.

BEMBICIUM AURATUM (Quoy & Gaimard, 1834)

Trochus. Voyage de...l'Astrolabe...pendant 1826-29 Zoologie 3 : 276, pl. 62, fig. 15-19.

Type loc.: "les rochers du canal d'Entrecasteaux, a'Lile de Van Diemen". Rec. ref.: Macpherson & Gabriel, 1962 : 89, fig. 118; Hodgkin et al, 1966 : 33, pl. 11 fig. 2. Range: Southern Australia; Vict. to Pt. Quobba, W.A.

Among and under rocks; intertidal

Stations: (1956-60) 9+. (Post 1960) 9+.

+ Break of family sequence from here on, several pages

Family : HIPPONICIDAE Troschel, 1861

Genus : CHEILEA Modeer, 1793

CHEILEA OCCIDUA Cotton, 1935

J. R. Soc. W. Aust. 21 : 154, figs 3, 4.

Type loc. : "Ellensbrook, Western Australia".

Range: South Western Australia; Esperance to Geraldton.

Beach; ?

Stations: (Post 1960) 154+D.

Genus : HIPPONIX Defrance, 1819

f Sabia.

HIPPONIX CONICUS (Schumacher, 1817)

Amalthea. Essai...desvers testaces : 81, pl. 21, fig. 4. Type loc.: -. Rec. ref.: Macpherson & Gabriel, 1962 : 127, fig. 152. as

Range: Southern Australia; Tas. to Exmouth, W.A.

On shells; 0-20 m.

Stations: (1956-60) 9+, 36+++, 41++, 61+, 169++.

Subgenus ANTISABIA Iredale 1937

HIPPONIX (ANTISABIA) FOLIACEUS Quoy & Gaimard, 1834

Voyage de...l'Astrolabe...pendant 1826-29 Zoologie, 3 : 439, pl. 72, fig. 41-45. Type loc.: "L'ile de Guam, dans l'archipel des Mariannes". Range: Southern Australia; N.S.W. to Fremantle, W.A.

Under stones; 0-7 m.

Stations: (1958-60) 36+, 174+, 176+. (Post 1960) 137+, 154+, 169+.

Family : CAPULIDAE Fleming, 1822

Genus : CAPULUS Montfort, 1810

CAPULUS SP.

From Stellaster inspinosus.

Stations: (Post 1960) 144+.

Family : CALYPTRAEIDAE Blainville, 1824

Genus : CALYPTRAEA Lamarck, 1799

Subgenus: SIGAPATELLA Lesson, 1830

CALYPTRAEA (SIGAPATELLA) CALYPTRAIFORMIS (Lamarck, 1822)

Trochus. Histoire naturelle des animaux sans vertèbres,
7 : 12. Type loc.: "les mers de la Nouvelle-Hollande.
Peron." Rec. ref.: Macpherson & Gabriel, 1962 : 130-
131, fig. 155. Range: Southern Australia; N.S.W.
to Fremantle, W.A.

Beach;

Stations: (Post 1960) 9+, 36+D.

Genus : CREPIDULA Lamarck, 1799

Subgenus : SEACRYPTA Finlay, 1927

CREPIDULA (ZEACRYPTA) IMMERSA Angas, 1865

Proc. zool. Soc. Lond., 1865 : 57, pl. 2, fig. 12.
Type loc.: "Port Lincoln, South Australia on dead
Pinnae". Rec. ref.: Macpherson & Gabriel, 1962 : 131-2,
fig. 156. Range: Southern Australia; N.S.W. to
Fremantle, W.A.

In dead shells; 0-7 m.

Stations: (1958-60) 9+, 36+. (Post 1960) 36+.

Family : CERITHIIDAE Fleming, 1822

Subfamily : CERITHINAE Fleming, 1822

Subfamily : CAMPANILINAE Douville, 1905

Genus : CAMPANILE Bayle in P. Fischer, 1884

CAMPANILE SYMBOLICUM Iredale, 1917

Proc. malac Soc. Lond. 12 : 325-326. Type loc.: -
Rec. ref.: Wilson & Gillett : 32, pl. 12, fig. 1.
Range: Western Australia; Esperance to Geraldton.

On sand and rocks near reef; 1-2 m.

Stations: (1958-60) 154+, 169.

Genus : DIALA A. Adams, 1861

DIALA LAUTA A. Adams, 1862

Ann. Mag. nat. Hist. (3) 10: 298. Type loc.:
S. Aust. "Port Adelaide". Rec. ref.: Hodgkin et al,
1966 : 33, pl. 11, fig. 1. Range: Southern Australia;
N.S.W. to Shark Bay.

Sand, mud, on weed; 0-10 m.

Stations: (1958-60) 137+. (Post 1960) 137+, 154+.

Genus : ALABA Adams, 1853

ALABA PUSILLA (Thiele, 1930)

Diala. Die Fauna Südwest Australiens 5 (8) : 573, fig.
16. Type loc.: Shark Bay. Range: South Western
Australia; Fremantle to Shark Bay.

Beach.

Stations: (1958-60) 137+D.

ALABA FRAGILIS (Thiele, 1930)

Diala. Die Fauna Südwest Australiens 5(8) : 573, fig. 17. Type loc.: "Swan River" Freshwater Bay. Range: South Western Australia; Fremantle to Shark Bay.

Sand, mud, on weed.

Stations: (1958-60) 92+, 137+. (Post 1960) 137+, 154+.

Cerithiidae

Genus : BITTIUM Leach in Gray, 1847

Subgenus SEMIBITTIUM Cossman 1896

BITTIUM (SEMIBITTIUM) GRANARIUM (Kiener, 1842)

Cerithium. Coquilles vivantes...: 72, pl. 19, fig. 3. Type loc.: ?. Rec. ref.: Macpherson & Gabriel, 1962 : 108-9, fig. 135, as Cacozeliana. Range: Southern Australia; Vict. to Geraldton, W.A.

Sand, mud, under and in crevices rocks, dead coral; 0-20 m.

Stations: (1958-60) 9+d, 10++d 11++, 36++, 86+, 112++, 136++, 137++, 141+, 149++d. (Post 1960) 4++, 36++, 136++, 137++, 156+.

m

BITTIUM (SEMIBITTIUM) ICARUS (Bayle, 1880)

Cerithium. J. Conch. Paris, 1880 : 249. Type loc.: "Port Lincoln".

Among rocks, near weed. 0-10 m.

Stations: (1958-60) 36+, 55+. (Post 1960) 154+.

Batillaria

Family : POTAMIDIDAE Adams, 1854

Genus : VELACUMANTUS Iredale, 1936

VELACUMANTUS AUSTRALIS (Quoy & Gaimard, 1834)

Cerithium. Voyage de...l'Astrolabe...pendant 1826-29, Zoologie 3 : 131, pl. 55, fig. 7. Type loc.: "le port Jackson" Rec. ref. Wilson & Gillett, 1971 : 32, pl. 12, fig. 9 9a. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand, mud; 0-2 m.

Stations: (Post 1960) 9++.

out of sequence

Family : DIASTOMATIDAE Crosse et Fischer, 1893

Genus : OBTORTIO Hedley, 1899

Subgenus ALABINA Dall, 1902

OBTORTIO (ALABINA) SP.

Sand, mud; 20 m.

Stations: (1958-60) 44-45+, 95+

Sequence 7

Family : RISSOIDAE

Genus : RISSOINA Orbigny, 1840

Subgenus : RISSOLINA Gould, 1861

RISSOINA (RISSOLINA) CRASSA (Angas, 1871)

Rissoina. Proc. zool. Soc. Lond., 1871 : 17, pl. 1, fig. L6. Type loc.: "From the Bottle and Glass" rocks, under stones, Port Jackson".
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Under stones; 0-2 m.
Stations: (1956-60) 36+, 169+. (Post 1960) 36+.

RISSOID

Beach.
Stations: (Post 1960) 154+D.

Family : VERMETIDAE Rafinesque, 1815

Genus : SERPULORBIS Sasso, 1827

SERPULORBIS SIPHO (Lamarck, 1818)

Serpula. Histoire naturelle des animaux sans vertébrés, 5 : 367. Type loc.: "L'Océan des Indes, a Timor." Rec. ref.: Macpherson & Gabriel, 1962, 100-102, fig. 127. Range: Southern Australia, N.S.W. to Abrolhos, W.A.

On stones, shells, dead coral; 0-10 m.
Stations: (1956-60) 9+, 36+, 61+++ , 86++ , 169+, 94++ , 111++ . 112++ . 169++ . (Post 1960) 9+, 137+, 144+.

Genus : PYXIPOMA Mörch, 1860

PYXIPOMA SP.

Sand: -2 m.
Stations: (Post 1960) 36+.

Family : TRIVIIDAE Troschel, 1863

Subfamily : TRIVIINAE Troschel, 1863

Genus : ELLATRIVIA Iredale, 1931

ELLATRIVIA MERCES (Iredale, 1924)

Triviella. Proc. Linn. Soc. N.S.W. 49 : 257, pl. 35, fig. 16-17. Type loc. "Common on littoral of N.S.W." Rec. ref.: Wilson & Gillett, 1971 : 62, pl. 44, fig. 12. Range: Southern Australia; N.S.W. to Geraldton, W.A.

Rock crevices; 0-10 m.
Stations: (1958-60) 36+.

Family : CYPRAEIDAE Rafinesque, 1815

Genus : CYPRAEA Linnaeus, 1758

CYPRAEA CAPUTSERPENTIS Linnaeus, 1758

Systema naturae ed. 10 : 720, no. 298. Type loc.: [Type specimens of Linnaeus belong to the African race which was chosen by Schilder and Schilder (loc. cit) as the typical subspecies], Dodge, 1953. Rec. ref.: Wilson & Gillett, 1971 : 54, pl. 34, fig. 5. Range: Indo West Pacific; Western Australia, south to Albany.

Beach.
Stations: (1958-60) 10+d.

Subgenus : ZOILA Jousseaume, 1884

X 11
CYPRAEA (ZOILA) FRIENDI Gray, 1831

Zoological Miscellany : 35. Type loc.: Cockburn Sound and Owen Anchorage between Garden and Carnac Islands and the mainland (restricted Wilson, 1967) Rec. ref.: Wilson & Gillett 1971 : 45, pl. 25, figs 1, 1a, 1b, 1c, 1d, 1e, 1f, 1g. Wilson & McComb, 1967 : 470-472, pls 232 and 333. Range: Western Australia; from western part of Great Australian Bight to Dorre Island.

On yellow sponge; 0-10 m.
Stations: 36+, 72+.

Family : NATICIDAE Swainson, Gray, 1840

Subfamily : POLINICINAE Gray, 1847

Genus : POLINICES Montfort, 1810

POLINICES TUMIDUS (Swainson, 1840)

Mamillaria. A Treatise on Malacology, : 345.
Type loc.: ? Rec. ref.: Cernohorsky 1972 : 98, pl. 25, 10. Polinices pyriformis Recluz is a synonym.

Naticinae
just

Wilson & Gillett, 1971 : 64, pl. 45, fig. 3, 3a.
as P. pyriformis Recluz. Range: Indo-Pacific;
south to Fremantle, W.A.

Mud; 20 m.

Stations: (Post 1960) 115+d.

Subgenus : CONUBER Finlay & Marwick, 1937

POLINICES (CONUBER) CONICUS (Lamarck, 1822)

Natica. Histoire naturelle des animaux sans vertèbres,
6 (2) : 198. Type loc.: - . Rec. ref.: Macpherson
& Gabriel, 1962 : 134, fig. 158. Range: Southern
Australia; Sth Qld. to Pt. Samson, W.A.

Sand, mud; 0-20 m.

Stations: (1958-60) 24+, 41+, 43+, 44+, 55+, 61++,
92+, 93+, 96+, 101+, 125+d, 129+d, 130+, 132+d, 136+,
137++, 141+, 153+++, 164+d. (Post 1960) 130+, 136+.

Genus : EUNATICINA P. Fischer, 1885

Subgenus : PERVISINUM Iredale, 1931

EUNATICINA (PERVISINUM) DINGELDEII (Iredale, 1931)

Pervisium. Rec. Aust. Mus. 18 : 206, pl. 23, fig.
15. Type loc.: "Sydney Harbour". Rec. ref.: Hodgkin,
et al, 1966 : 31, pl. 10, fig. 4. Range: Southern
Australia; N.S.W. to Fremantle, W.A.

Sand near weed; 0-5 m.

Stations: (1958-60) 55+, 153+, 174+. (Post 1960) 137+,
169+.

Genus : SIGARETOTREMA Sacco, 1890

SIGARETOTREMA UMBILICATUM (Quoy & Gaimard, 1832)

Natica. Voyage de...l'Astrolabe...pendant 1826-29,
Zoologie 2 : 234, pl. 66, figs 22-23.

Type loc.: "de la Nouvelle Hollande". Rec. ref.:
Wilson & Gillett, 1971 : 64, pl. 45, fig. 13, 13a.
Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand; 0-2 m.

Stations: (1958-60) 36+. (Post 1960) 137+.

Subfamily : SININAE Woodring, 1928

Genus : SINUM (Bolten) Röding, 1798

Subgenus : ECTOSINUM Iredale, 1931

SINUM (ECTOSINUM) ZONALE (Quoy & Gaimard, 1832)

Cryptosoma. Voyage de...l'Astrolabe...pendant...
1826-29, Zoologie 2 : 221, pl. 66, figs 1-5.

Type loc.: [King George Sound]. Rec. ref.:
Wilson & Gillett, 1971 : 64, pl. 45, fig 14, 14a.
Range: Southern Australia; N.S.W. to Geraldton,
W.A.

Sand; 0-10 m.

Stations: (1958-60) 60+. (Post 1960) 9+. 36+, 137+.

Subfamily : NATICINAE Swainson, 1840

Genus : NATICA Scopoli, 1777

NATICA SAGGITTATA Menke, 1843

16
Molluscorum Novae Hollandiae : 10. Type loc.:
"ad litus occidentale". Rec. ref.: Wilson & Gillett,
1971 : 64, pl. 45, fig. 12, 12a. Range: All
Australian states.

or Notocochilis?
Sand near weed; 0-4 m.

Stations: (1958-60) 11+, 24+, 160+.
(Post 1960) 36+, 137+.

NATICA GUALTERIANA (Recluz, 1844)

Natica. Proc. zool. Soc. Lond. 1843 : 208.

Type loc.: "Sual, province of Pangasinan, Island of
Luzon, found at five to seven fathoms on sand."

Rec. ref.: Hodgkin, et al, 1966 : 31, pl. 10, fig. 7.

Range: Indo-west Pacific; south to Sth Qld and
Albany in W.A.

Sand, and sand near Posidonia; 1-3 m.

Stations: (1958-60) 9+, 36+, 136+, 137+. (Post 1960)
169+.

Genus : NATICARIUS Dumeril, 1806

NATICARIUS SEYCHELLIUM Watson, 1885

The Voyage of H.M.S. Challenger (Zoology), Report
on the Gastropoda : 434, species 6.

Type loc.: "Mahe in the Seychelles". Rec. ref.:

Allan, 1950: 136, text fig. 30, fig 1. Range:
Indo Pacific; W.A. south to Fremantle.

Sand; 1-3 m.

Stations: (1958-60) 137+. (Post 1960) 36+, 137+.

Family : CYMATIIDAE Iredale, 1913

Genus : RANELLA Lamarck, 1816

Subgenus : MAYENA Iredale, 1917

RANELLA (MAYENA) AUSTRALASIA (Perry, 1811)

Biplex. Perry Conchology 1811 : pl. 4, fig. 2,
pl. 4. Type loc.: ?. Rec. ref.: Wilson & Gillett,
1971 : 76, pl. 52, fig. 6. Range: New Zealand
and southern Australia; N.S.W. to Port Denison, W.A.

On rocks; 1-3 m.

Stations: (1958-60) 36+.

Genus CABESTANA Bolten Roding, 1798

CABESTANA WATERHOUSEI (Adams & Angas, 1864)

Triton. Proc. zool. Soc. Lond. 1864 : 35. Type loc.:
"Port Lincoln". Rec. ref.: Wilson & Gillett, 1971 : 78,
pl. 53, fig. 13, 13a. Range: Southern Australia;
N.S.W. to Fremantle, W.A.

Among rocks; 7 m.
Stations: (1958-60) 9+.

Genus : TURRITRITON Dall, 1904

TURRITRITON LABIOSA (Wood, 1828)

Murex. Index Testaceologicus Supplement : 15,
pl. 5, fig. 18. Type loc.: -. Rec. ref.: Beu,
1971 : 109, figs 5, 6. Range: Northern Caribbean
Sea; Indo-west Pacific.

On rocks and coral; 0-5 m.
Stations: (1958-60) 10+. (Post 1960) 137+.

Genus : CHARONIA Gistel, 1848

CHARONIA POWELLI Cotton, 1957

Rec. S. Aust. Mus. 13 : 120, pl. 6, lower.
Type loc.: "S.W.A. Ellenbrook". Rec. ref.: Wilson
& Gillett, 1971 : 76, pl. 52, fig. 3. Range:
South Western Australia; Esperance to Fremantle.

Dead coral rock; carnivorous, eating Parasterina;
10 m.
Stations: (1970) 112+.

Genus : SEPTA Perry, 1810

Subgenus : CABESTANIMORPHA Iredale, 1936

SEPTA (CABESTANIMORPHA) TABULATA (Menke, 1843)

Tritonium. Molluscorum Novae Hollandiae : 25.
Type loc.: "in litore occidentali" Western Australia.
Rec. ref.: Wilson & Gillett, 1971 : 78, pl. 53, fig. 5,
5a. as Turritriton. Range: All Australian states.

Stations: 1958-60 4+, 55+d.

Family : TONNIDAE Suter, 1913

Genus : TONNA Brunnich, 1772

TONNA VARIEGATA (Lamarck, 1822)

Dolium. Histoire naturelle des animaux sans vertèbres,
7 : 261. Type loc.: "les ner de la Nouvelle Hollande,
dans la baie des Chiens-Marins". Rec. ref.: Wilson
& Gillett, 1971 : 74, pl. 51, fig. 1 & 1a.
Range: South Western Australia; Eucla to Shark Bay.

Beach.
Stations: (Post 1960) 10+D.

exarata

Order : NEOGASTROPODA Thiele, 1929
Family : MURICIDAE Rafinesque, 1815
Subfamily : MURICINAE Rafinesque, 1815
Genus : PTERYNOTUS
Subgenus : PTEROCHELUS Jousseaume, 1880

PTERYNOTUS (PTEROCHELUS) ANGASI (Cross, 1863)

Typhis. J. Conch. Paris 9 : 86, pl. 1, fig. 2.
Type loc.: [N.S.W.]teste, Cotton, 1959. Rec. ref.:
Wilson & Gillett, 1971, pl. 88, fig. 2, a-d.
Range: Southern Australia to Fremantle, W.A.

In crevices, dead coral; 10 m.
Stations: (Post 1960) 35+.

Genus : BEDEVA Iredale, 1924

BEDEVA PAIVAE Crosse, 1864

Trophon. J. Conch. Paris 12 : 278, pl. 11, fig. 7.
Type loc.:
Rec. refs: Macpherson & Gabriel, 1962 : 172, fig.
205; Radwin & D'Attilio 1976 : pl. figs
Range: All Australian states.

Remarks: B. hanleyi (Angas, 1867) is a synonym
teste Radwin and D'Attilio, 1976.

Stations; (1956-60) 9+, 10+, 18++, 19+, 21++, 29++,
31++, 42++, 44++, 80++, 93++, 112++, 124+, 125++,
129++d, 130++, 132+d, 137++, 141++, 143++, 144+d,
148+, 149++, 161++, 164++.

Genus : ASPELLA Mörch, 1877

ASPELLA PLATYLAEVIS Radwin & D'Attilio, 1976

Murex Shells of the World, Stanford : 224-225, fig.
168. Type loc.: Woodman Point, Cockburn Sound
(March, 1963). Range: Indo-West Pacific? Known
from Cockburn Sound and Palau Islands.

Under stones, intertidal and shallow sub-littoral.
Stations: (1956-60) 10+. (Post 1960) 10+.

ASPELLA PONDERI Radwin & D'Attilio, 1976

Murex Shells of the World, Stanford : 227-228, fig.
174. Type loc.: 3 km southwest of Broome, W.A.
Range: northern Australia, Cockburn Sound to N.S.W.

Under stones, intertidal and shallow sub-littoral.
Stations: (Post 1960) 136+, 170+.

Remarks: Radwin and D'Attilio's two species of
Aspella from Cockburn Sound may be variants of a single
species.

Genus : MURICOPSIS Bucquoy, Dautzenberg and Dollfus, 1882

MURICOPSIS PLANILIRATA (Reeve, 1845)

Murex. Conchologia iconica 3 : pl. 31, fig. 149.

Type loc.: "Swan River". Rec. ref.: Ponder,
1972 : 240, pl. 22, fig. 9. Hodgkin et al 1966 :
37, pl. 13, fig. 2. as Murexsul fimbriatus.

Range: Southern Australia; west of Wilson's
Promontory to Fremantle, W.A.

Remarks: M. fimbriatus Lamarck is a synonym.

Under stones; 0-3 m.

Stations: (1958-60) 98+. (Post 1960) 9+, 36+.

Genus : CRONIA H. & A. Adams 1853

CRONIA AVELLANA (Reeve, 1846)

Buccinum. Conchologia iconica 3 : pl. 8, fig. 52.
Type loc.: "North coast of New Holland". Rec. ref.:
Wilson & Gillett, 1971 : 92, pl. 61, fig. 12.
Range: Western Australia, Cheyne Beach to Broome.
Under stones and in crevices; 1-8 m.
Stations: (1958-60) 9++, 36++, 136+, 169+. (Post
1960) 38+, 137+, 156+.

