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THE BENTHIC FAUNA OF COCKBURN SOUND,  
WESTERN AUSTRALIA



PART II : COELENTERATA

*L. M. Marsh.*

PART III : ECHINODERMATA:  
OHIOUROIDEA

*D. M. Devaney.*

PART IV : ECHINODERMATA; CRINOIDEA  
ASTEROIDEA, ECHINOIDEA AND  
HOLOTHUROIDEA

*L. M. Marsh.*

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WESTERN AUSTRALIAN MUSEUM  
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The Benthic fauna of Cockburn Sound, Western Australia

Part 2. COELENTERATA.

L.M. Marsh

Coelenterates are represented in Cockburn Sound by hydroids (class HYDROZOA), several species of jellyfish (class SCYPHOZOA) and in the class ANTHOZOA, sub class OCTOCORALLIA, several species of soft corals (orders STOLONIFERA, TELESTACEA and GORGONACEA) and sea pens (order PENNATULACEA); anemones and stony corals (subclasses CERIANTIPATHARIA and ZOANTHARIA). Of these groups only the cerianthids, sea pens, anemones and stony corals are considered here because of their importance in the benthic fauna of Cockburn Sound.

At the time of the W.A. Naturalists' Club survey (1956-60) there was a fairly rich coral fauna in Cockburn Sound despite a more severe temperature regime than on the open coast, with seasonal extremes of  $14^{\circ}$  -  $26^{\circ}$ C. in Cockburn Sound. Twelve species in nine genera of hermatypic (reef-building) corals and four species in three genera of ahermatypic corals are here recorded from the Sound, pls. 1 and 2.

Two species (Goniopora cf. pedunculata and Cyphastrea serailia) have not been found elsewhere in the Fremantle area and are believed to be at the southern limit of their geographical range. The remainder of the Cockburn Sound hermatypic coral species extend south to Geographe Bay and are also found on offshore reefs in the Fremantle area.

Two of the ahermatypic species (Tubastrea aurea and T. diaphana) are at their southern limit while the other two species extend southwards to Geographe Bay.

Many of the corals were found on a substrate of dead coral of unknown age which formed extensive patches on the northeastern shelf in stations 17, 34, 41, 57, 65, 90, 91 and 112, and on the western shelf in stations 47, 75 and 137. Similar dead coral reefs occur off Fremantle (Hall Bank) and off Whitford's Beach. A sample from one outcrop was identified as Turbinaria cf. T. crater by J.W. Wells who also made the determinations of the other corals (1954-1958).

Of interest among the anemones are Bundactis maculosa of which the type locality is Mangles Bay, Cockburn Sound and Dofleina armata a large tropical species, only known on this coast from Cockburn Sound and notable for its severe stinging properties.

Pennatulids formed a major part of the fauna of the central basin and were particularly abundant in the soft mud of the southern central basin.

The distribution of the orange Pennatulid is not known but there are specimens in the W.A. Museum from Owen Anchorage, Blackwall reach (Swan estuary) and Cockatoo island off the Kimberley coast, the latter suggesting a tropical distribution.

SYSTEMATIC LIST

Phylum : COELENTERATA  
Class : ANTHOZOA  
Subclass : CERIANTIPANTHARIA

Order : CERIANTHARIA Perrier, 1893

Genus : CERIANTHUS

CERIANTHUS sp.

Muddy sand or mud; 5-20m.

Stations: (1956-60) 11+++ , 86++ , 136+ , 138+ , 147+ , 148+ , 153+ ;  
(1973) 63+ , 89+ ; (1974) 30/29+ , 150+ , 174+ ; (1975) 41/42+ ,  
142+ . 1978: 93, 103, 110, 126, 121, 113, 164 59 81, 16

32, 100, 107

Subclass : OCTOCORALLIA

Order : PENNATULACEA Verrill, 1865

Suborder: SESSILIFLORAE Kükenthal, 1915

A. Gen. and sp. indet. (orange sea pen)

Mud; 15-22m.

Stations: (1956-60) 42++++, 43+++ , 44+ , 52+ , 55+ , 68+ , 69+ , 92++ ,  
93+ , 94+ , 95+++ , 96+++ , 97++++ , 101++ , 113+++ , 114+ , 115+++ ,  
116+++ , 117+++ , 118+ , 119++ , 124+ , 125++ , 126++ , 129++ , 130++ ,  
131+ , 132+++ , 135+ , 138+ , 139++ , 140++ , 141++ , 142+++ , 143+++ ,  
144+++ , 147+ , 148++++ , 149+++ , 160+++ , 164++++ ; (1970) 129++ ,  
130+++ , 143+++ , 144+++ ; (1971) 6/19/30/43+++ ; (1973) 63+ , 134++++ ;  
(1974) 27/46+ , 54++ , 79++ , 77/96+++ , 97/100++ , 101/118++++ ,  
103/116+ , 121+++ , 130+ , 134++++ , 133/140++++ , 174++ ; (1975) 41/42+ ,  
93/94+ , 116+ , 132/140/141++++ , 133++++ , 142++++ . 1978: 16, 117, 127  
42, 100, 107, 126, 121, 113, 164

B. Gen. and sp. indet. (thin sea pens)

Mud; 15-22m.

Stations: (1956-60) 92+ , 115+ , 132+ , 139+ , 149+ ; (1970) 129+ , 130+ ,  
143+ , 144+ ; (1973) 134+ ; (1975) 93/94+ , 116+ , 132/133/140/141+ .

1978: 117, 92, 103, 101, 164, 126, 113, 117, 93, 121, 70

Suborder: SUBSELLIFLORAE Kükenthal, 1915

C. Gen. and sp. indet. (leafy sea pen)

Mud; 15-22m.

Stations: (1956-60) 119+ , 139+ , 147+ , 148+ ; (1974) 79+ .

Subclass : ZOANTHARIA

Order : ACTINIARIA R. Hertwig, 1882

Genus : BUNODACTIS

BUNODACTIS MACULOSA Carlgren 1954

Actiniaria and Zoantharia from South and West Australia.  
Arkiv för zoologi, Kungl. Svenska vetenskapsakademien ser 2,  
6 no. 34: 577-578, figs. 6, 7.  
Type loc.: Mangles bay, near Cape Peron.  
Range: unknown.  
Under rocks; 0-2m.  
Stations: (1952) 170+; (1956-60) 71+.

Genus : RADIANTHUS

RADIANTHUS CONCINNATA (Lager, 1911)

Antheopsis.  
Actiniaria, in Michaelsen and Hartmeyer: Fauna Südwest - Australiens,  
3: 244-245, fig. 20.  
Type loc.: Shark Bay W.A.  
Range: West coast of Western Australia  
Sand; 0-10m.  
Stations: (1956-60) 9++, 10++, 61+++; 84+, 86+, 136+, 153++\*, 170++,  
176++.

Genus : DOFLEINA

DOFLEINA ARMATA Wassilieff, 1908

Type loc.: Sagami Bay, Japan  
Range: Japan, Philippines, Western Australia  
Muddy sand or mud; 4-18m  
Stations: (1956-60) 37+, 84+, 86+, 134+, 138+, 153+, 176+;  
(1971) 10+; (1973) 134+.

Order : SCLERACTINIA Bourne, 1900

Family : SIDERASTREIDAE Vaughan and Wells, 1943

Genus : COSCINARAEA Milne-Edwards and Haime, 1848

COSCINARAEA cf. C. MARSHAE Wells, 1962.

Two new scleractinian corals from Australia.  
Rec. Aust. Mus., 1962: 240-241, pls. 17, 18.

Type loc.: Rottnest I., W.A.

Range: south-western Australia, Geographe Bay to Rottnest Island.

Rock; 3m.

Stations: (1956-60) 10+; (1970) 112+

C. michelli

Family : PORITIDAE Gray, 1842

Genus : GONIOPORA de Blainville, 1830

GONIOPORA cf. G. PEDUNCULATA de Blainville, 1830

Dict. Sci. nat., lx, 359

Type loc.: Port Dorey, New Guinea

Rec. ref.: Vaughan and Wells 1943: 152, pl.22, fig.7.

Range: Tropical Indo-Pacific.

Rock; 9m

Stations: (1956-60) 34+, 41+.

Family : FAVIIDAE Gregory, 1900

Genus : CYPHASTREA Milne-Edwards and Haime, 1848

CYPHASTREA SERAILIA (Forskaal, 1775)

Madrepora. Descriptiones Animalium, Avium, Amphibiorum, Piscium, Insectorum Vermium que in itinere orientali observavit Petrus Forskål. xviii-xix. 131-139. Hauniae.

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 169-173, figs. 330-341.

Range: Tropical Indo-Pacific, Red Sea to Marshall Islands.\*

Rock; 6-7m

Stations: (1956-60) 34+.

Genus : FAVIA Oken, 1815

FAVIA cf. SPECIOSA (Dana, 1846)

Zoophytes. U.S. Exploring Exped. 1838-1842, 7: 1-740, pl. 1-61.