Genus : MACULOTRITON Dall, 1904

MACULOTRITON DISCOLOR (Quoy & Gaimard, 1832)

Buccinum. Voyage de...l'Astrolabe...pendant
1826-29 Zoologie, 2 : 422, pl. 30, figs 23-25.
Type loc.: "d l'île Tonga-Tabou." Rec. ref.:
Hodgkin et al, 1966 : 37, pl. 13, fig 5.
Range: Southern Australia; N.S.W. to Fremantle, W.A.
Crevices in rocks and dead corals; 0-4 m.
Stations: (1958-60) 36+, 169+. (Post 1960) 36+.

Subfamily: THAIDINAE ?

Genus : LEPSIELLA Iredale, 1912

LEPSIELLA FLINDERSI (Adams & Angas, 1864)

Purpura. Proc. zool. Soc. Lond. 1863 : 421, pl. 37,
fig. 22. Type loc.: "York's Peninsula, South
Australia". Rec. ref.: Wilson & Gillett 1971: 92, pl.
61, fig. 11. Range: Southern Australia; Vict. to
Fremantle, W.A.

In crevices and under stones; 0-10.
Stations: (1958-60) 169+. (Post 1960) 36+.

Genus : DICATHAIS Iredale, 1936

DICATHAIS ORBITA (Gmelin, 1791)

Buccinum, in Linnaeus Systema naturae ed. 13, 1: 3490.
Type loc.: - . Rec. ref.: Wilson & Gillett, 1971 :
90, pl. 60, fig. 9, 9a. as D. textilosa, Lamarck.
Range: New Zealand; Kermadec Is., Norfolk Is.,
Lord Howe Is. Southern Australia; sth Qld to Barrow
Is., W.A.

Remarks: This is a highly variable species, the
different forms have at times been separated. The
local form was known as D. aegrota Reeve. See
Phillips, Campbell, Wilson, 1973.

Among and on rocks, mussels; 1 m.
Stations: (1956-60) 9++, 36++, 146+, 154++, 169++,
170++. (Post 1960) 9++.

textilosa?

within its wider
range - - - -

Subfamily : DRUPINAE

Genus : DRUPA [Bolten] Roding, 1798

DRUPA SP.

Range:

Family : COLUMBELLIDAE Swainson, 1840

Genus : PYRENE [Bolten] Roding, 1798

PYRENE (COLUMBELLA) SCRIPTA forma BIDENTATA (Menke, 1843)

Columbella. Molluscorum Novae Hollandiae. : 23, species 108. Type loc.: "in litore occidentali".
Rec. ref.: Hodgkin et al, 1966 : 47, pl. 18, fig. 7.
Cernohorsky, 1972 : 134, pl 40, fig. 8. regard P. bidentata, Menke as a synonym. Range: Indo-Pacific.

On weed, on and under rocks; 1-10 m.

Stations: (1958-60) 9++, 10++, 36+, 61++, 98+, 114++, 153++, (Post 1960) 10++, 36++, 169++, 176++.

Genus : ZAFRA A. Adams, 1860

ZAFRA VERCOI Thiele, 1930

[sic] Pyrene. Die Fauna Sudwest Australiens 5 (8) : 583, pl. 4, fig. 57. Type loc.: "Sharks Bay". Range: South Western Australia; Fremantle to Shark Bay.

Caulerpa washings, mud; 0-7 m.

Stations: (Post 1960) 10+, 137+.

ZAFRA cf. ATKINSONI Tenison-Woods, 1876

Mangelia. Proc. R. Soc. Tas. 1875 : 141. Type loc.: "East coast". Rec. ref.: Hedley, 1915 : 744-5, pl. 83, fig. 72. Zafra speciosa Angas, 1877 is a synonym. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Mud; 10 m.

Stations: (Post 1960) 154+d, 176+d.

ZAFRA SP.

Mud; 7 m.

Stations: (Post 1960) 137+.

Mitrella ✓ Genus : DENT IMITRELLA Ludbrook, 1958

DENT IMITRELLA LINCOLNENSIS (Reeve, 1859)

Columbella. Conchologia iconica, 11 : pl. 29, figs 184a and b. Rec. ref. : Hodgkin et al, 1966 : 47, pl. 18, fig. 8. Range: Southern Australia; Vict. to Abrolhos, W.A.

Pitrella

Sand, near Posidonia; 0-10 m.
Stations: (1956-60) 9+, 4+, 10+, 19+, 36+, 136+,
169+, 176+. (Post 1960) 4+, 136+, 154+, 156+.

DENT IMITRELLA MENKEANA Reeve

complet →

11

DENT IMITRELLA AUSTRINA (Gaskoin, 1852)

Columbella. Proc. zool. Soc. Lond. 1851 : 9.
Type loc. "Australia". Rec. ref.: Hodgkin et al,
1966 : 47, pl 18, fig. 9. Range: Southern Australia;
Vict. to Fremantle, .W.A

Sand, weed, under rocks; 0-7 m.
Stations: (1958-60) 9+, 169+. (Post 1960) 4+, 9+,
137+.

Family : BUCCINIDAE Rafinesque, 1815

Genus : COMINELLA J.E. Gray (in M. E. Gray) 1850

Subgenus: JOSEPHA Tenison Woods, 1878

COMINELLA (JOSEPHA) TASMANICA (Tenison Woods, 1879)

Josepha. Pap. Proc. R. Soc. Tasm. 1878 : 32. Type
loc.: "Tasmania". Rec. ref.: Hodgkin et al, 1966 :
45, pl. 17, fig. 1. Range: Southern Australia;
Tas, S.A. to Geraldton, W.A.

Under rocks, among weed, on sand near weed; 0-13 m.
Stations: (1958-60) 9++, 10++, 11++, 36++, 137+,
146+, 153+, 169++, 170++. (Post 1960) 9+, 98+,
137+, 156+, 169+, 174+.

Family : MELONGENIDAE Gill, 1871

Genus : SYRINX Röding, 1798

SYRINX ARUANUS (Linnaeus, 1758)

Murex. Systema naturae ed.10 : 753, no. 484.
Type loc.: "Ad Novam Guineam". Rec. ref.: Wilson
& Gillett, 1971 : 98, pl. 64, fig. 10. Range:
Northern Australia, southern Qld to Bunbury, W.A.

On sand near reef; 1-10 m.
Stations: (1958-60) 36+.

Family : NASSARIIDAE Iredale, 1916

Genus : NASSARIUS Dumeril, 1806

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K
NASSARIUS PYRRHUS (Menke, 1843)

Buccinum. Molluscorum Novae Hollandiae : 21.

Type loc.: "in litore occidentali".

Rec. ref.: Wilson & Gillett, 1971 : 102, pl. 66, fig. 4, 4a. Range: Southern Australia; Vict. to Fremantle, W.A.

Sand, mud near Posidonia; 0-20 m.

Stations: (1956-60) 9+, 10+, 15++++, 16+, 19+, 28+, 44-45+, 55+, 86+, 96+, 141+, 153++. (Post 1960) 136+.

59X
NASSARIUS PAUPERATUS (Lamarck, 1822)

Buccinum. Histoire naturelle des animaux sans vertèbres, 7 : 278. Type loc.: - none [Australia - Menke, 1843]

Rec. ref.: Wilson & Gillett, 1971 : 102, pl. 66, fig. 5, 5a. as Parcanassa. Cernohorsky, 1972 : 147, figs 47-48, 55, 73. Range: Southern Australia; Vict. to Abrolhos, W.A.

Sand, mud; 1-10 m.

Stations: (1958-60) 11+, 31+, 176+.

Subgenus : HIMA 'Leach', Gray, 1852

NASSARIUS (HIMA) PAUPERUS (Gould, 1850)

Nassa. Proc. Boston nat. Hist. Soc., 3 : 155.

Type loc.: "Pacific Ocean". Rec. ref.: Hodgkin et al 1976 : 43, pl. 16, fig. 4. as Reticunassa.

Range: Southern Australia; Vict. to Fremantle, W.A.

Sand, mud; 20 m.

Stations: (1958-60) 19+.

Subgenus : ALECTRION Montfort, 1810

NASSARIUS (ALECTRION) RUFULUS (Kiener, 1834)

Buccinum. Coquilles vivantes... : 89, pl. 24, fig.

95. Type loc.: "La Méditerranée?" Rec. ref.: Wilson & Gillett, 1971 : 102, pl. 66, fig. 12, 12a.

Range: South Western Australia; Albany to Geraldton.

Sand, mud; 0-20m.

Stations: (1958-60) 19+, 24+, 36+, 44+, 65+, 66+, 115+, 136+, 137+, 169+, 170+. (Post 1960) 10+, 16+, 156, 169+, 174+.

Subgenus NIOTHA H. & A. Adams, 1853

* NASSARIUS (NIOTHA) NIGELLUS (Reeve, 1854)

Nassa. Conchologia iconica 8 : pl. 17, fig. 116.

Type loc.: New Zealand = error! Teste, Cernohorsky, 1972. Rec. ref.: Cernohorsky, 1972 : 148-149, figs 49-50, 54, 64-66. Range: Southern Australia; N.S.W. to Fremantle, W.A.

Sand; 1-20 m.

Stations: (1958-60) 55+, 95+. (Post 1960) 116+, 154+.

* identity confirmed by W.O. Cernohorsky Dec 1970 JWK

Family : FASCIOLARIIDAE Gray, 1853

Subfamily : FUSININAE Wrigley, 1927

Genus : FUSINUS Rafinesque, 1815

FUSINUS AUSTRALIS (Quoy & Gaimard, 1832)

Fusus. Voyage de ...l'Astrolabe...pendant 1826-29
Zoologie, 2 : 495, pl. 34, figs 9-14. Type loc.:
"La Nouvelle Hollande, dans les ports du Roi
Georges et Western". Rec. ref.: Wilson & Gillett,
1971 : 98, pl. 64, fig. 10. Range: Southern
Australia; Vict. to Geraldton, W.A.

On sand, under stones; 0-20 m.

Stations: (1958-60) 9+, 36+, 113d. (Post 1960)
9+, 36+, 60 , 124+.

Genus : MICROCOLUS Cotton & Godfrey, 1832

MICROCOLUS DUNKERI (Jonas, 1846)

Fusus. Abh. Geb. Naturw. Hamburg, I : 129. Type
loc.: (S.W.A.) teste Cotton, 1959. Rec. ref.:
Hodgkin et al, 1966 : 41, pl. 15, fig. 4. Range:
Southern Australia; Vict. to Fremantle, W.A.

Under stones; 0-10 m.

Stations: (1958-60) 9+, 28+, 36+, 52+, 77+, 101++,
112++, 117+, 136+, 139++, 170+. (Post 1960) 9+, 169+.

Family : OLIVIDAE Latrielle, 1825

Genus : AMALDA A. Adams, 1853

Subgenus : GRACILISPIRA Olson, 1956

AMALDA (GRACILISPIRA) MONILIFERA (Reeve, 1864)

Ancillaria. Conchologia iconica, 15 : pl. 10,
fig. 36. Type loc.: "Swan River". Rec. ref.:
Wilson & Gillett, 1971 : 108, pl. 71, fig. 6,
6a. Range : Southern Australia, Vict. to
Fremantle, W.A.

Stations: (1958-60) 160+,

Genus : OLIVA Martyn, 1786

Subgenus : STREPHONA Morch, 1852

OLIVA (STREPHONA) AUSTRALIS Duclos, 1835

Oliva. Histoire naturelle coq. Monog. Genre (Oliva), Paris, sp. 54, pl. 8, figs 3 & 4. Type loc.: -
Rec. ref.: Wilson & Gillett, 1971 : 108, pl. 71, figs 1, 1a, 1b. Range: Southern Australia; Vict. to Broome, W.A.

Sand; 0-3 m.

Stations: (1956-60) 11++, 36++, 61+++, 86+++, 136++, 137++, 146++, 153++, 156++, 176+. (Post 1960) 9++.

Genus : OLIVELLA Swainson, 1831

Subgenus : CUPIDOLIVA Iredale, 1924

OLIVELLA (CUPIDOLIVA) SOLIDULA (Verco, 1909)

Olivella. Trans. and Proc. and Rep. R. Soc. S. Aust., 33 : 339, pl. 25, figs 7, 8. Type loc.: "55 fathoms off Cape Borda".

Range: Southern Australia; S.A. to Fremantle, W.A.

Beach D.

Stations: (Post 1960) 36+, 136+, 154+.

Family MITRIDAE Swainson, 1831

Subfamily VEXILLINAE Thiele, 1929

Genus VEXILLUM [Bolten] Röding, 1798

Subgenus PUSIA Swainson, 1840

VEXILLUM (PUSIA) MARROWI Cernohorsky, 1973

Rec. Auckland Inst. Mus. 10 : 140-141, figs 19-23. Type loc.: "Yanchep reef, c. 30 miles (48 km) north of Perth, West Australia". Rec. ref.: Hodgkin et al, 1966 : 47, pl. 18, fig. 4 as Proximitra pica (Reeve). Range: South Western Australia; Margaret River to Port Gregory

Sand near Posidonia, under stones. 0-8 m.

Stations: (1958-60) 2+, 36+. (Post 1960) 10+.

Subfamily MITRINAE Swainson, 1831

Genus : MITRA Martyn, 1784

MITRA GLABRA Swainson, 1821

Exotic Conchology, part 3, pl. 2. Type loc.: Sydney New South Wales - restricted by Cernohorsky, 1976. Rec. ref.: Wilson & Gillett, 1971 : 346-9, pl. 255, figs 19, 20, pl. 302. Range: Southern Australia N.S.W. to Fremantle, W.A.

On and among rocks; 0-3 m.

Stations: (Post 1960) 9+, 36+.

Vexillidae
or
Costellariidae

Fam

MITRA CHALYBEIA Reeve, 1844

Conchologia iconica 2 : pl. 9, fig. 59.

Type loc.: Beagle Is., Western Australia, designated by Cernohorsky 1976. Rec. ref.: Wilson & Gillett, 1971 : 118, pl. 76, fig. 1. Cernohorsky, 1976 : 342, pl. 255, figs. 17, 18; pl. 297. Range: Western Australia; Albany to Shark Bay.

In sand among rocks; 0-3 m.
Stations: (Post 1960) 36+, 154+.

MITRA NIGRA (Gmelin, 1971)

Voluta. in Linnaeus Systema naturae ed. 13 I : 3452
Type loc.-. Rec. ref.: Wilson & Gillett, 1971 : 118, pl. 76, fig. 4. as Eumitra. Range: Indo Pacific and southern Australia.

Remarks: This species is known in Australian literature as E. malaniana Lamarck, 1811 (= E. contermina Iredale, 1936) but Cernohorsky (1967) considers the Australian form conspecific with the tropical E. nigra.

Among rocks; 3 m.
Stations: (1958-60) 36+d.

Family : VOLUTIDAE Rafinesque, 1815

Genus CYMBIOLA Swainson, 1831

Subgenus AULICINA Rovereto, 1899

CYMBIOLA (AULICINA) NIVOSA (Lamarck, 1804)

Voluta. Ann. Mus. d'Hist. Nat (Paris) 5 : 158, pl. 12, figs 2, 3. Type loc. "Les cotes de la Nouvelle Hollande, a la baie des chiens marins". [Garden Is., south-central Western Australia] restricted Sowerby I 1845. Rec. ref.: Wilson & Gillett, 1971 : 130, pl. 87, fig. 2, 2a. as Aulicina. Range: Western Australia; Bunbury to Broome.

Sand; 5 m.
Stations: (1958-60) 10+, 36+.

Genus : MELO Sowerby, 1826

MELO MILTONIS Gray, 1834

Voluta. in Griffith and Pidgeon, Cuvier's Animal Kingdom 12 : 601, pl. 29. Type loc.: New Holland, restricted by Gray 1856 to Swan River, Western Australia. Rec. ref.: Wilson & Gillett, 1971 : 138, pl. 92, fig. 3. Range: Southern Australia; western Vict. to Geraldton, W.A.

On sand near Posidonia; 1-10 m.
Stations: (1958-60) 36+. (Post 1960) 36+, 112+.

Genus : AMORIA Gray, 1855

AMORIA GRAYI Ludbrook, 1953

Ludbrook for synonymy
Proc. Malac. Soc. Lond 30 : 136, 137, pl. 14, figs 4,5.
Type loc.: "(Mouth of the River Swan, Western Australia)
Rec. ref.: Wilson & Gillett, 1971 : 128, pl. 85, figs
3, 3a, 3b, 3c. Range: Western Australia; Geographe Bay
to the north Kimberley.

Sand; 10 m.

Stations: (1958-60) 36+.

Family : CANCELLARIIDAE Gray, 1853

Genus : CANCELLARIA Lamarck, 1799

Subgenus : NEVIA Jousseaume, 1887

CANCELLARIA (NEVIA) SPIRATA (Lamarck, 1822)

Cancellaria. Histoire naturelle des animaux sans
vertèbres, 7 : 115. Type loc.: -. [Garden Is.,
Swan River, Western Australia] teste Garrard.
Rec. ref. Garrard, 1975 : 7, fig 1 (4) and (5).
Range: Southern Australia; Vict to Fremantle, W.A.

Beach.

Stations: (Post 1960) 136+D.

Family : MARGINELLIDAE Fleming, 1828

Genus : MARGINELLA Lamarck, 1799

Genus
"MARGINELLA PULCHELLA Kiener, 1834

Coquilles vivantes... : 27, pl. 9, fig. 40.
Type loc.: ?. Rec. ref.: Hodgkin et al, 1966 : 46,
pl. 18, fig. 5. as Kogomea. Range: Southern
Australia; Vict. to Fremantle, W.A.

Sand, crevices of worm tubes.

Stations: (1958-60) 9+, 137+, 169+. (Post 1960) 154+.

Genus : MICROGINELLA, Laseron, 1957

sp. of M.
MICROGINELLA / cf. MINUTISSIMA (Tenison Woods, 1876)

Marginella. Pap. Proc. R. Soc. Tasm., 1875 : 27.
Type loc.: "Long Bay. D'Entrecasteaux Channel,
Tasmania." Rec. ref.:
Murray, 1970 : 31-35. Range: Southern Australia;
Vict. to Fremantle, W.A.

On rope-like Polyzoan; 18 m.

Stations: (Post 1960) 29+.

Bryozoan

Family : TURRIDAE H. & A. Adams, 1853

Genus : DAPHNELLA Hinds, 1844

DAPHNELLA BOTANICA Hedley, 1918

J. R. Soc. N.S.W. 51 Suppl. p. 783. Type loc.:
[Bottle and Glass Reef, Port Jackson] teste Hedley,
1922. Rec. ref.: Hodgkin et al 1966 : 47, pl. 18, fig 6.
Hedley, 1922 : 326, pl. 53, figs 157, 159.
Range: Southern Australia; Sth Qld to Yanchep, W.A.
In crevices of rocks and under stones; 0-10 m.
Stations: (1958-60) 9+, 36+, 137+.

Genus : PARADRILLIA Makiyama, 1940

cf. PARADRILLIA SP.

Sand, mud and in rock crevices; 10-20 m.
Stations: (1958-60) 44+, 92+, 124+, 141+. (Post
1960) 18+?, 137+.

Genus : ETREMA Hedley, 1918

ETREMA SP. A.

Rec. ref.: Powell, 1966; 111-112, pl. 17, fig. 9.
Range of Genus: Recent, Indo-Pacific; Madagascar
to Japan and Australia.
In tube mass of colonial polychaete. Family
Sabellariidae among Posidonia; 2 m.
Stations: (1958-60) 169

ETREMA SP. B.

Beach.
Stations (pre 1958-60) 36+.

Genus : GURALEUS Hedley, 1918

GURALEUS PICTUS var. VINCENTINUS (Crosse and Fischer, 1865)

Pleurotoma (Mangelia). J. Conch Paris 13 : 422, pl. 11,
fig. 6. Type loc.: [Rapid Bay] teste Hedley, 1922.
Rec. ref.: Hedley 1922 : 321-322, pl. 53, fig. 149.
Mangelia alucinans Sowerby, 1896 is a synonym.
Range: Southern Australia; N.S.W. to Fremantle, W.A.
Beach.
Stations: (19) 36+d. (Post 1960) 167+

GURALEUS cf. PICTUS forma MEREDITHIAE (Tenison Woods, 1876)

Mangelia. Proc. and Papers R. Soc. Tas. 1875 : 142
Type loc.: "Bass Strait". Rec. ref.: Hedley, 1922 :
321-322, pl. 43, fig. 150. Range: ?
Sand near Posidonia; 1-2 m.
Stations: (Post 1960) 136+.

GURALEUS SP.

On sand near Posidonia; 1 m.
Stations: (Post 1960) 136+.

Genus KERMIA Oliver, 1915

KERMIA SP.

Rec. ref.: Powell, 1966 : 134, pl. 22, figs 1, 2.
Range of genus: Indo-Pacific; Mauritius to Japan,
New Zealand, Qld, Loyalty Islands and the Kermadecs.

Under stones; intertidal.
Stations: (Post 1960) 36+, 154+d.

Family : CONIDAE Rafinesque, 1815

Genus : CONUS Linne, 1758

CONUS DORREENSIS Peron, 1807

SGX
Voyage de deconvertes aux terres
Australes, 1 : 120. Rec. ref.: Wilson & Gillett, 1971 :
148, pl. 99, fig. 4, 4a. Range: Western Australia;
Cape Leeuwin to Barrow Is.

Remarks: Once known as C. pontificalis, Lamarck.

Among rocks beach.
Stations: (1958-60) 9+.

SGX
CONUS ANEMONE Lamarck, 1810

Ann. Mus. d'Hist. Nat. (Paris) 15 : 272. Type loc.:
[New Holland] teste Tomlin. Rec. ref.: Wilson & Gillett,
1971 : 148, pl. 99, fig. 6, 6a, 6b, 6c. Range:
Southern Australia; N.S.W. to Geraldton, W.A.

Among and under stones; 0-5 m.
Stations: (1956-60) 9+, 36+, 136+, 169
(Post 1960) 4 +, 9+.