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 36, fig. 45.

Range: Tropical Indo-Pacific

Rock; 7m

Stations: (1956-60) 34+.

Genus : FAVITES Link, 1807

FAVITES FAVOSA (Ellis and Solander, 1786)

Madrepora. The Natural History of many curious and uncommon zoophytes: 167, pl. 50, fig. 1.

Syn. Favio magnistella Milne-Edwards and Haime, 1850

Range: Red Sea to Marshall Is., N. to Japan

Rock; 3m

Stations: (1953) 36++.

FAVITES VIRENS (Dana, 1846)

Zoophytes. U.S. Exploring Exped. 1838-1842, 7: 1-740, pl. 1-61

Range: Tropical Indo-Pacific

Rock; 4-5 m

Stations: (1956-60) 37+.

*F. complanata*

FAVITES SP.

Rock; 2-7m

Stations: (1956-60) 34+, 37+, 41+, 137+; (1970) 112+, (1974) 9+, 37+; (1976) 37+.

Genus : GONIASTREA Milne-Edwards and Haime, 1848

GONIASTREA ASPERA Verrill, 1865

Corals and polyps of the North Pacific Exploring Expedition.  
Proc. Essex Inst. Salem. 4: 32.

Syn. Goniastrea spectabilis (Verrill)

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 83-84, figs. 157-162

Range: Central Indo-West Pacific, Mergui Archipelago to New Caledonia and the Great Barrier reefs.

Rock; 9m

Stations: (1956-60) 34++.

GONIASTREA AUSTRALENSIS (Milne-Edwards and Haime, 1857)

Prionastrea. Histoire naturelle des Coralliaires. Paris. 1, 2 & 3, 1-326, 1-632, 1-560

Syn. Goniastrea benhami Vaughan, 1917

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 92-95, figs. 176-181, col. fig. 451.

Range: Kermadec Is. to Japan and Western Australia

Rock; 3-7 m

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

Genus : OULOPHYLLIA Milne-Edwards and Haime, 1848

OULOPHYLLIA CRISPA (Lamarck, 1816)

Meandrina. Histoire naturelle des Animaux sans vertèbres. Paris, 2: 1-568

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 118-124, figs. 227-237, col. fig. 461.

Range: Indo-West Pacific, Red Sea to New Caledonia and Japan.

Rock; 3-7m

Stations: (1956-60) 34+, 37+; (1970) 112+.

Genus : PLESIASTREA Milne-Edwards and Haime, 1848

PLESIASTREA VERSIPORA (Lamarck, 1816)

Astraea. Histoire naturelle des Animaux sans vertèbres, Paris. 2: 1-568.

Syn. Plesiastrea urvillei Milne-Edwards and Haime, 1849

Rec. ref.: Veron, Pichon and Wijsman-Best, 1977: 149-153, figs. 284-294.

Range: Tropical Indo-Pacific, Red Sea to Fiji and southern Australia

Rock; 0-5m

Stations: (1956-60) 34+, 36+, 37+++; 112+++; 136+, 137+, 176+; (1970) 112+++; (1972) 9+, 47+; (1974) 9+, 37+++; (1976) 37+++.

Family : RHIZANGIIDAE d'Orbigny, 1851

Genus : CULICIA Dana, 1846

CULICIA cf. C. TENELLA Dana, 1846

Zoophytes, U.S. Exploring Exped. 1838-1842, 7: 1-740, pl. 1-61

Type loc.: Port Jackson, N.S.W.

Range: Australia ?

Rock, jetty piles; 0-4m

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

Family : MUSSIDAE Ortmann, 1890

Genus : HOMOPHYLLIA Brueggemann, 1877

HOMOPHYLLIA AUSTRALIS (Milne-Edwards and Haime, 1849)

Caryophyllia. Memoire sur les polypiers appartenant à la famille des Oculinides, au groupe intermédiaire des Pseudastréides et à la famille des Fongides. C.R. Hebd. Séances Acad. Sci. 29: 67-73.

Range: Southern Australia and Lord Howe Island

Rock; 2-5m

Stations: (1956-60) 112+, 137+.

Family : DENDROPHYLLIIDAE Gray, 1847

Genus : TUBASTREA

TUBASTREA AUREA (Quoy and Gaimard, 1833)

Lobophyllia. Zoologie IV, 175-254, pl. 14-20 in Dumont d'Urville, J.S.C. Voyage de découvertes de "l'Astrolabe", exécuté par ordre du Roi, pendant les années 1826-29, sous le commandement de M.J. Dumont d'Urville. Paris, 1830-1835. 14V.