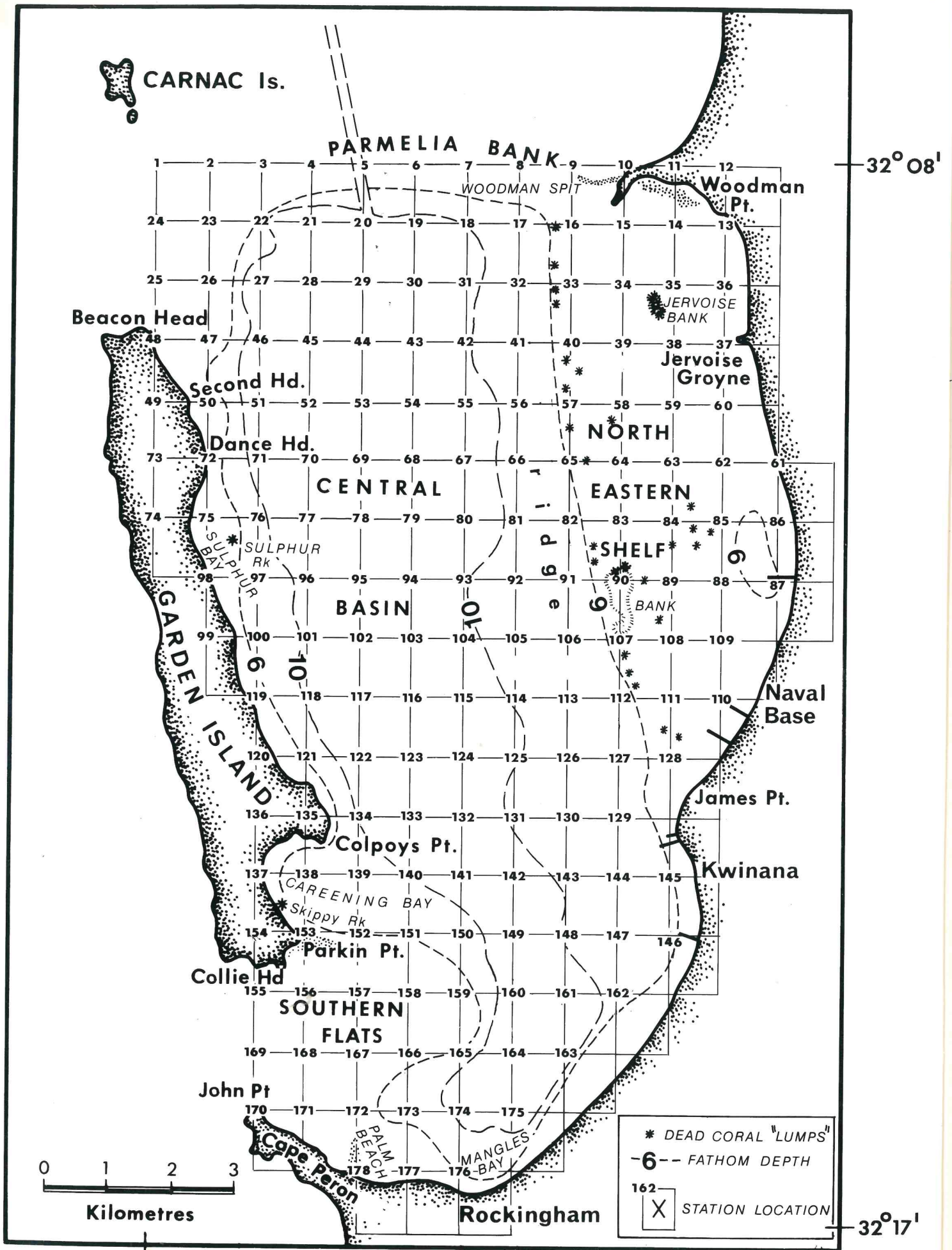


FIGURE 1 Cockburn Sound showing sample stations and locality names used. 1956 - 1960 SURVEY.

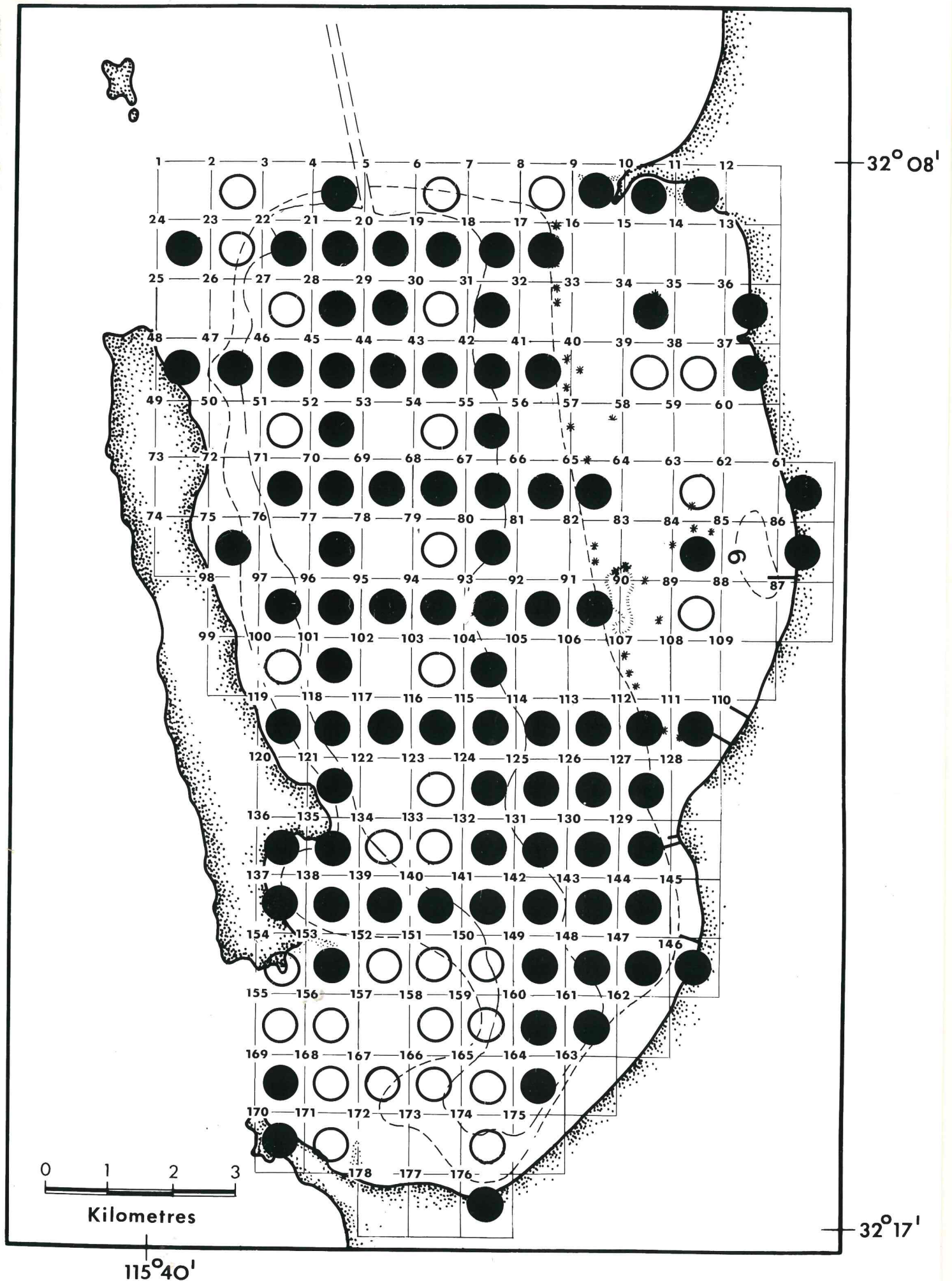


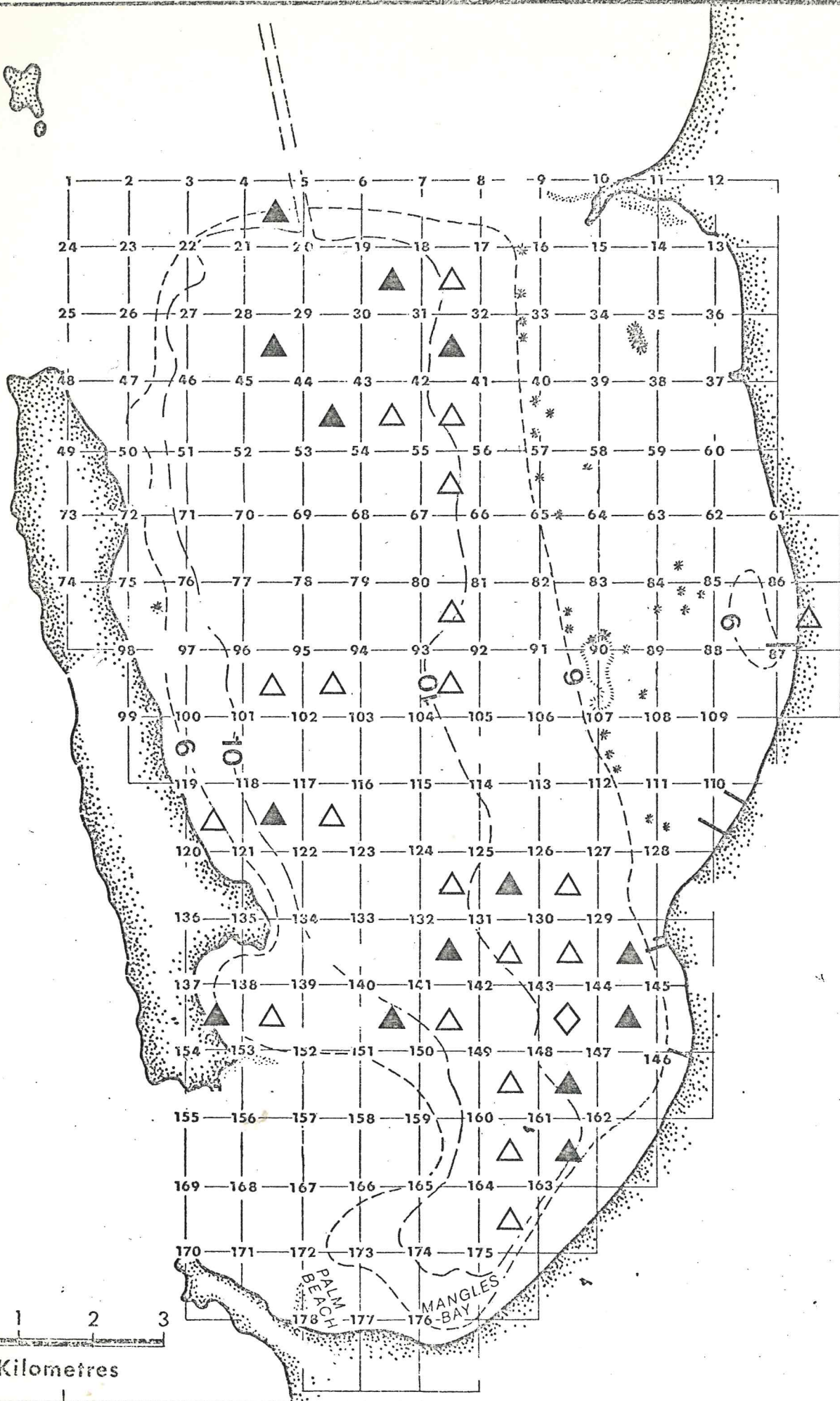
FIGURE 2. Cockburn Sound showing sample stations

- 1956 - 1960 survey
- post 1960

FIGURES SHOWING STATION RECORDS OF SELECTED SPECIES COMMON IN COCKBURN SOUND DURING THE W.A. NATURALISTS CLUB 1956-60 SURVEY AND SUBSEQUENT COLLECTIONS.

Key:

▲	1956-60	common to abundant
△	1956-60	single record
◆	Post 1960	common to abundant
◇	Post 1960	single record.



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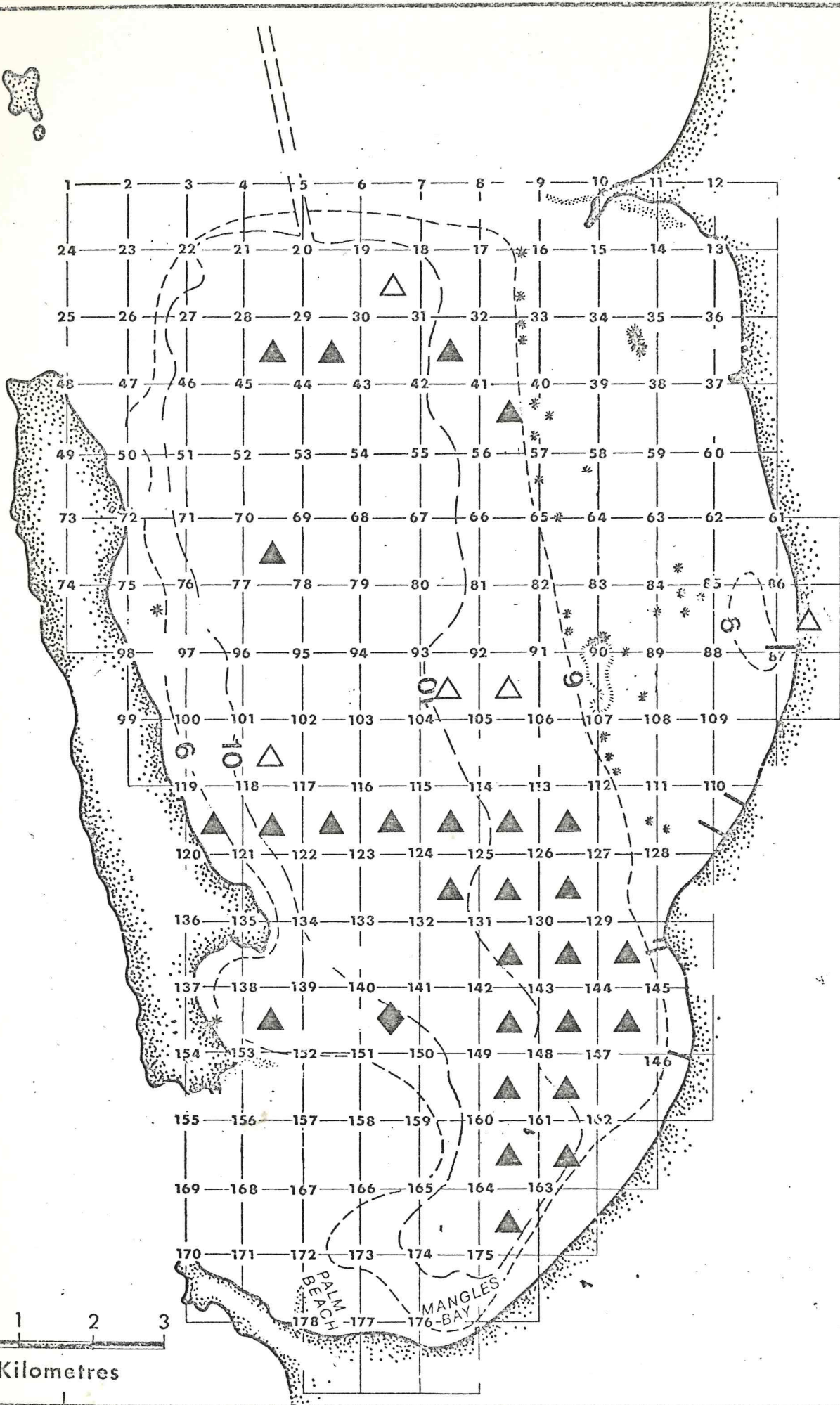
32° 17'

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Kilometres

115° 40'

NUCULANA VERCONIS



32° 08'

32° 17'

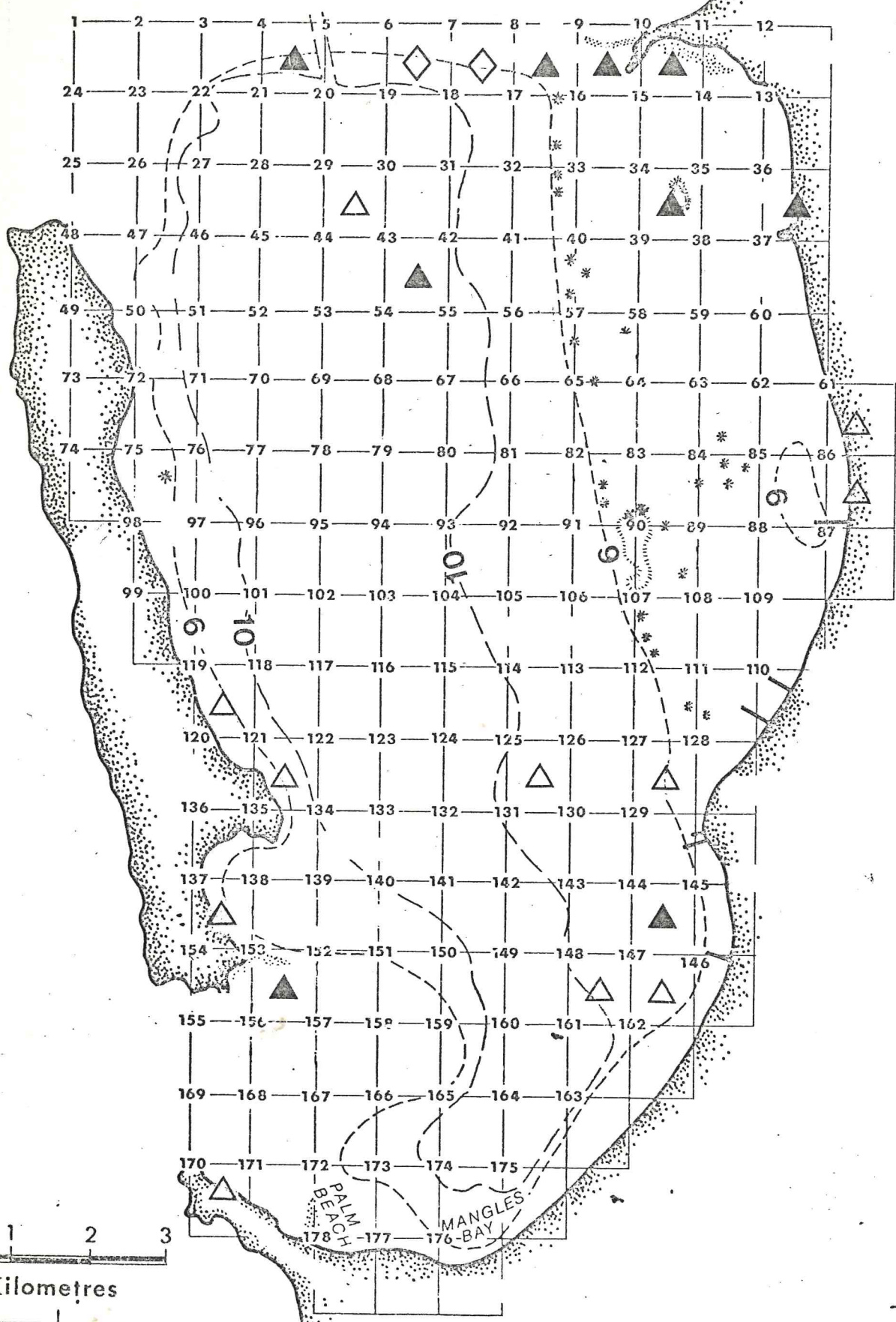
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Kilometres

115° 40'

MUSCULISTA GLABERRIMA



32° 08'

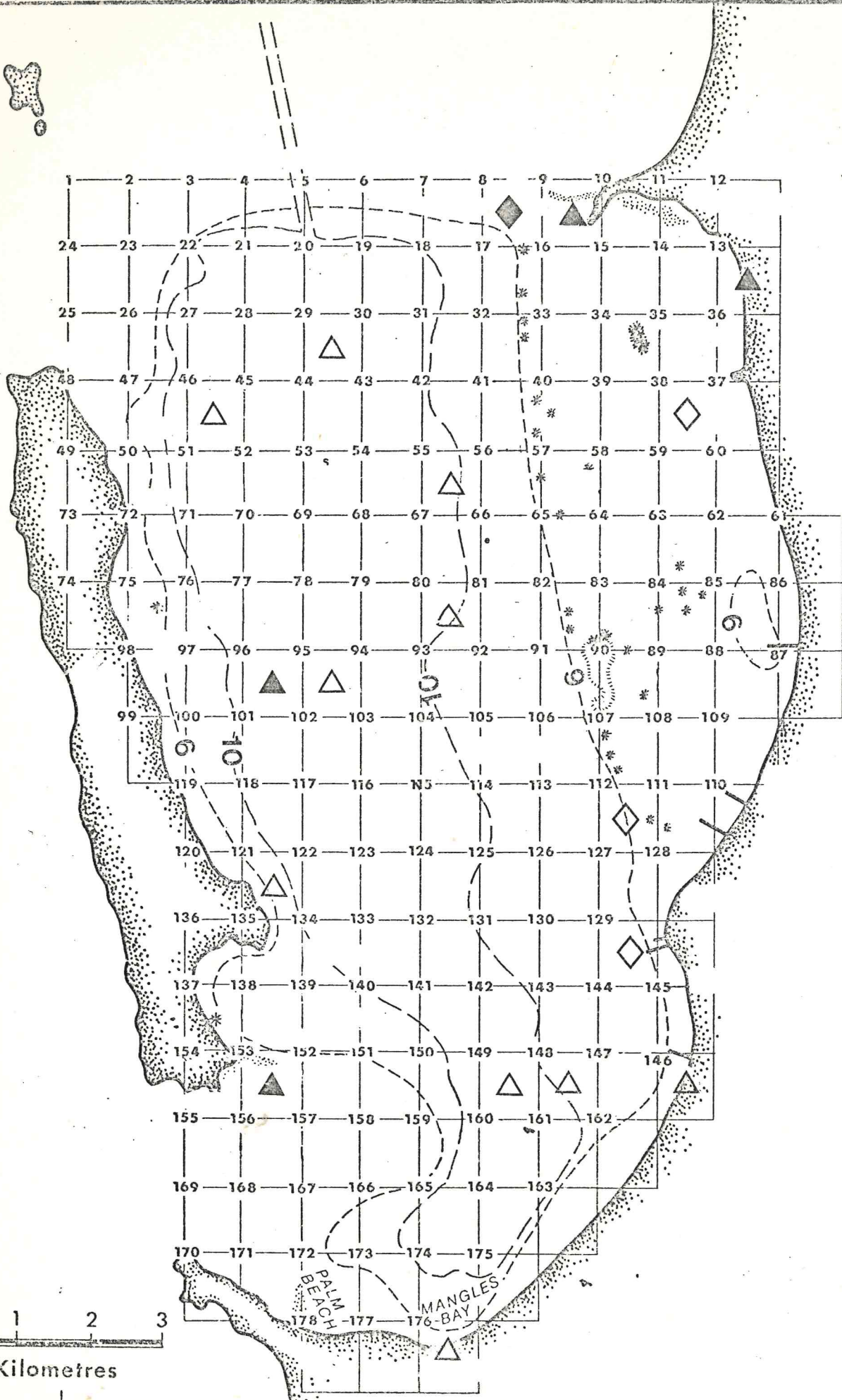


Kilometres

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115° 40'