Range: Tropical Indo-Pacific

Rock; 0-3m

Stations: Cockburn Sound, no location.

TUBASTREA DIAPHANA (Dana, 1846)

Zoophytes, U.S. Exploring Exped. 1838-1842, 7, 1-740, pl. 1-61

Rock; 0-5m

Stations: Cockburn Sound, no location.

Genus : TURBINARIA Oken, 1815

TURBINARIA PELTATA (Esper, 1797)

Die Pflanzenthier, Fortsetzungen, 1, 169-230, Nürnberg

Rec. ref.: Veron and Pichon (in press)

Range: Mauritius to Japan and Marshall Is., extends into temperate northern and southern waters

Rock; 4-7m

Stations: (1956-60) 34+, 37+, 41+.



TURBINARIA cf. FRONDENS (Dana, 1846)

Zoophytes. U.S. Exploring Exped. 1838-1842, 7, 1-740, pl. 1-61  
Syn. T. danae (Bernard, 1896)

Rec. ref.: Veron and Pichon (in press)

Range: Indo-Pacific, extends into temperate northern and southern waters.

Rock; 3m

Stations: (1953) 37+; (1957-60) 34+, 37+, 112+, 137+, 176+;  
(1970) 112+.

TURBINARIA cf. CRATER (Pallas, 1766)

Madrepora. Elenchus Zoophytorum. Den Haag. 1-451

Remarks: large dead colonies (stn. 36) were identified by J.W. Wells as this species.

REFERENCES

Vaughan, T.W. and Wells, J.W., 1943. Revision of the sub-orders, families and genera of the Scleractinia. Geol. Soc. Am. Spec. Pap. 44 : 1-363, pl. 1-51.







Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinia of eastern Australia. Part II. Families Faviidae, Trachyphyllidae. Aust. Inst. Mar. Sci. Monogr. Ser. 3 : 1-233, 477 figs.

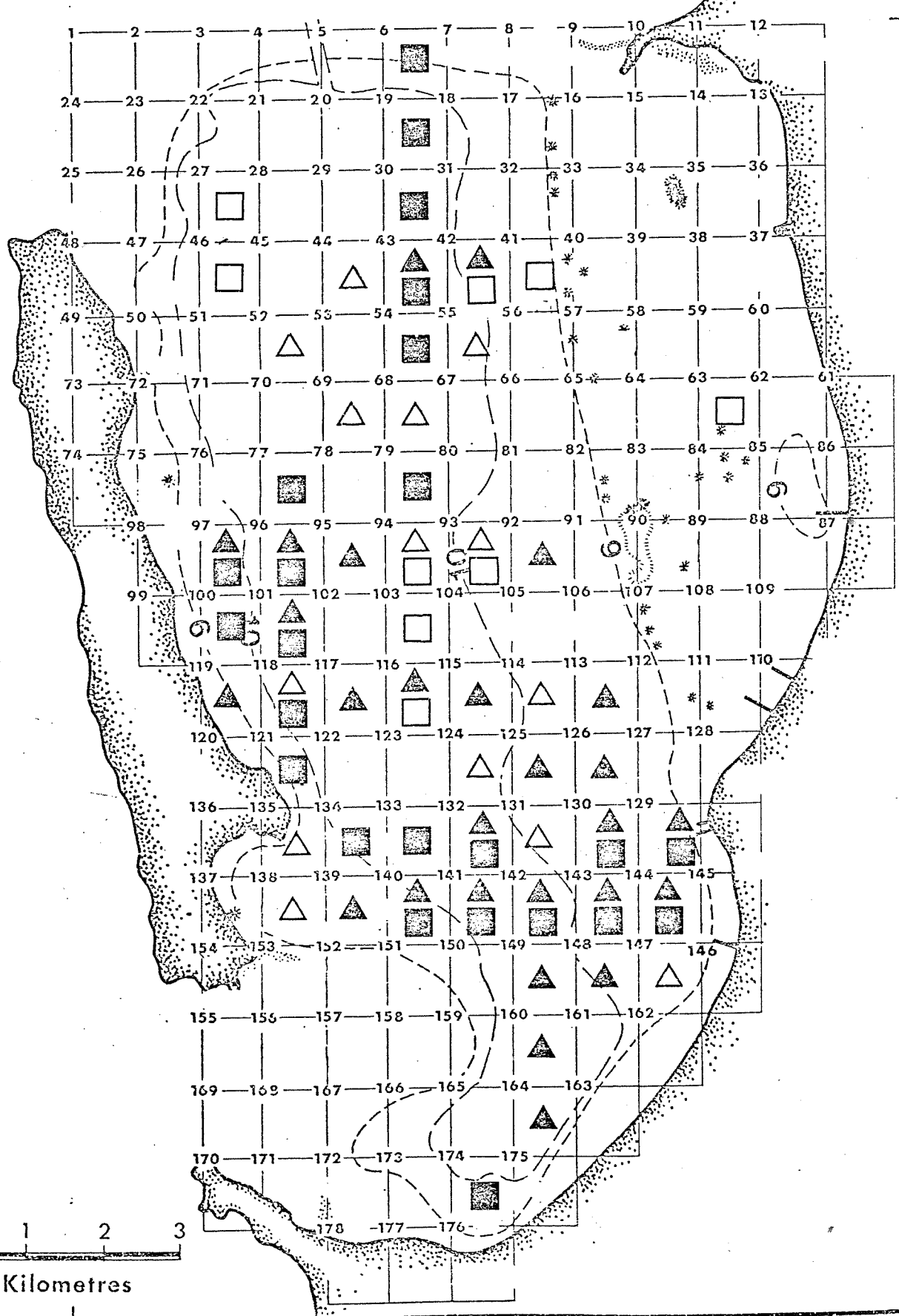
Veron, J.E.N. and Pichon, M. (in press). Scleractinia of Eastern Australia. Part III. Families Agariciidae, Siderastreidae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. Aust. Inst. Mar. Sci. Monogr. Ser. 4.