PINNA BICOLOR



32° 08'

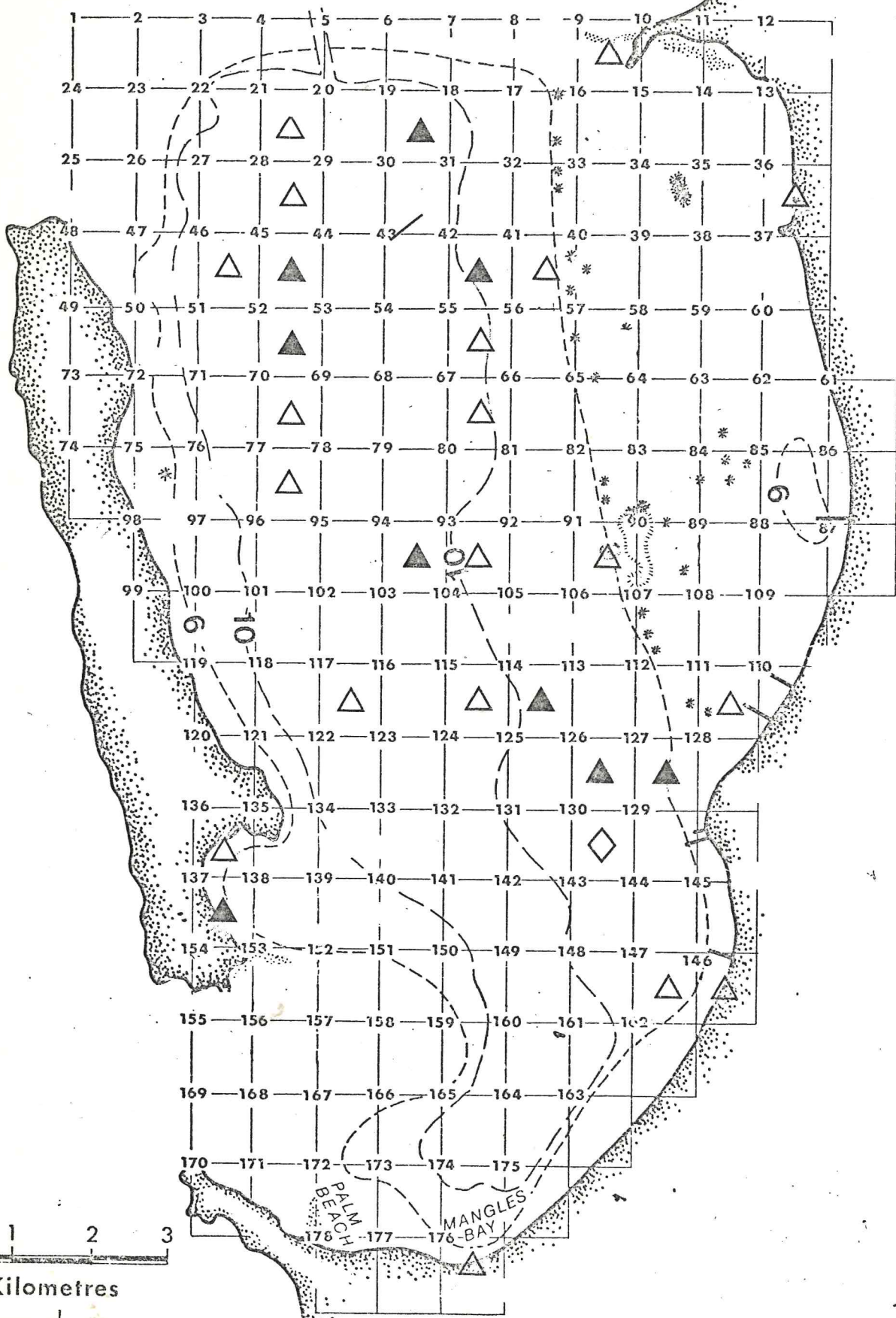
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115° 40'

ANOMIA TRIGONOPSIS



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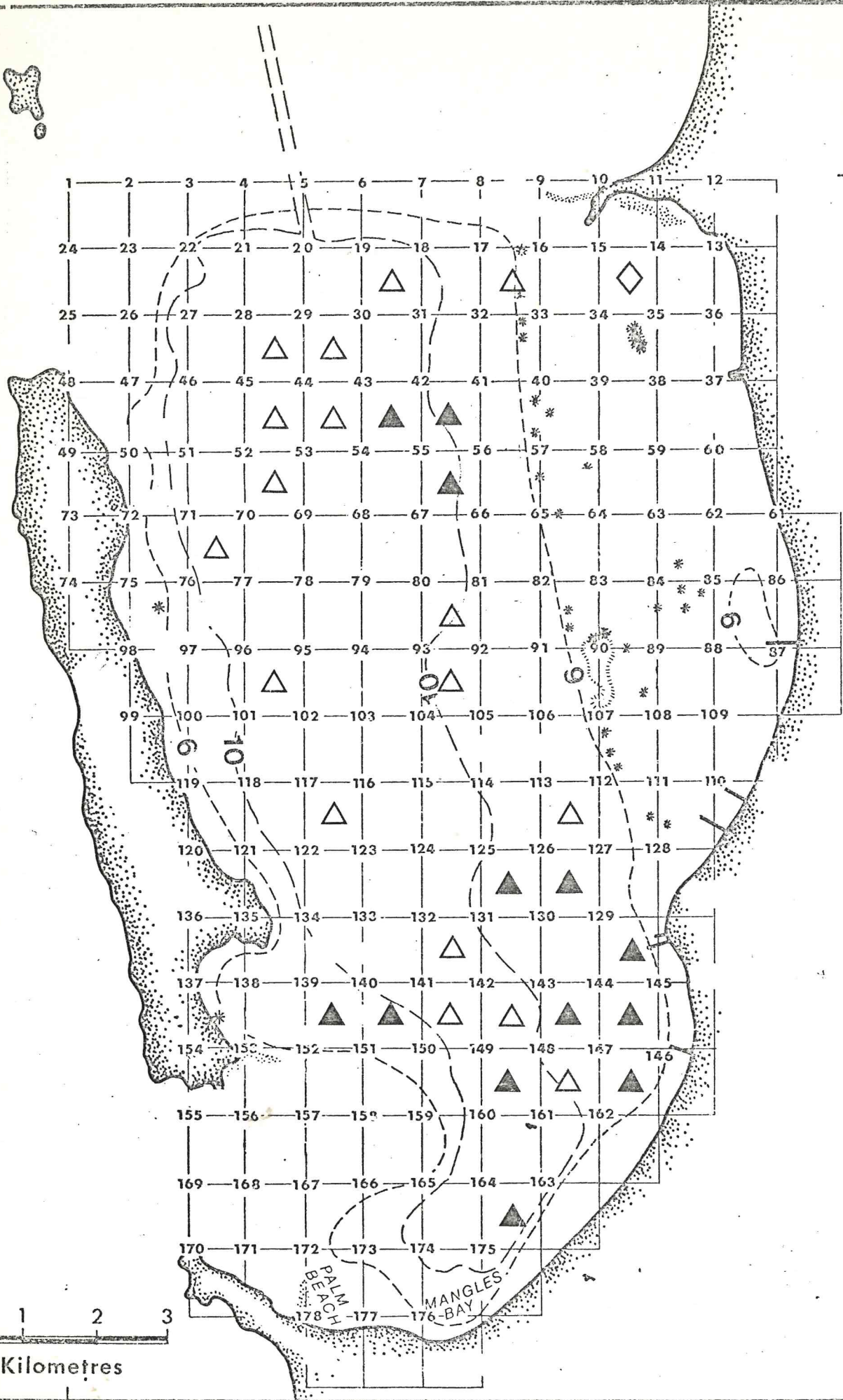


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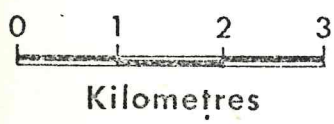
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MALLEUS MERIDIONALIS



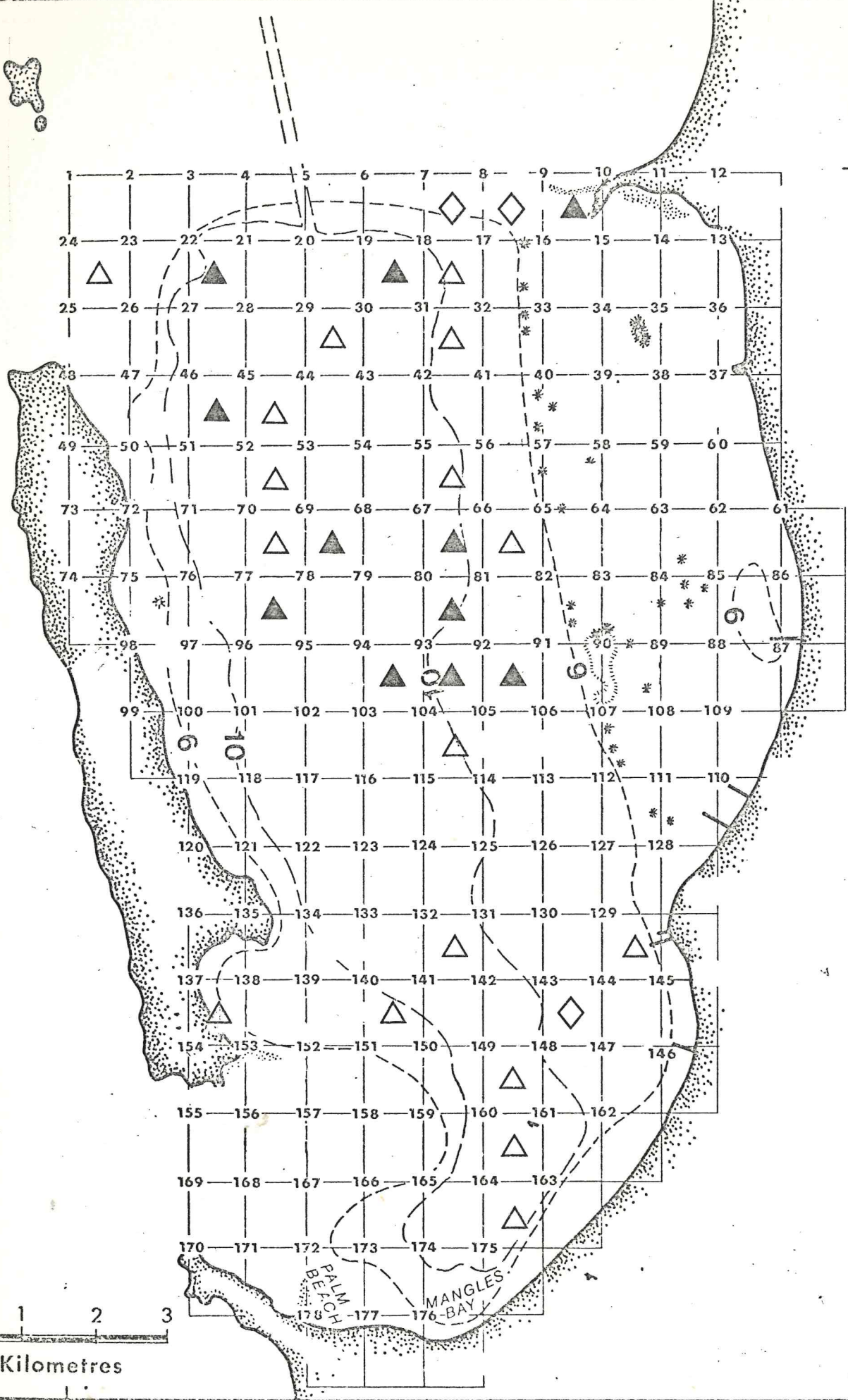
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115° 40'

32° 17'

PECTEN MODESTUS



32° 08'

32° 17'

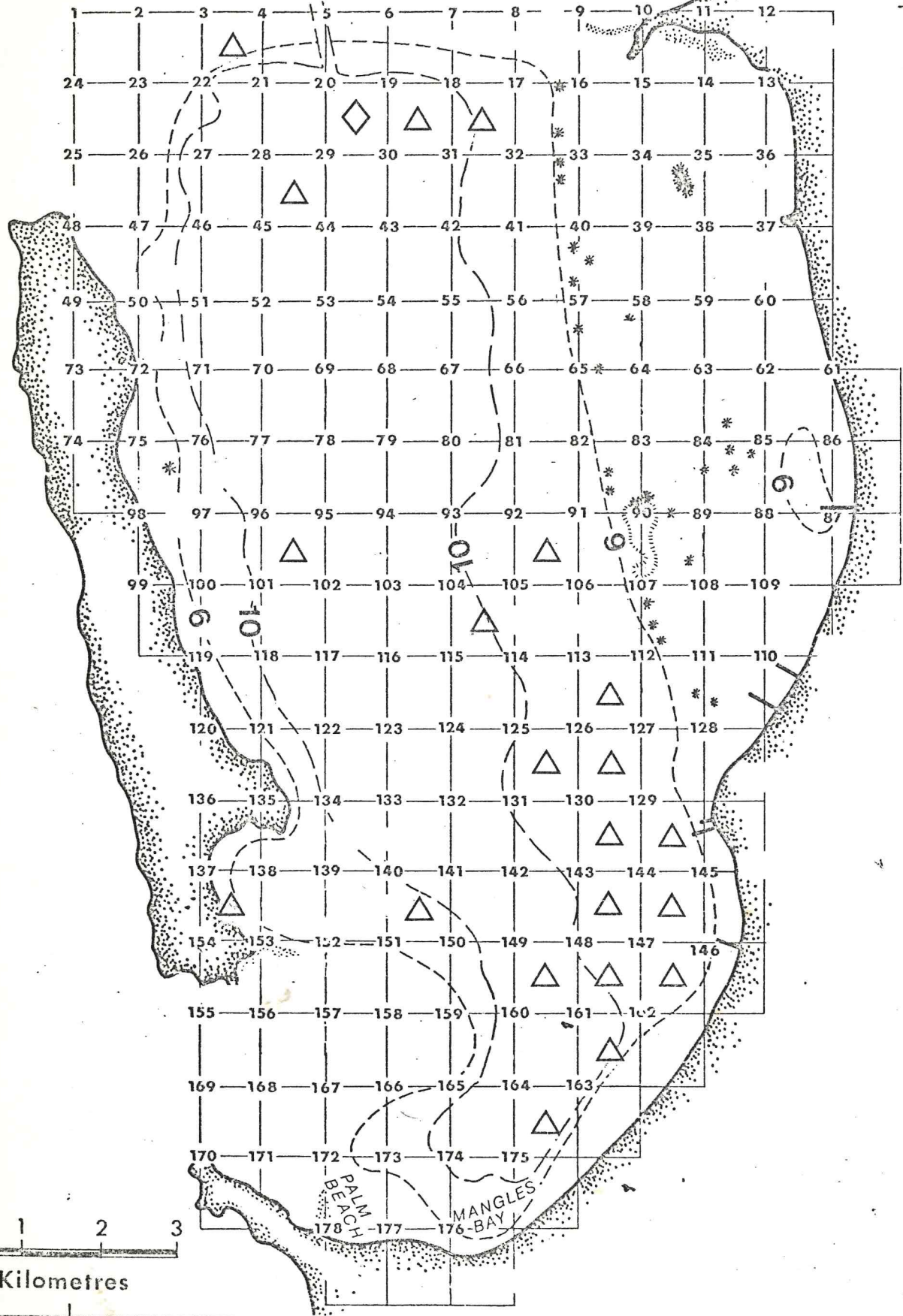
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CHLAMYS ASPERRIMUS



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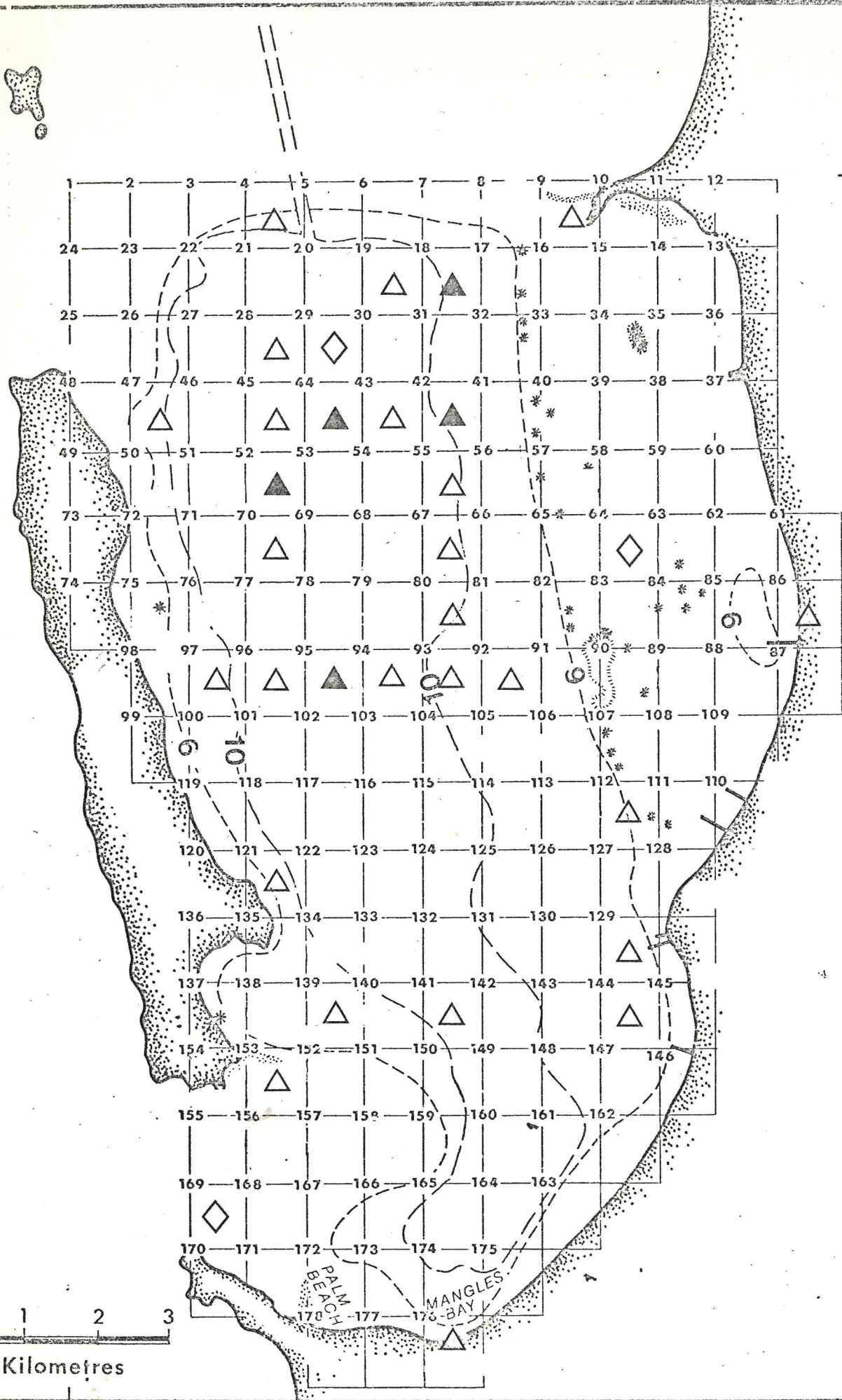