Wells, J.W., 1962. Two New Scleractinian corals from Australia. Rec. Aust. Mus. 25(11): 239-242, pls 16-18.

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
	1961-66	common to abundant
	1961-66	single record
	1970-76	common to abundant
	1970-76	single record.



"ORANGE PENNATULID"

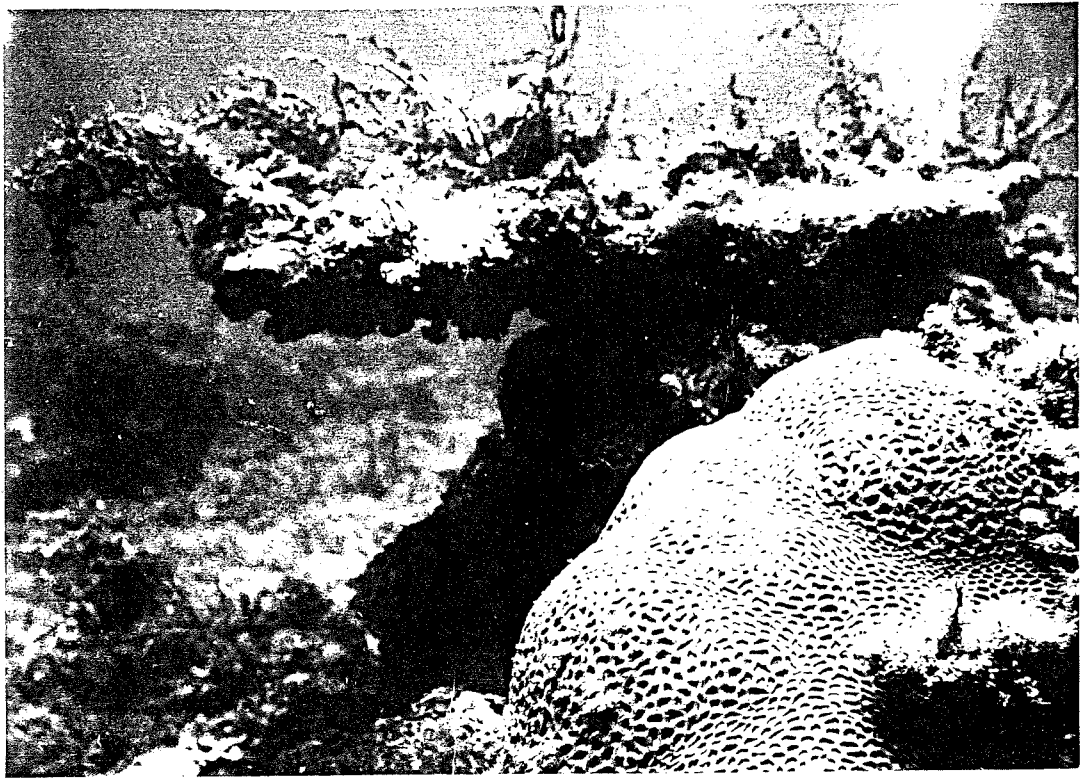


Fig. 1. Living colony of *Goniastrea aspera* near Jervoise Groyne, 1960.



Fig. 2. Large colony of *Turbinaria peltata*, with polyps expanded, near Jervoise Groyne, 1960.



Fig. 1. Favites, Goniastrea and other corals, Jervoise bank, 1960.

THE BENTHIC FAUNA OF COCKBURN SOUND

PART 3. ECHINODERMATA-OPHIUROIDEA

D.M. Devaney

INTRODUCTION

Twenty-two species of ophiuroids have been recorded from Cockburn Sound. Three species, Amphiura (Ophiopeltis) parviscutata, Ophiacantha alternata and Ophiurodon opacum are newly reported from Western Australia, previously being known only from southeastern Australia. Four additional species are new records for Cockburn Sound (Amphioplus (Unioplus) ochroleuca, Ophiactis savignyi, Ophiocomella sexradia, and Ophiura kinbergi) while the presence of Ophiopeza assimils is now confirmed from the Western Australian area. These species show the following distribution.

1. Ten species occur in both tropical and temperate regions of Australia of which only two (Amphiura (A.) constricta and Ophiactis acosmeta) have not been recorded in tropical waters beyond Australia.

Tropical

Ophiomyxa australis  
Amphipholis squamata  
Amphioplus depressus  
A. ochroleuca  
Amphiura constricta  
Ophiactis acosmeta  
Ophiactis savignyi  
Ophionereis semoni  
Ophiocomella sexradia  
Ophiura kinbergi

2. Nine of the remaining 12 species are recorded only from the temperate Australian region and all of these extend from at least Victoria (often as far as New South Wales) to SW Australia.

Warm temperate

Ophiacantha alternata  
Amphiura (O.) parviscutata  
Ophiothrix caespitosa  
O. spongicola  
Ophionereis schayeri  
Clarkcoma canaliculata  
Ophiarachnella ramsayi  
Ophiopeza assimils  
Ophiurodon opacum

3. The remaining three species (Ophiacantha clavigera, Macrophiothrix michaelsoni, and Ophiocoma occidentalis) are endemic to W. Australia between Shark Bay and Albany.

The relationship between the Western Australian and South Australian ophiuroid fauna based on those species now recorded from Cockburn Sound is strong: 15 of the 22 species (68%) are common to both areas and reflect the warm temperate fauna in that area.

SYSTEMATIC LIST

Class: STELLEROIDEA  
Subclass: OPHIUROIDEA  
Order: PHRYNOPHIURIDA Matsumoto, 1915  
Suborder: OPHIOMYXINA Fell, 1962

Family: OPHIOMYXIDAE Ljungman, 1866  
Genus: OPHIOMYXA Müller and Troschel, 1840

OPHIOMYXA AUSTRALIS Lütken, 1869

Additamenta ad historiam Ophiuridarum. K.danske Vidensk. Selsk. Skr. 5 (8): 24-109, 3 figs.

Type loc.: Bass Strait, off East Moncoeur Island  
Rec. Ref.: H.L. Clark, 1938: 201, pl.13, figs 1-2  
Range: Indo-West Pacific except W. Indian Ocean, circumcontinentally Australian.

Habitat/Depth: under stones, sand, Posidonia with large dead coral outcrops, on Pinna shells in Posidona; 0-20m.

Stations: (pre 1958) 8+; (1958-1960) 9+, 11+, 18+, 19+, 24+, 29+, 42+; (Post 1960) 10+++<sup>(pre 1960) 112 +</sup>, 137+.

Order: OPHIURIDA Müller and Troschel, 1840  
Suborder: LAEMOPHIURINA Matsumoto, 1915

Family: OPHIACANTHIDAE Perrier, 1891  
Genus: OPHIACANTHA Müller and Troschel, 1842

OPHIACANTHA ALTERNATA A.M. Clark, 1966

Port Phillip Survey 1957-1963. Echinodermata  
Mem. nat. Mus. Vict. 27: 328-330, figs 4a-c

Type loc.: Port Phillip Bay, Victoria  
Range: Western Australia (Dongara to Yallingup), Victoria (Port Phillip Bay), South Australia.

Habitat/Depth: muddy sand; 20m.

Stations: (1958-1960) 22++.

OPHIACANTHA CLAVIGERA Koehler, 1907

Fauna Südwest-Australiens 1 : 247, figs 1-3

Type loc.: Southwestern Australia (Cockburn Sound, Koombana Bay)

Range: W. Australia (Broome to Koombana Bay)

Habitat/Depth: rocky bottom "Felsboden"; 6.5-8m South Channel

Stations: (pre 1958) "South Channel and Southern Flats" (the latter based on Hamburg Museum specimen det. by Koehler 1907 but not reported).