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PHAXAS CULTELLUS

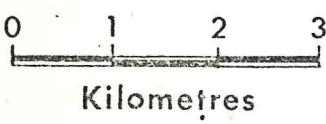


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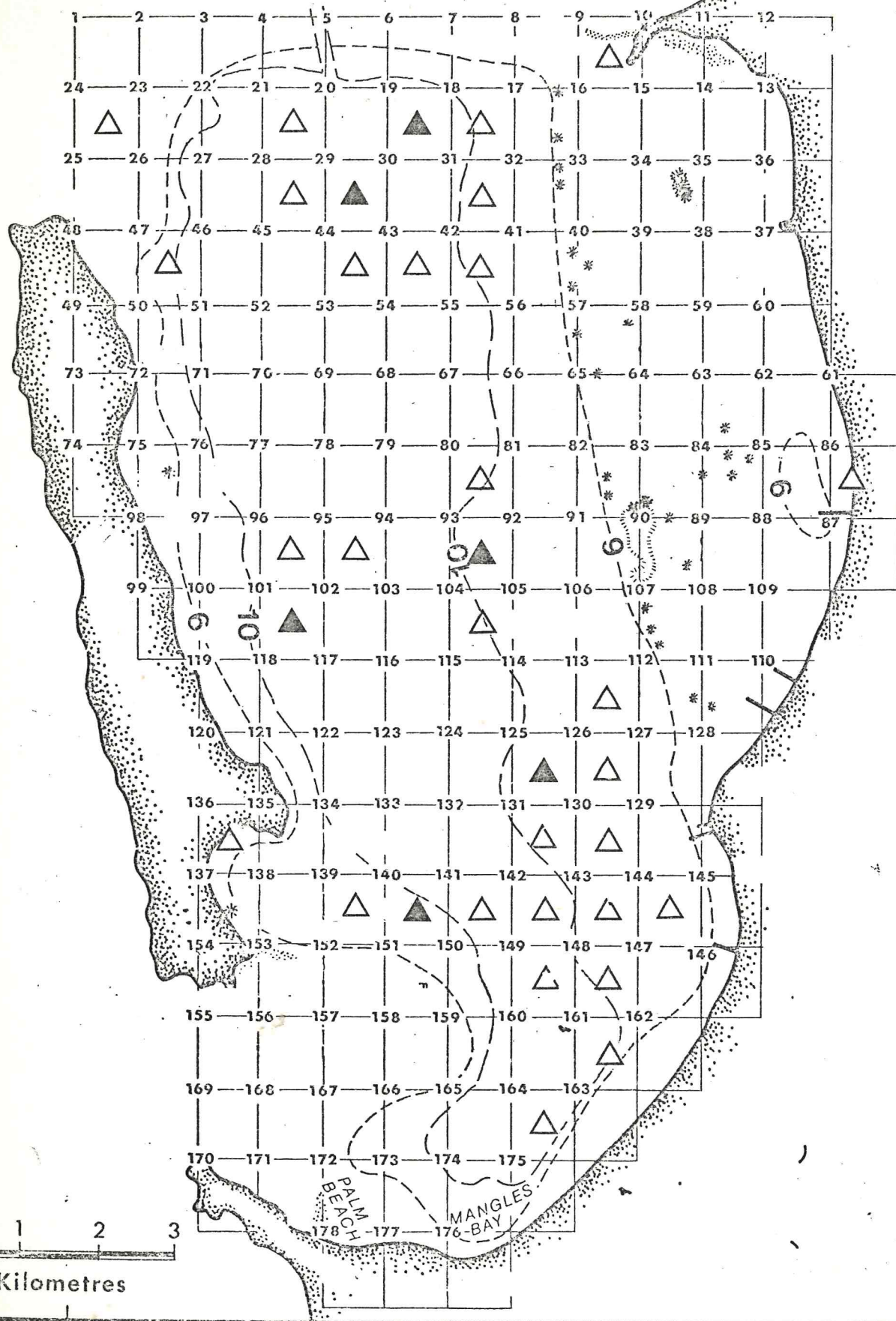
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MEGACARDITA INCRASSATA





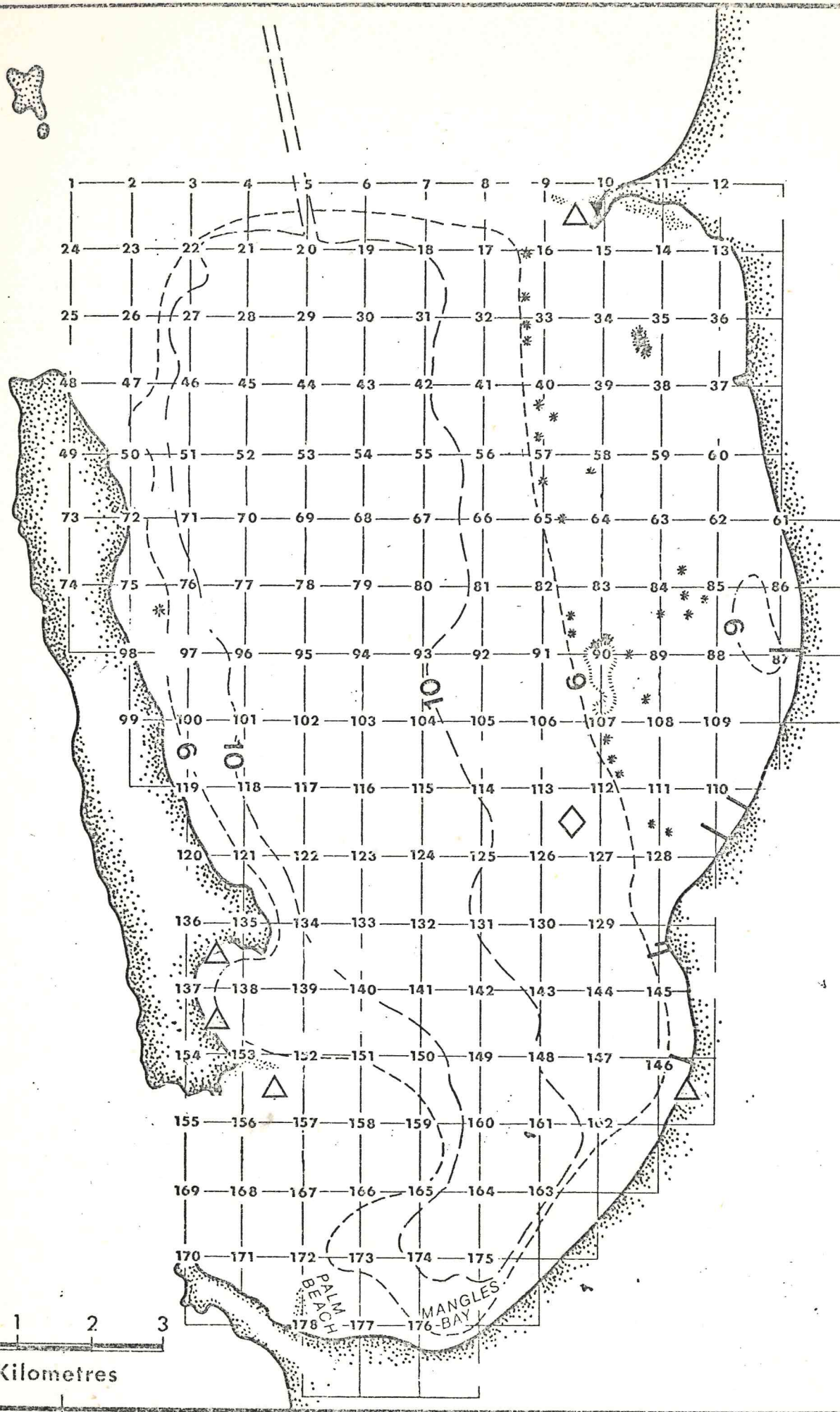
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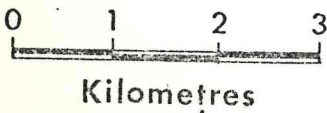
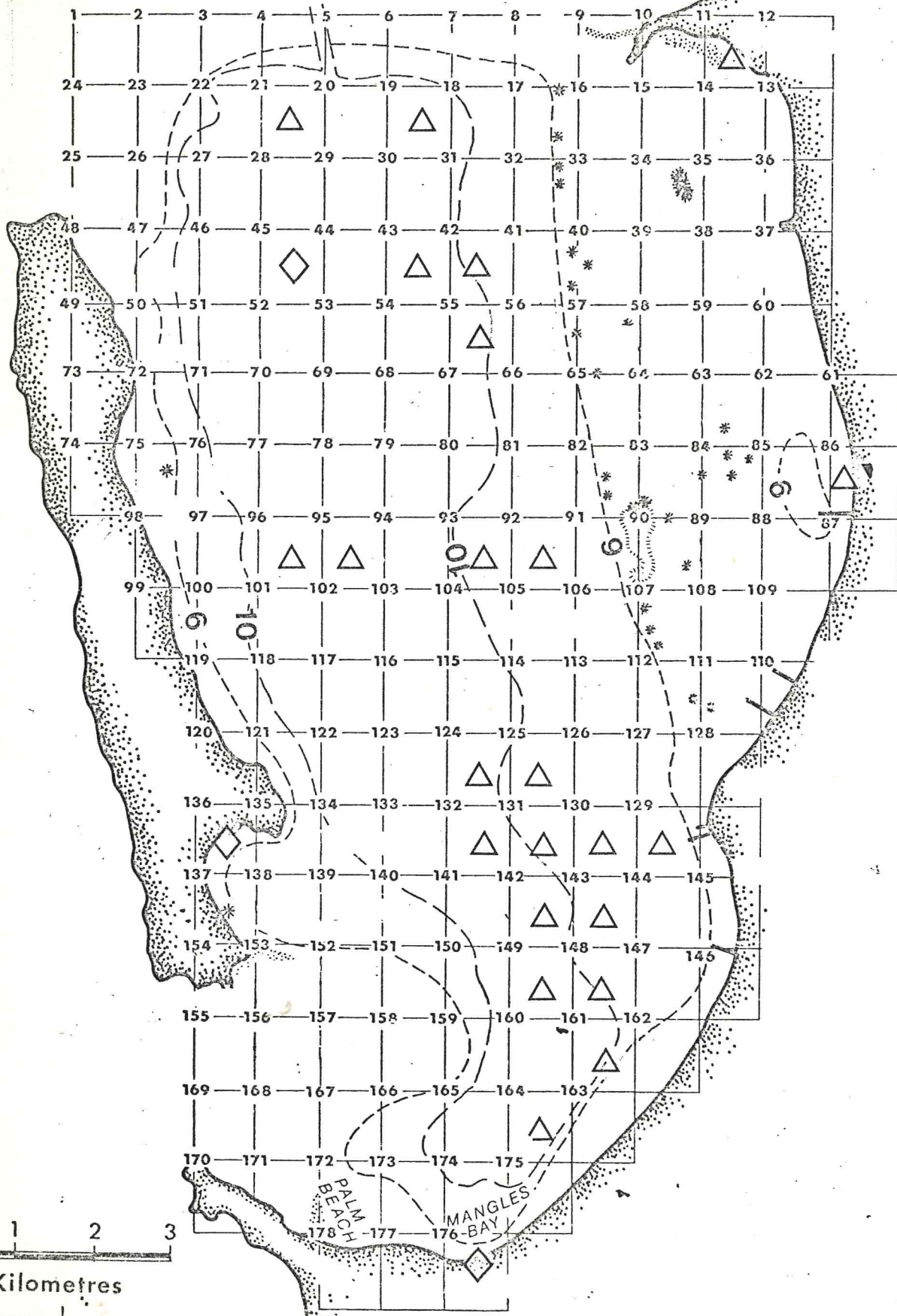
FULVIA APERTA



FULVIA TENUICOSTATA



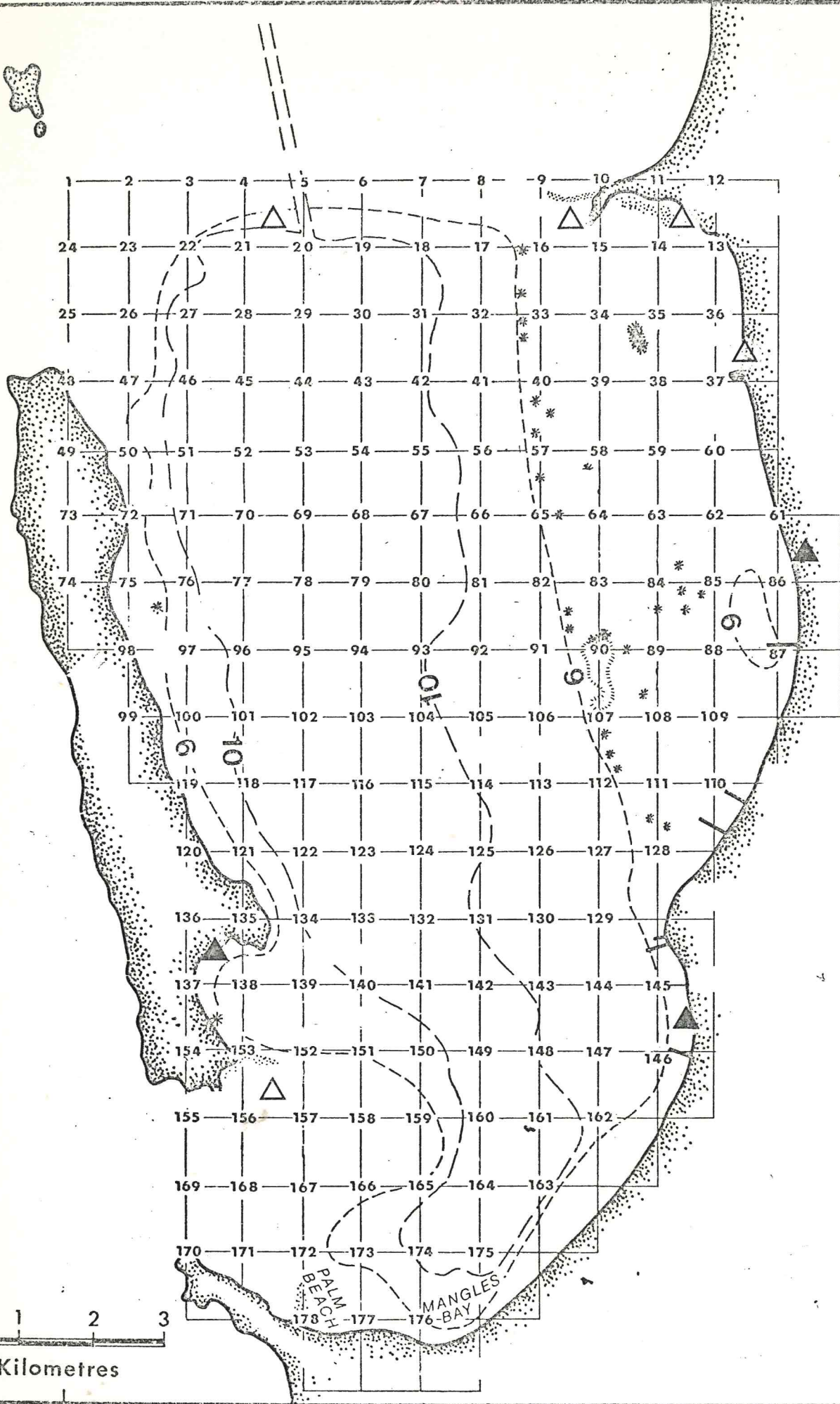
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115° 40'

32° 17'

TELLINA SP.



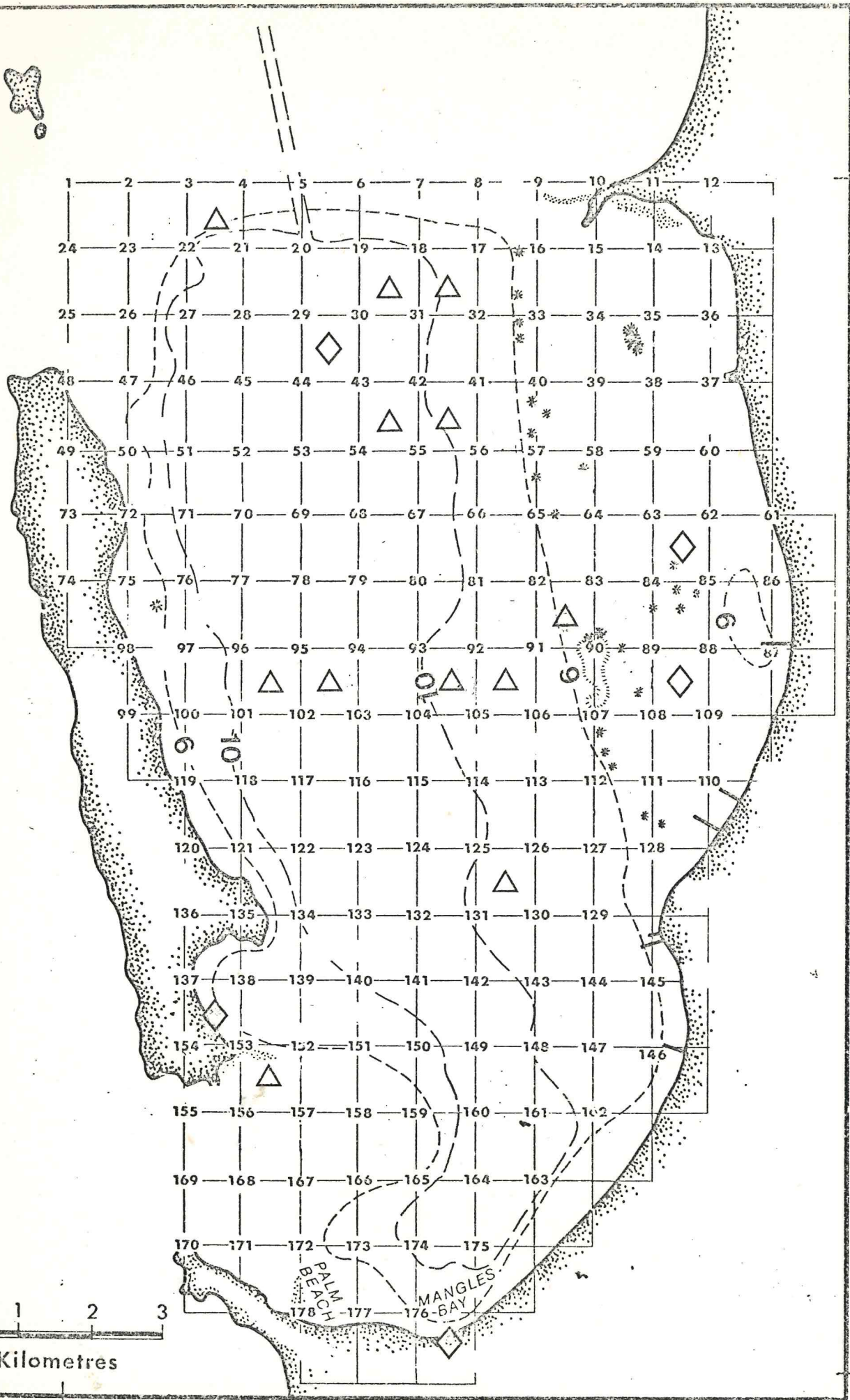
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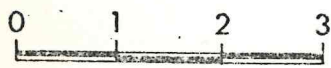
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GOMPHINA UNDULOSA



32° 08'

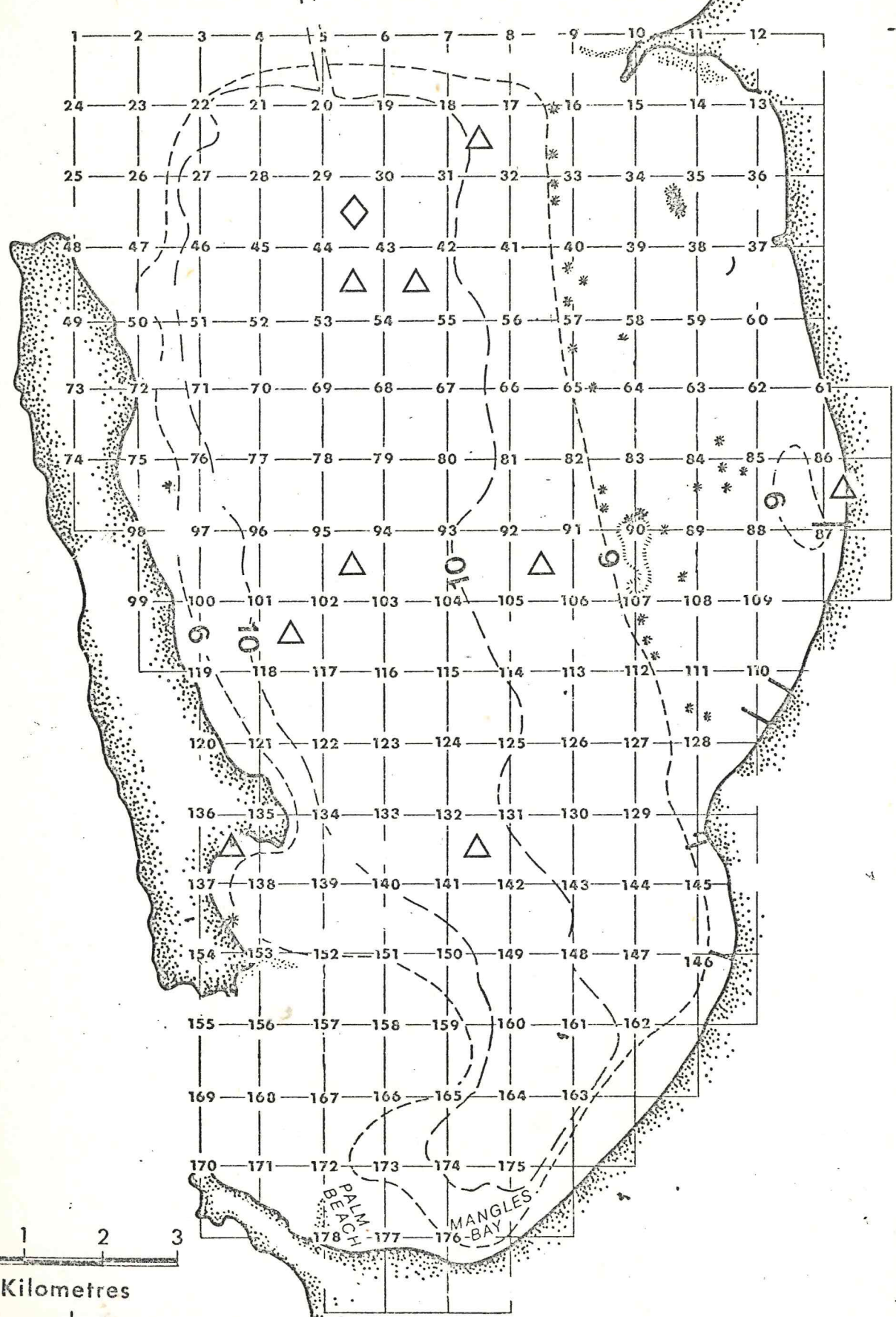
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Kilometres