Suborder: GNATHOPHIURINA Matsumoto, 1915

Family: AMPHIURIDAE Ljungman, 1867  
Genus: AMPHIPHOLIS Ljungman, 1866

AMPHIPHOLIS SQUAMATA (Della Chiaje, 1828)

Asteria. Mem. anim. senza vert. Napoli, 3 (3) cap.7: 74-79

Type loc.: Naples (Italy)

Rec. Ref.: Clark, A.M. and F.W.E. Rowe, 1971: 99 fig.27b and pl.13, fig. 5.

1

Amphioplus (Unioplus) repositus Koehler 1905  
Koehler, R. (1905) Siphonien thalassales, Siboga Exped. 45b 11-102, 187.  
303-76 Southern Flats. T. Meagher 1966.  
238-71 Sabellariid worm rock. B. R. Wilson.

Amphivra reposita Koehler, 1905.  
Type loc. Pulu Kantungan ketjil, 11 mi.  
Indonesia.

#

Amphioplus ochroleuca  
362-89 (1). Woodman Pt. sand &  
rubble, under rocks, coll 18.X.88.

Amphivra aff. multiremuda.  
356-89. Woodman Pt. sand & rubble  
under rocks coll. 19.X.88.



Range: Cosmopolitan world-wide temperate and tropical.  
Habitat/Depth: washings from Caulerpa and dead Pinna with Caulerpa algae; washings from Zostera and Halophila sea grasses, grey mud and Cymodocea; 0-20m.

Stations: (pre 1958) Koehler (1907) from Port Royal and north to silt and algal bottom. (post 1960) 8+, 9++, 10+++ , 70+.

Genus: AMPHIOPLUS Verrill, 1899  
Subgenus: LYMANELLA A.M. Clark, 1970

AMPHIOPLUS (LYMANELLA) DEPRESSUS (Ljungman, 1867)  
Amphipholis; Ofvers. K. Vetensk-Akad. Forh., 23(9):312.

Type loc:

Rec. Ref.: A.M. Clark, 1970 : 52, fig. 9u; A.M. Clark and F.W.E. Rowe, 1971 : 80, pl. 14, figs. 2, 3.

Range: Indo-West Pacific to Bay of Bengal, N. Australia (Torres Strait, Darwin, Broome to Cockburn Sound and Rottneest I.

Habitat/Depth: mud-sand; 1-21m.

Stations: (pre 1958) H.L. Clark (1938) "Pt. Peron" (169 or 170+). (1958-60) 29+++ , 44+, 45++, 91+, 92+++ , 96+, 124+. (post 1960) 2/23+, 19/30++, 21++, 27/46++, 29+, 30++, 44+, 70+, 93++, 124/132++, 142/149+, 168++.

AMPHIOPLUS (UNIOPLUS) ~~OGHROLEUCA~~ (Brock, 1888)

Amphiura-Die ophiuriden-fauna des indischen Archipels. Ztschr.f. Wissensch. Zool., 47: 465-539.

Type loc.: Amboina

Rec. ref.: A.M. Clark, 1970: 39, fig. 8t (as A. (Amphichilis) ochroleuca)

Range: Amboina, Australia (N.W. Coast from Broome S.W. to Dunsborough, east to Spencer Gulf).

Habitat/Depth: Among Posidonia seagrass and in Sabellariid worm rock. 1.5 to 5m.

Stations: (1958-1960) 170+; (post 1960) 168+.

Genus: AMPHIURA Forbes, 1843

AMPHIURA (AMPHIURA) CONSTRICTA Lyman, 1879

"Challenger" Ophiuridae and Astrophytidae, Pt.2, Bull. Mus. Comp. Zool. Harv., 6: 22, pl.11, figs 295-298

Type loc.: Port Jackson

Range: Australia, except between Darwin and Port Curtis, Queensland

Habitat/Depth: washings from dead Pinna shells with Caulerpa; washings from Posidonia roots; rocky bottom.

Stations: (pre 1958) (Koehler (1907) from South Channel (= 155?)++ on rocky bottom). (Post 1960) 8++, 10+, 159+.

repositus ?

WAM 238-71

now ID as A.(U) repositus

238-71

302

AMPHIURA (OPHIOPELTIS) PARVISCUTATA A.M. Clark, 196  
Port Phillip Survey 1957-1963, Echinodermata,  
Mem. nat. Mus. Victoria 27: 337, figs 8a-b.