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PAPHIA CRASSISULCA

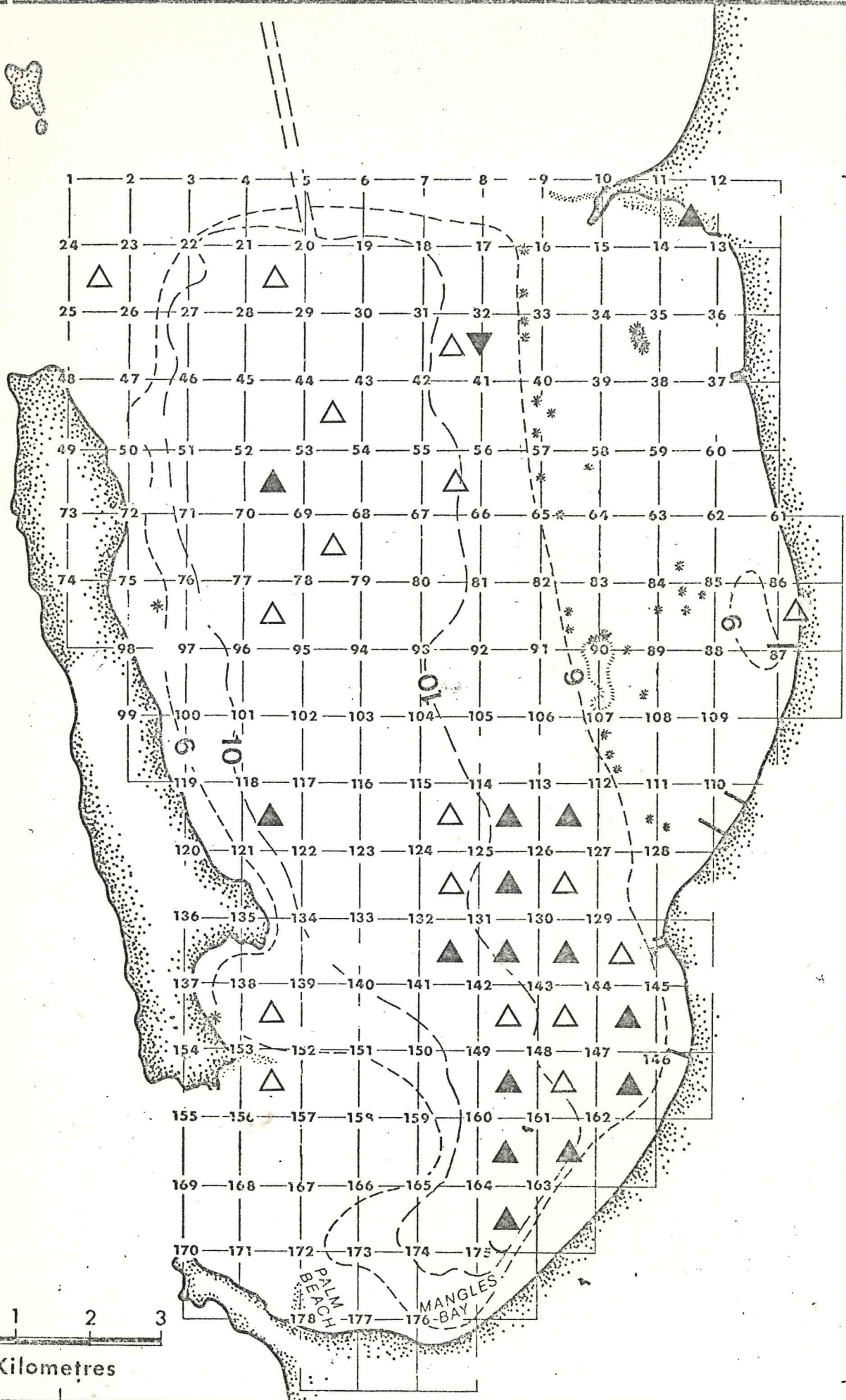


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115° 40'

DOSINIA INCISA



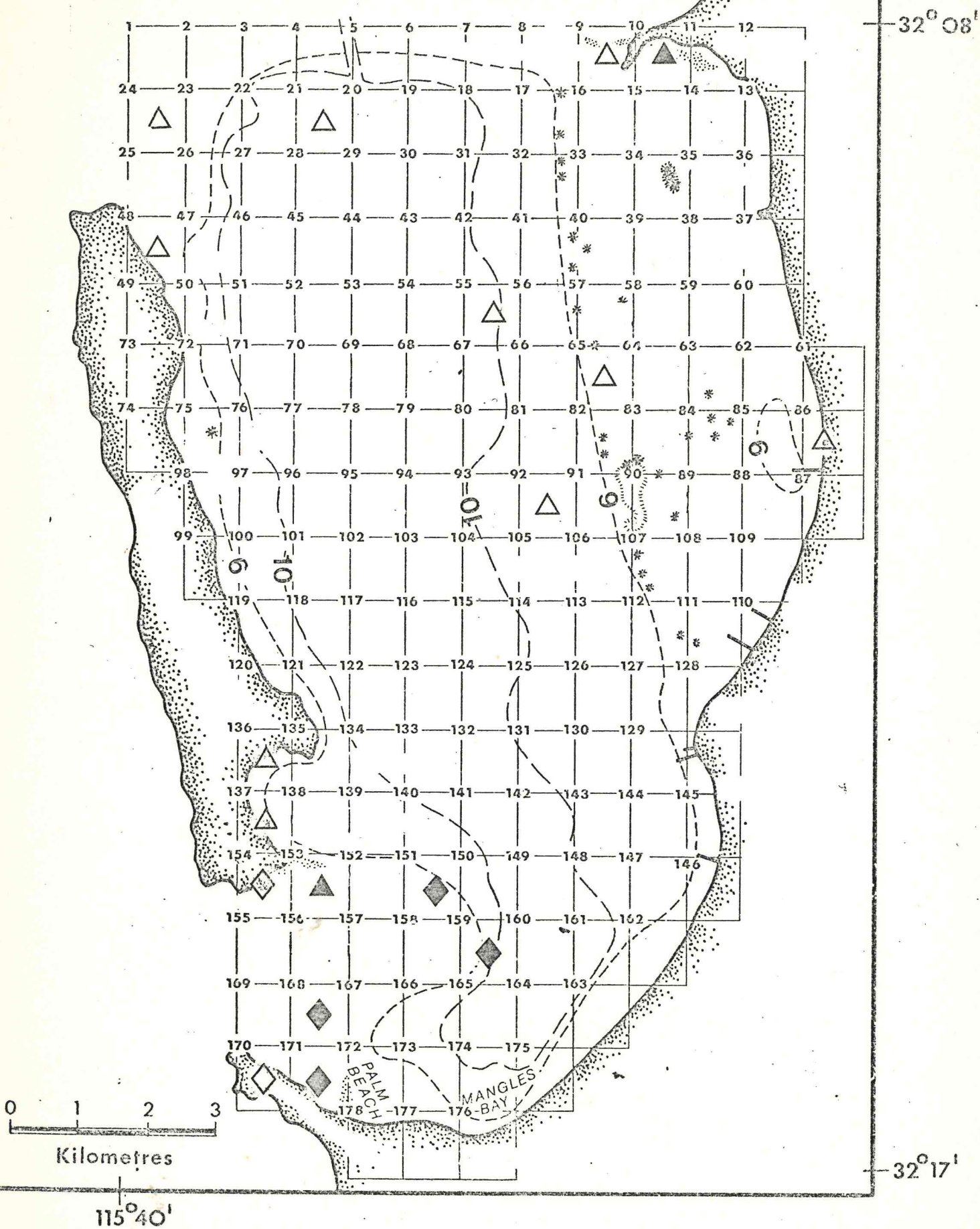
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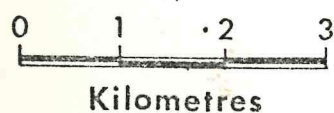
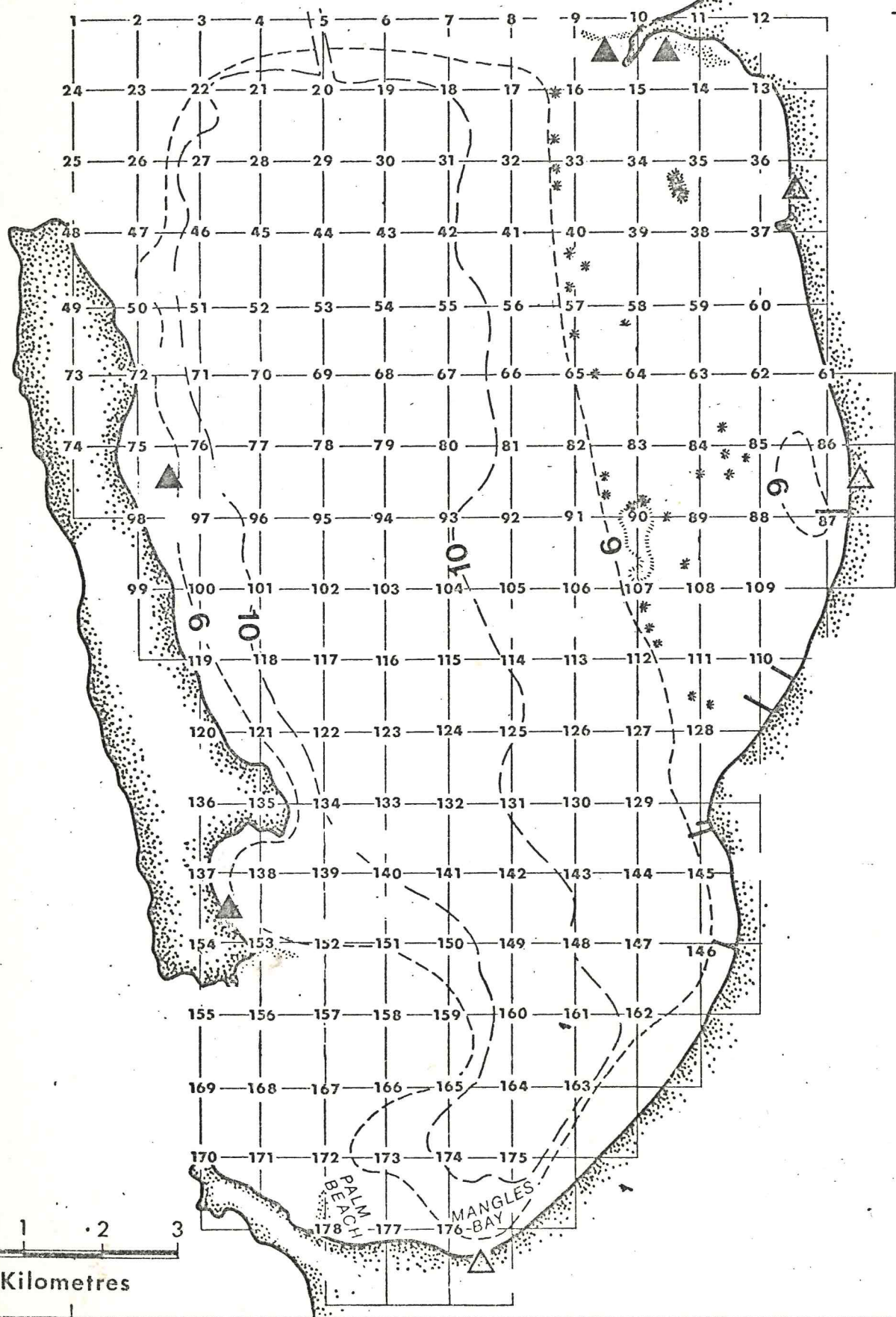
CIRCE SULCATA



"CANTHARIDUS" LEPIDUS



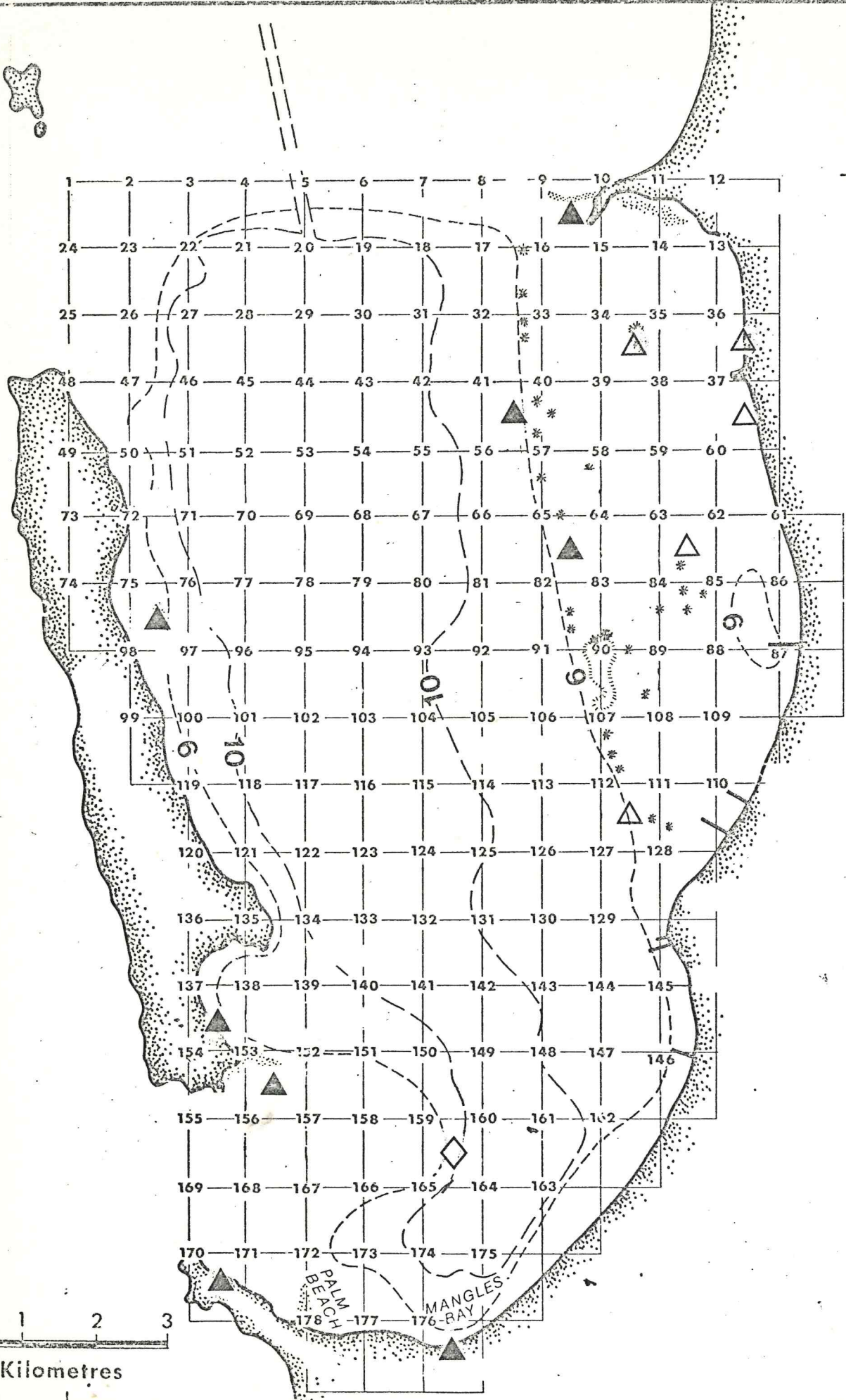
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115° 40'

32° 17'

ANGARIA TYRIA

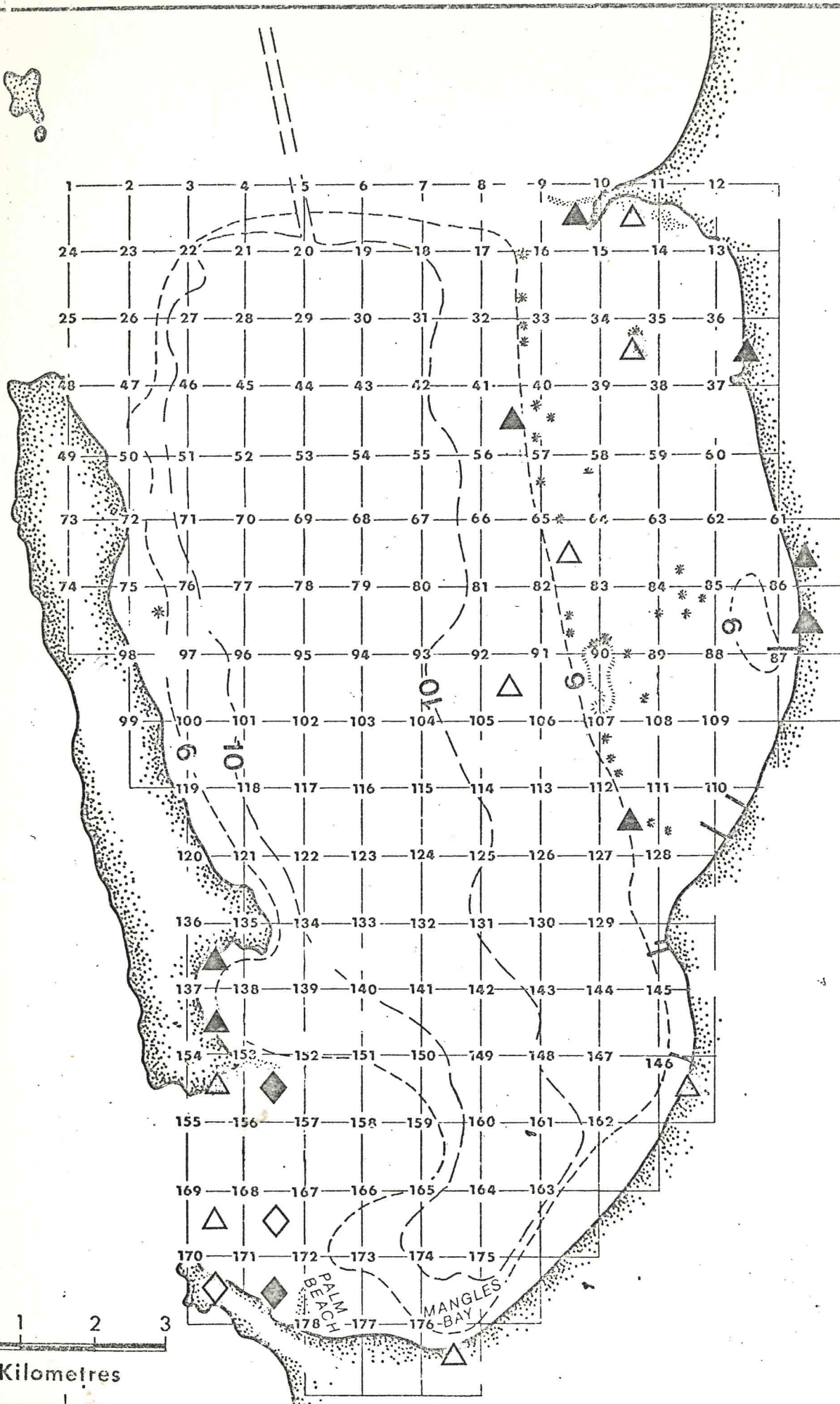


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32° 17'

115° 40'

TECTUS PYRAMIS



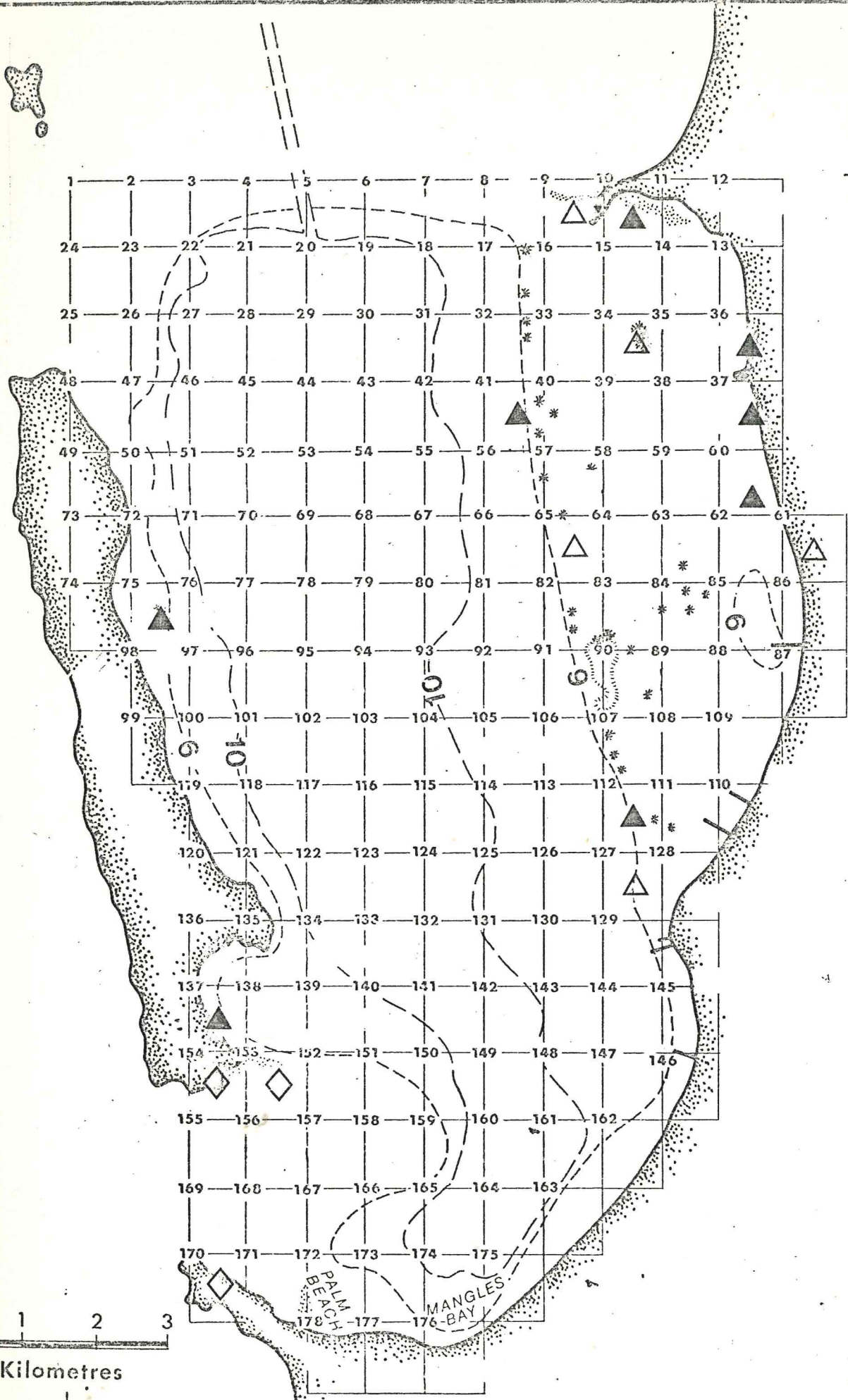
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Kilometres

115° 40'

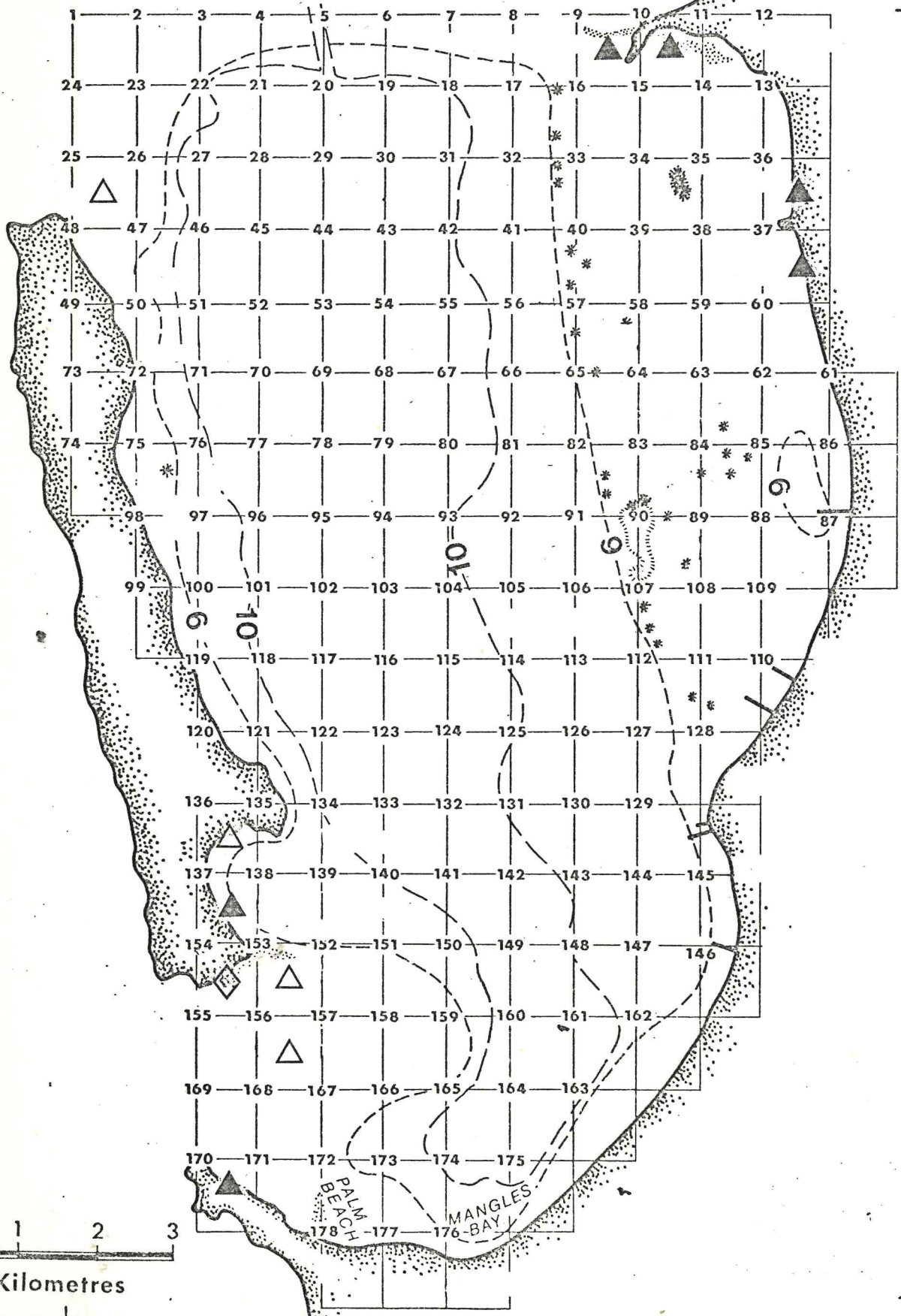
ASTRAEA SQUAMIFERA



ASTRAEA TENTORIUM



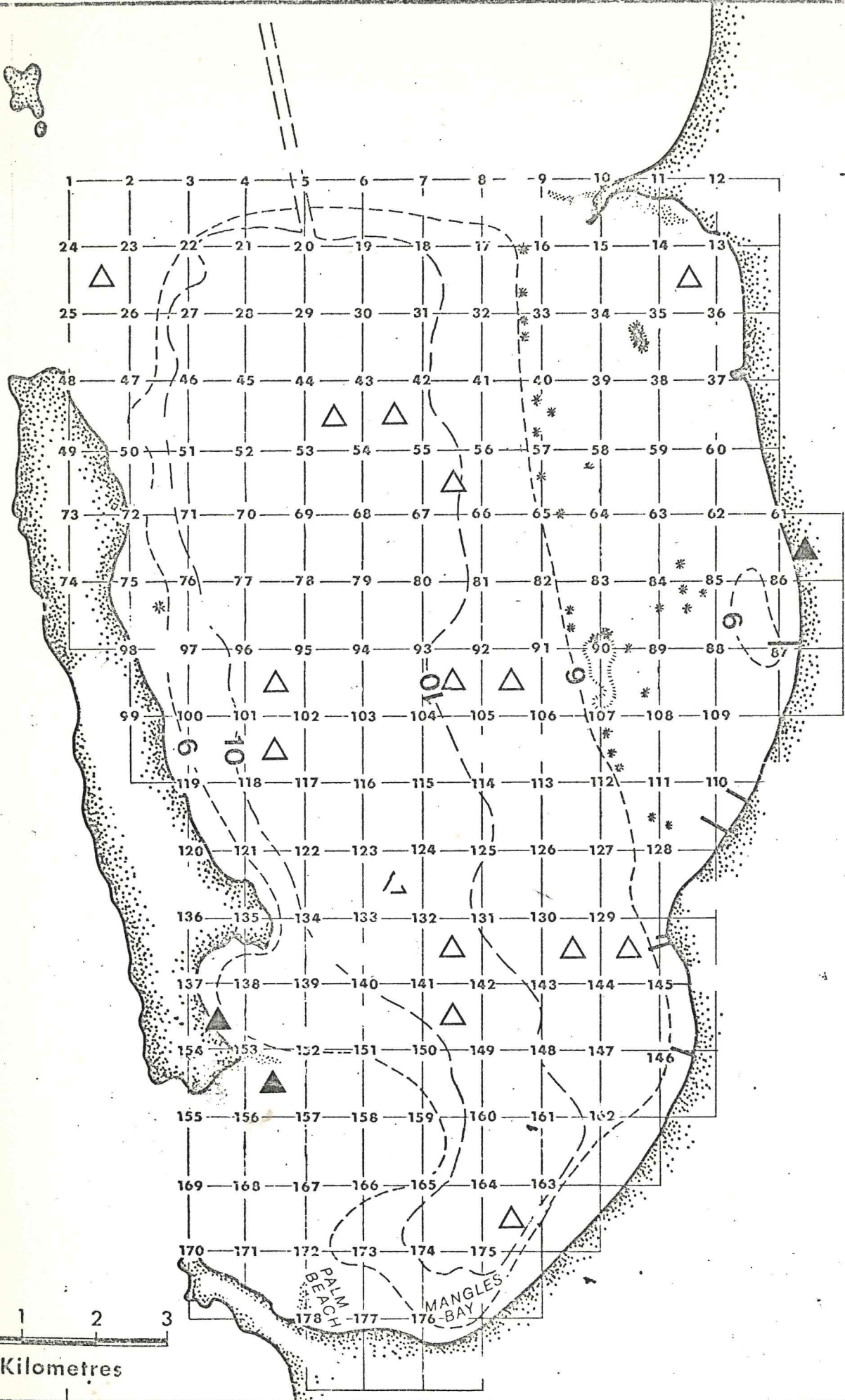
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32° 17'

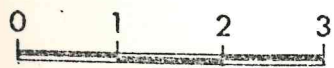


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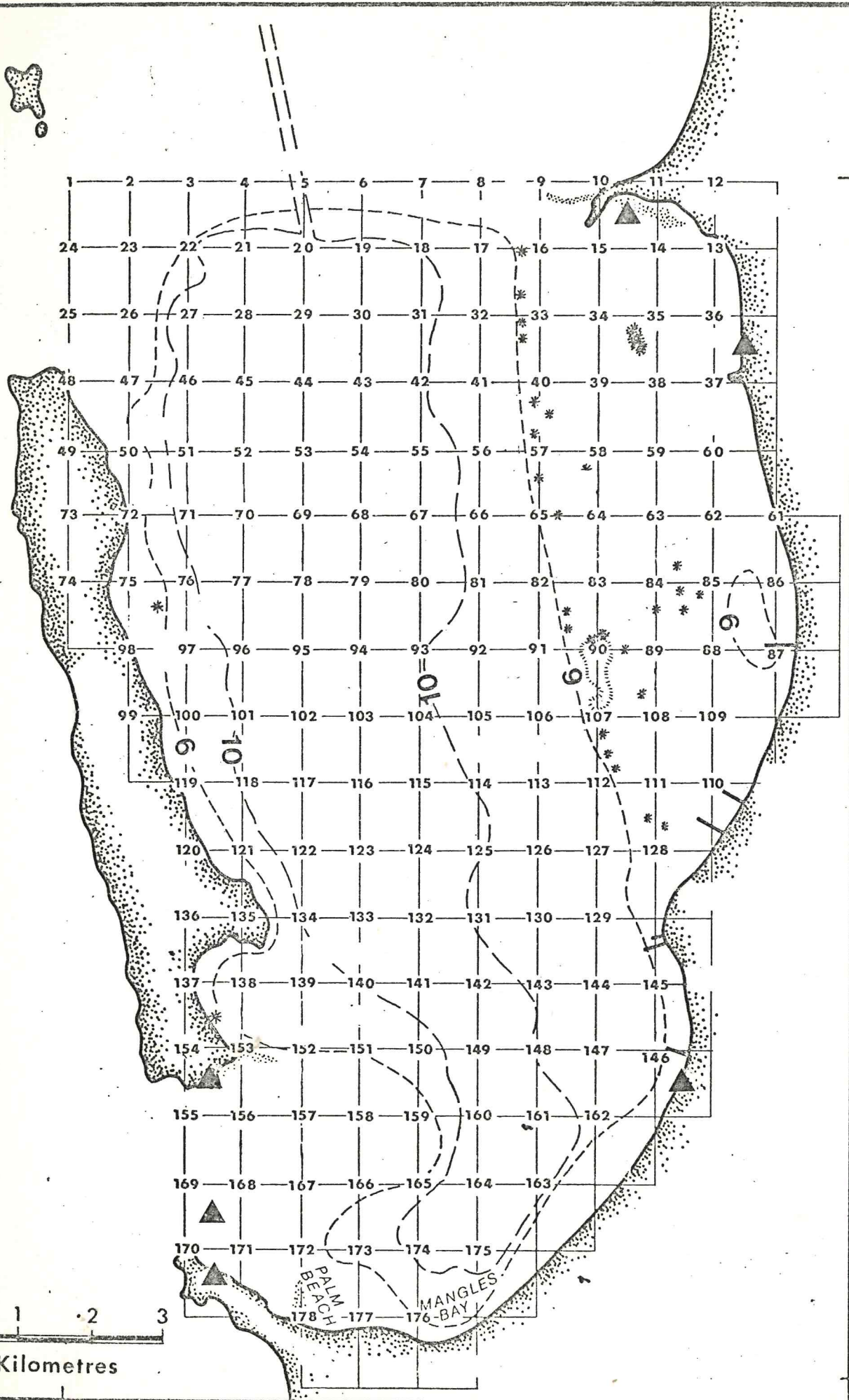
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115° 40'

POLINICES CONICUS



Kilometres



32° 08'

32° 17'

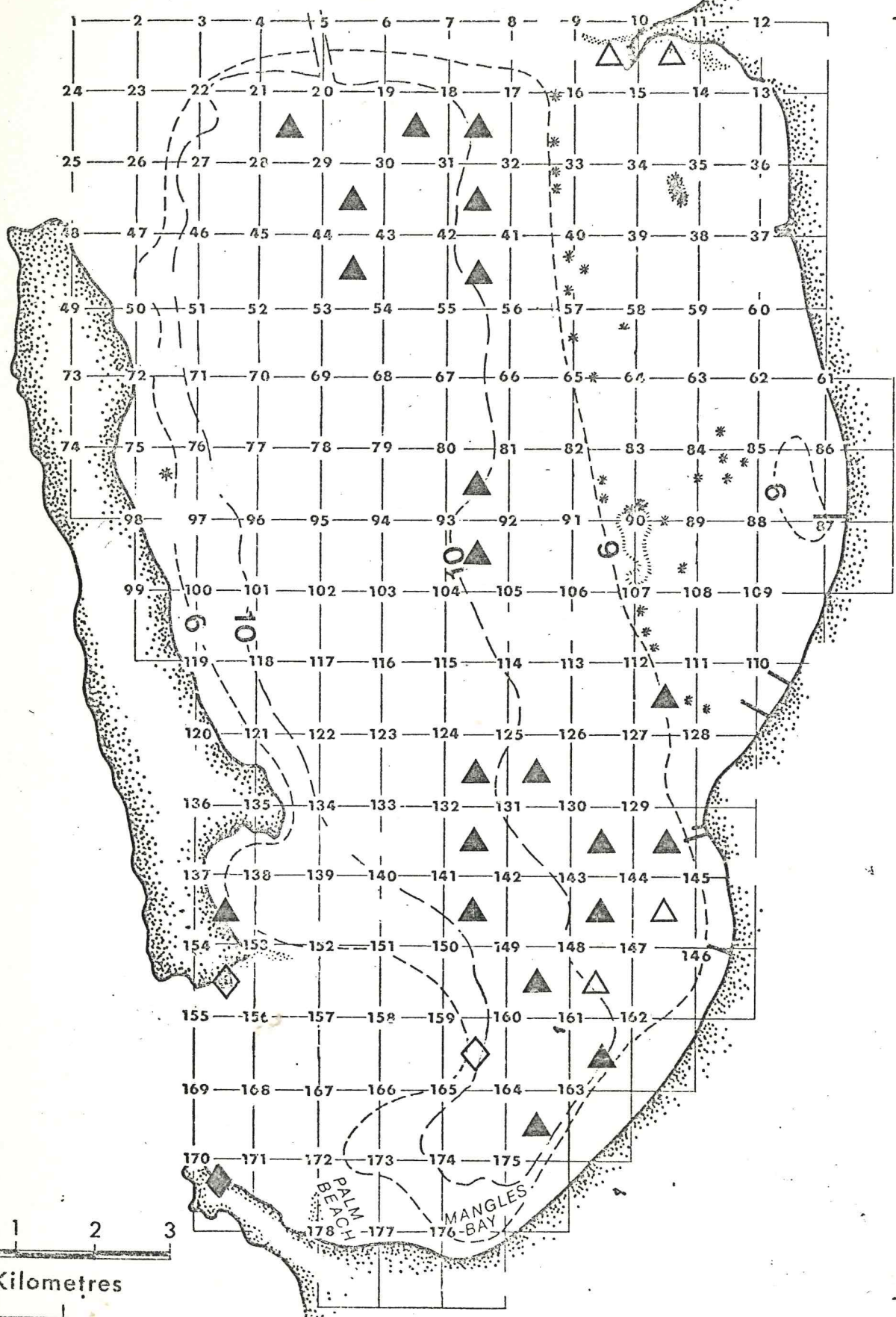
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Kilometres

DICATHAIS ORBITA



32° 08'

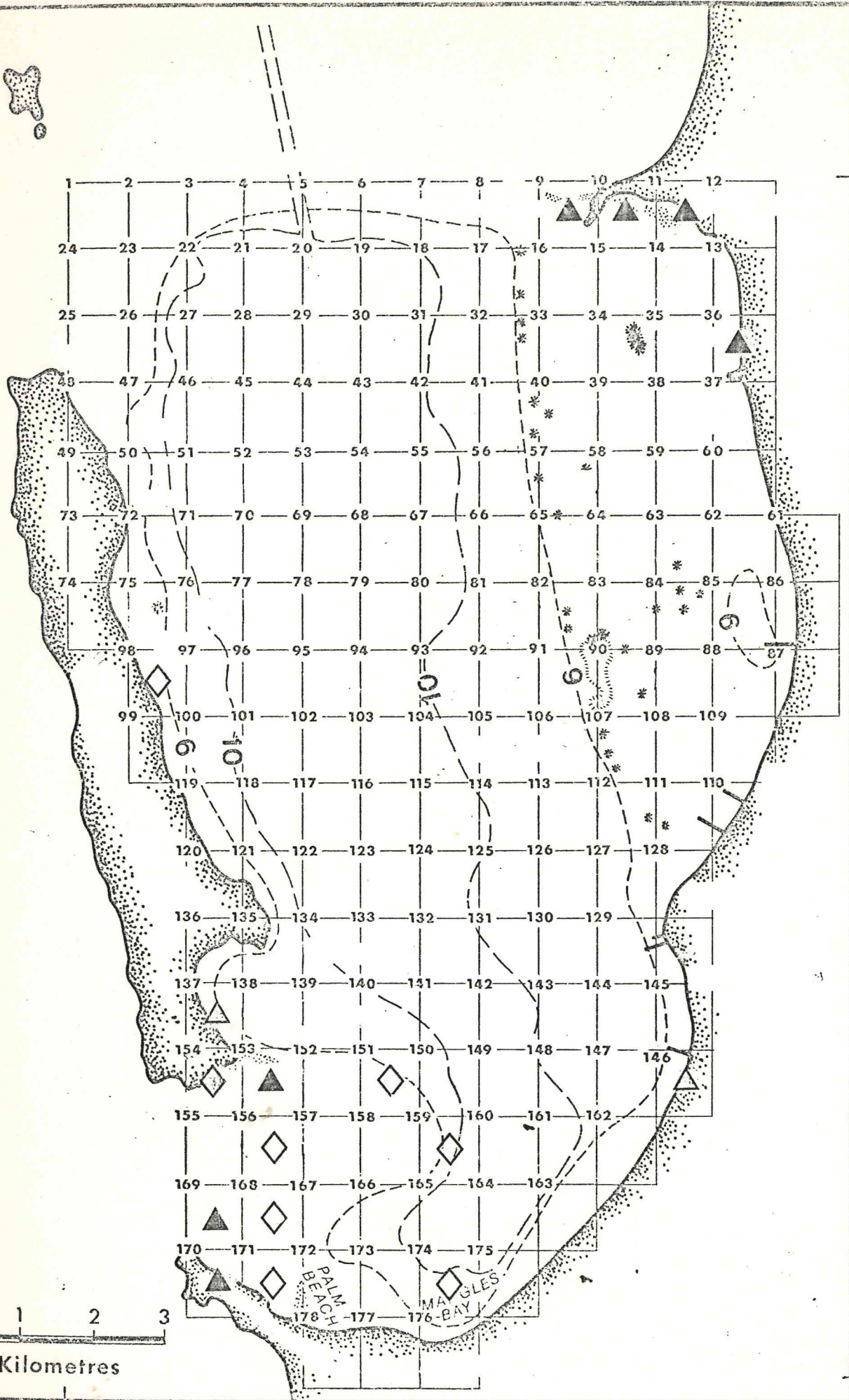


Kilometres

115° 40'

32° 17'

BEDEVA PAIVAE



32° 03'

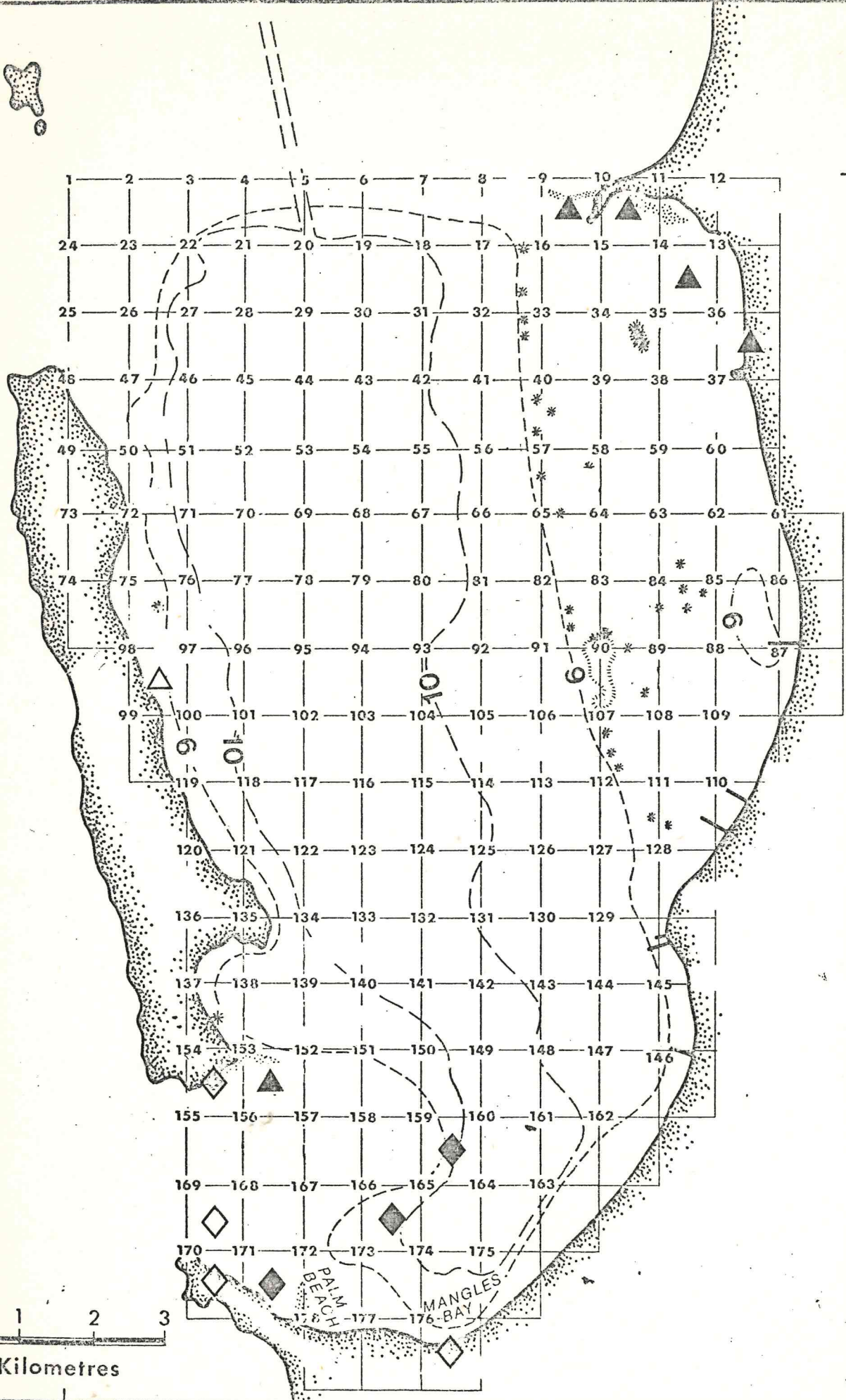
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115° 40'

COMINELLA TASMANICA



Kilometres



32° 08'

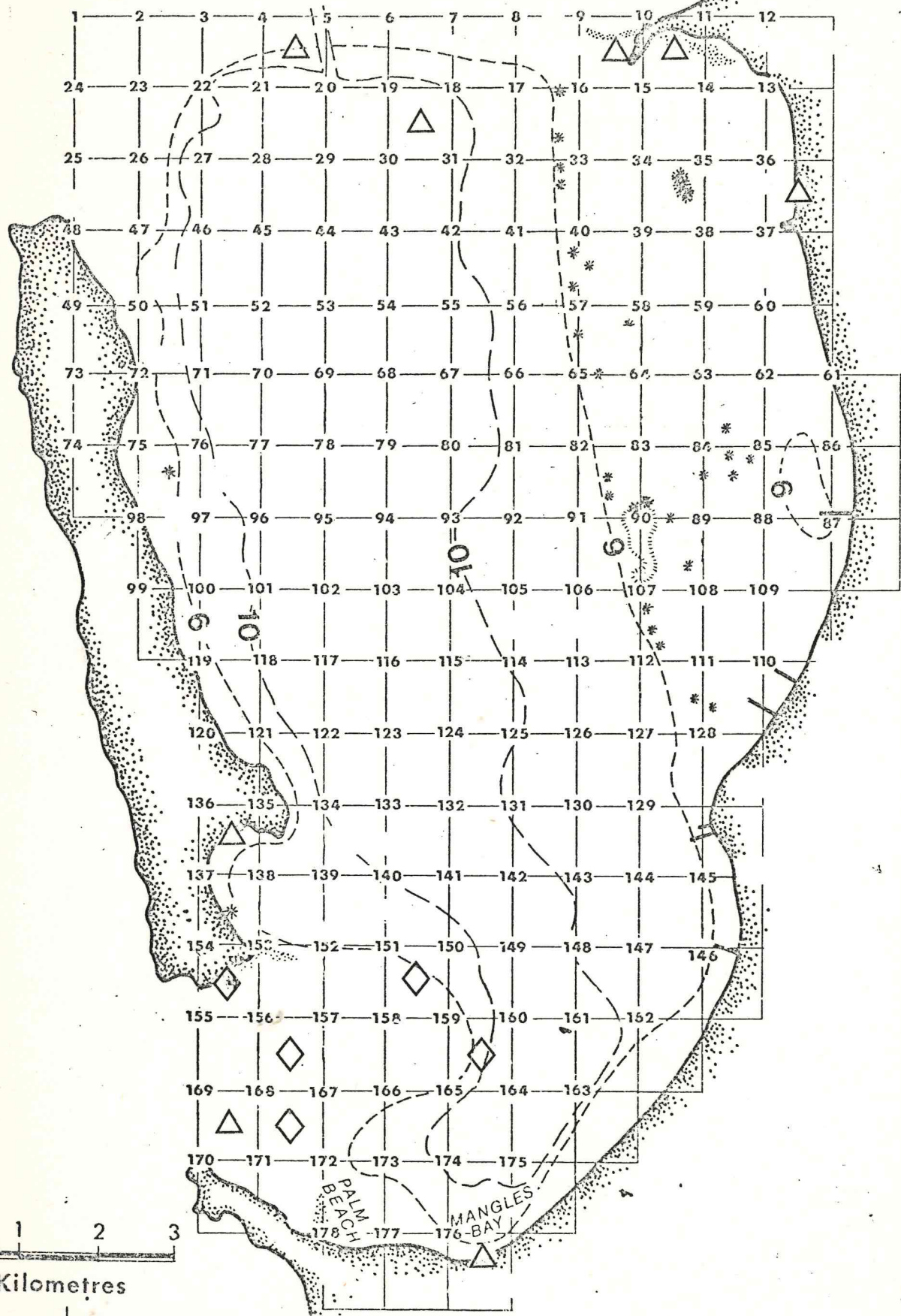
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115° 40'

PYRENE SCRIPTA



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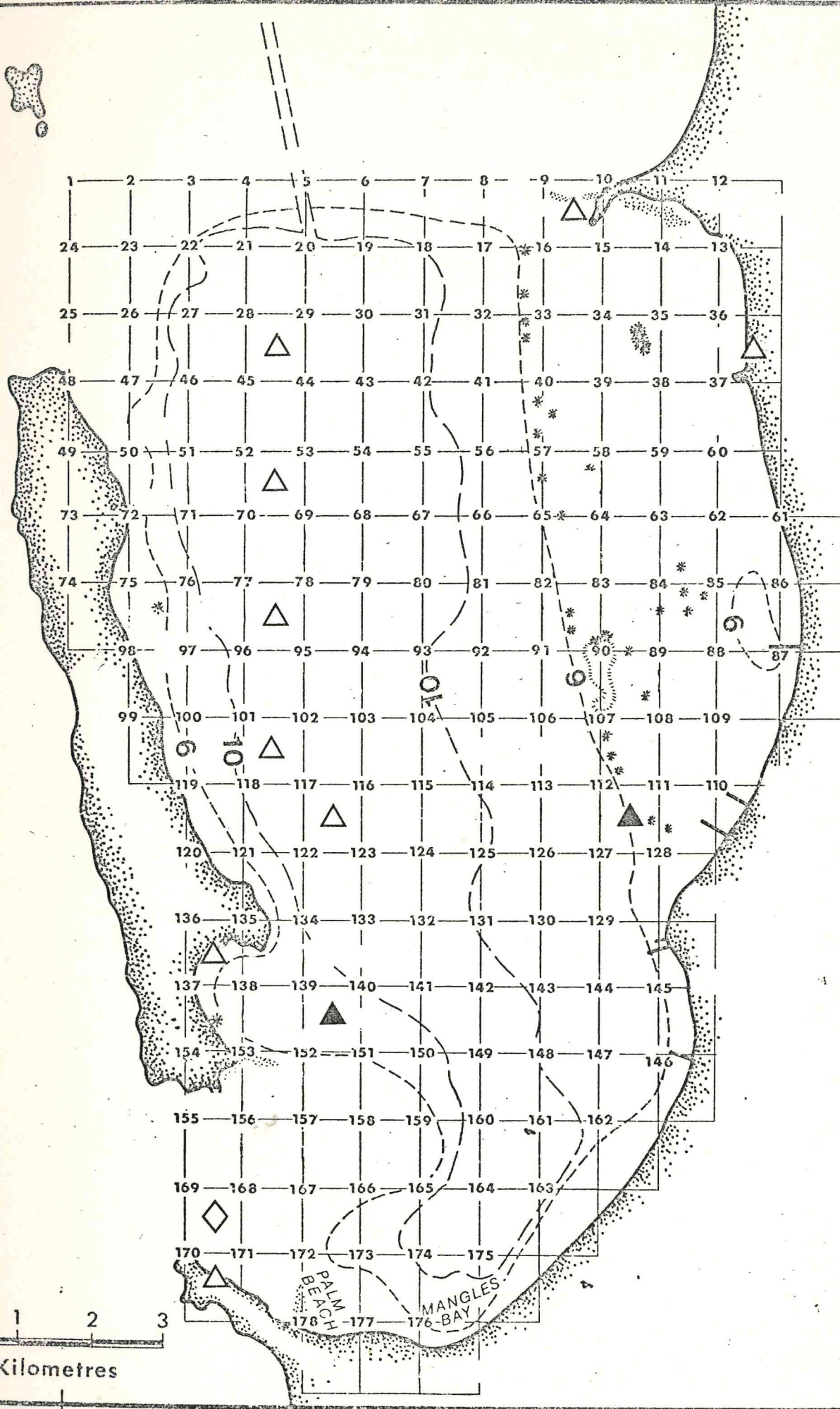


Kilometres

115° 40'

32° 17'

DENTIMITRELLA LINCOLNENSIS



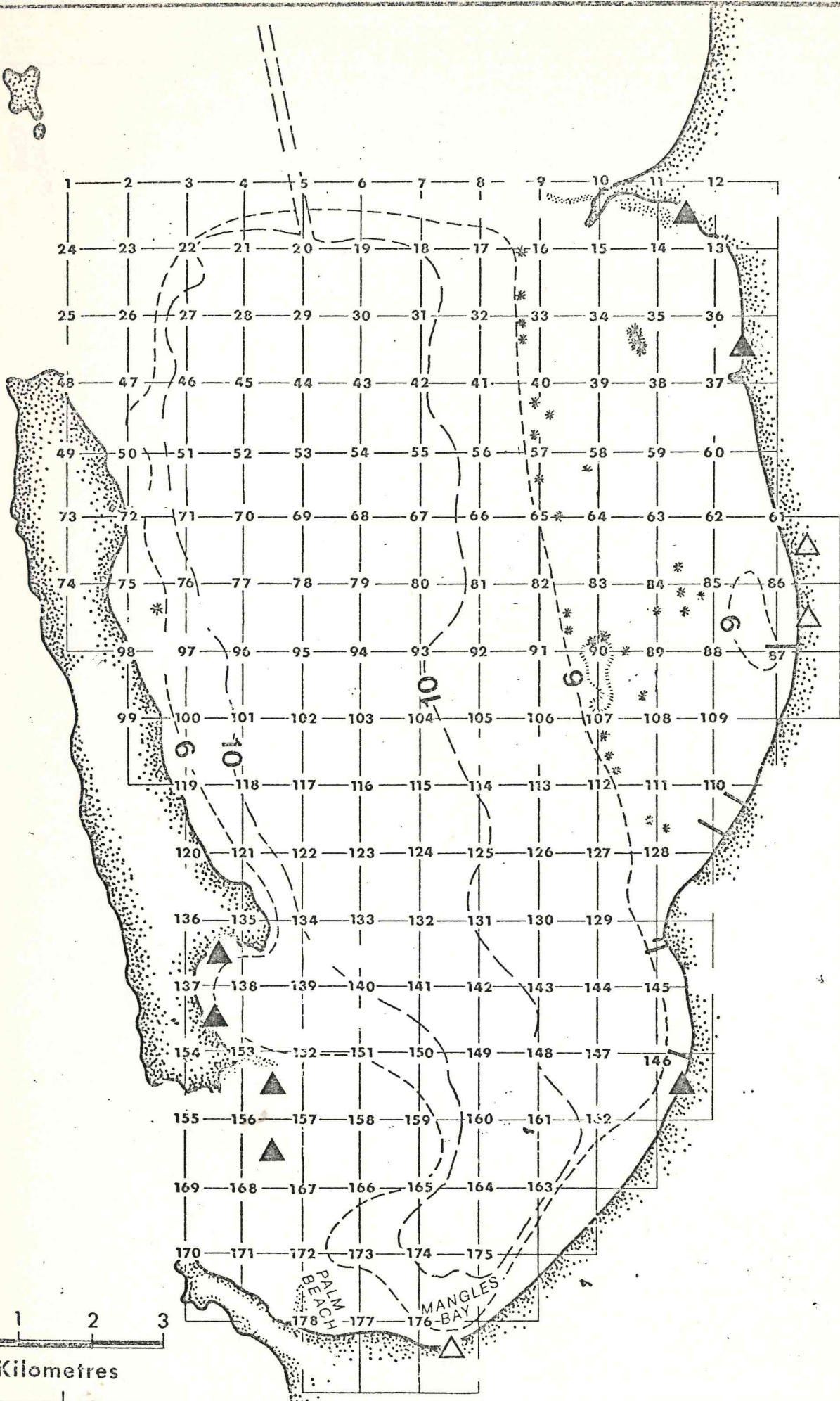
32° 08'

32° 17'

0 1 2 3
Kilometres

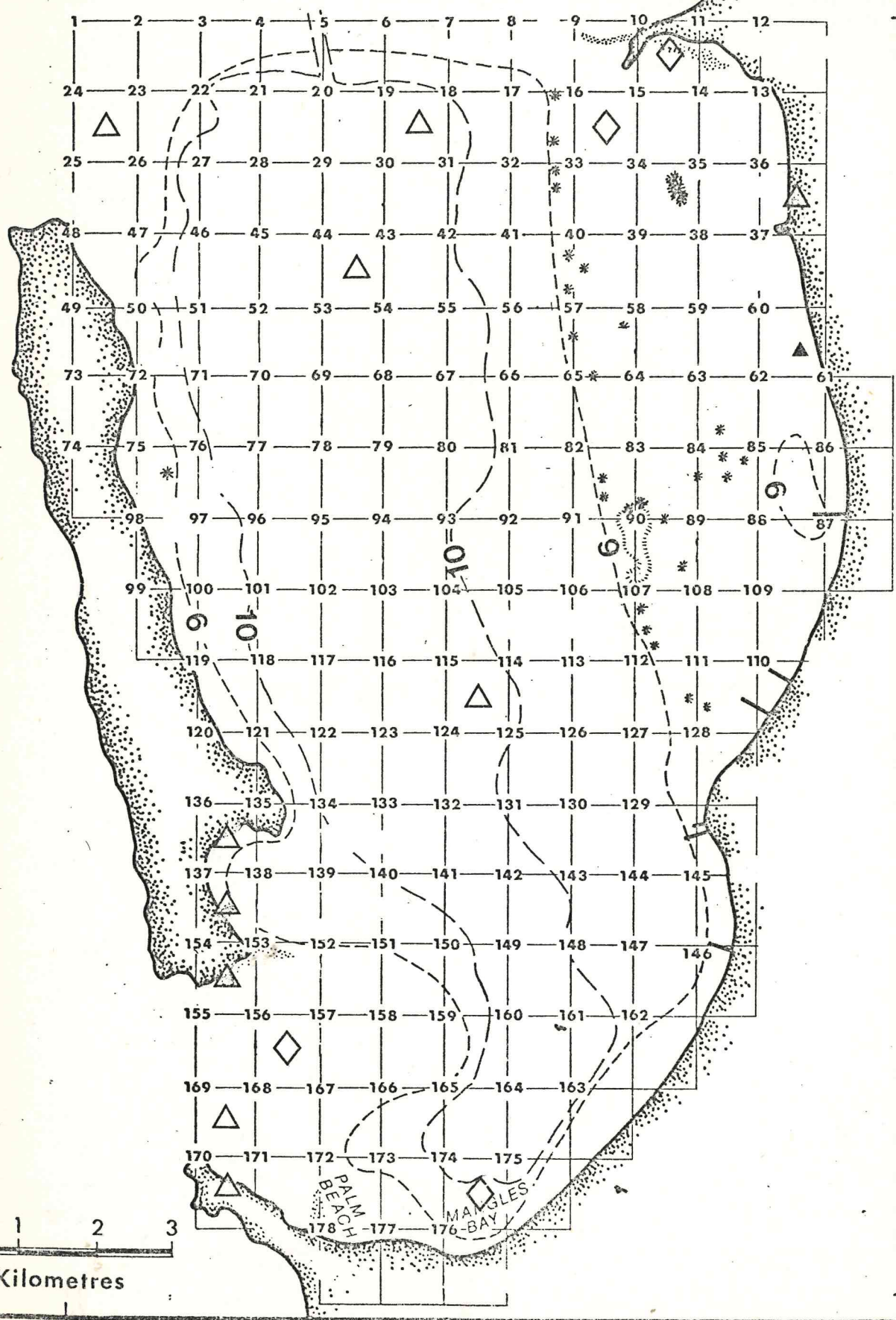
115° 40'

MICROCOLUS DUNKERI



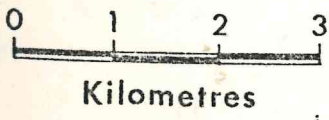
115° 40'

OLIVA AUSTRALIS



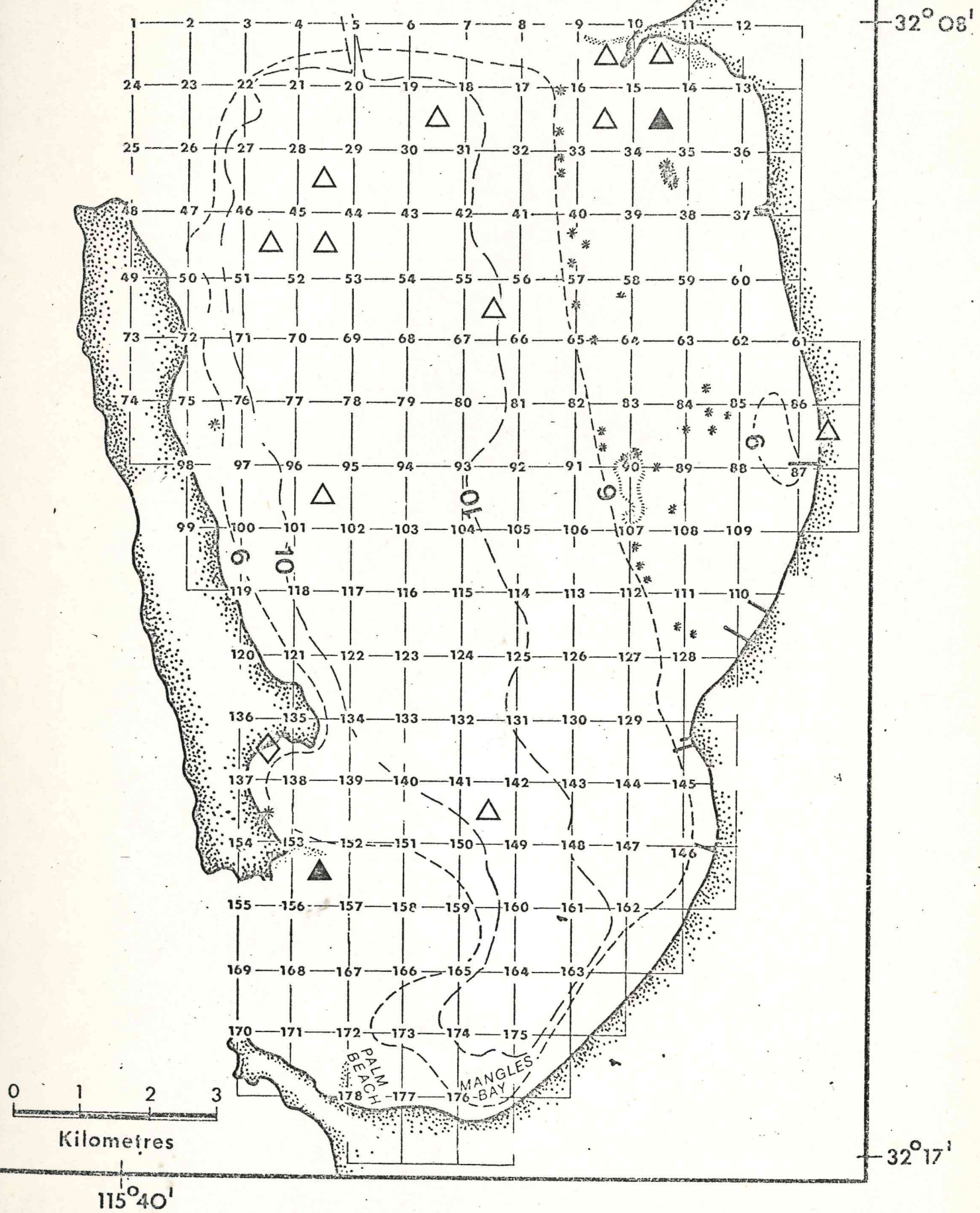
32° 08'

32° 17'



115° 40'

NASSARIUS RUFULUS



32° 08'

32° 17'

Kilometres

115° 40'

NASSARIUS PYRRHUS