Type loc.: Port Phillip, Victoria  
Range: Southern Australia (Port Philip, Albany, Cockburn  
Sound).  
Habitat/Depth: mud; 18m.  
Stations: (Post 1960) 134++.

Family: OPHIACTIDAE Matsumoto 1915  
Genus: OPHIACTIS Lutken, 1856

OPHIACTIS ACOSMETA H.L. Clark, 1938  
Echinoderms from Australia, Mem. Mus. comp. Zool.  
Harv. 55: 262.

Type loc.: Dongara, W. Australia  
Range: Australia (Port Curtis, Queensland, and W. Australia  
from Broome to Cockburn Sound) and Lord Howe Island.  
Habitat/Depth: washings from Caulerpa algae with or without dead  
Pinna shells; 0 - 10.5m.  
Stations: (Post 1960) 8++, 9+, 38/39+.

OPHIACTIS SAVIGNYI (Müller and Troschel, 1842)  
Ophiolepis. System der Asteriden: 95.

Type loc.: Red Sea  
Rec. ref.: A.M. Clark and F.W.E. Rowe, 1971 : 103, fig. 31b,  
pl. 14, fig. 4.  
Range: Wide-ranging pan temperate, pan tropical; Australia  
except Victoria, S. Australia and Tasmania.  
Rottne I.  
Habitat/Depth: washings from Caulerpa algae and Posidonia  
seagrass; 1-2m.  
Stations: (Post 1960) 9+, 10+.

Family: OPHIOTRICHIDAE Ljungman, 1866  
Genus: MACROPHIOTHRIX H.L. Clark, 1938

MACROPHIOTHRIX MICHAELSENI (Koehler, 1907)  
Ophiothrix. Fauna Sudwest-Australiens 1 : 250, figs.  
7-10.

Type loc.: Shark Bay, W. Australia  
Range: Shark Bay to King George Sound (Albany).  
Habitat/Depth: dead coral reef, Posidonia and large dead coral  
outcrop; under stones, in "coral" rock; 1.5-20m.  
Stations: (1958-1960) 112+, 175++; (post 1960) 36++, 47+,  
136/137+.

Genus: OPHIOTHRIX Muller and Troschel 1840

OPHIOTHRIX (OPHIOTHRIX) CAESPITOSA Lyman 1879  
"Challenger" Ophiuridae and Astrophytidae. Pt. 2,  
Bull. Mus. Comp. Zool. Harv. 6 : 53.

Type loc.: Port Jackson, N.S.W.

Rec. ref.: Koehler, 1930 : 136, pl. 8, figs. 11-12.  
Range: Southern Queensland, southern Australia (St Vincent and Spencer Gulfs) to Shark Bay, W. Australia.  
Habitat/Depth: rocky bottom, Posidonia and coral rock; 5 - 8m.  
Stations: (pre 1958) South Channel (Koehler, 1907); (Post 1960) 36+, 51+.

OPHIOTHRIX (PLACOPHIOTHRIX) SPONGICOLA Stimpson, 1855

Descriptions of some new marine invertebrates:  
Echinodermata, Proc. Acad. Nat. Sci. Philadelphia 7 :  
385 - 387.

Type loc.: Port Jackson  
Rec. ref.: Koehler 1904 : 97, figs. 64-68.  
Range: Southern Australia - N.S.W. to the Abrolhos  
Habitat/Depth: under stones, with or in sponges, sand in Posidonia, jetty piles; 1 - 22m.  
Stations: (pre 1958) 176+; (1958-1960) 19+, 29++, 42+, 43+, 45+, 67+, 71+, 77+, 92+, 95+, 136+, 146+, 176++, (post 1960) 9++, 19/30/42/55++, 30++, 36+, 51+++, 57/58+, 72++, 77++, 134++, 136/137++ and +++ from "N. end of Cockburn Sound".

Suborder: CHILOPHIURINA Matsumoto 1915  
Family: OPHIONEREIDIDAE Ljungman, 1867

Genus: OPHIONEREIS Lütken, 1859

OPHIONEREIS SCHAYERI Müller and Troschel, 1844  
Beschreibung neuer Asteriden, Arch. f. Naturgesch.,  
10 (1) : 178-185.

Type loc.: Australia, Port Jackson?  
Rec. ref.: H.L. Clark 1915 : 289, pl. 13, figs 1-2.  
Range: Southern Australia from N.S. Wales south and west to the Abrolhos.  
Habitat/Depth: under rocks with sand, in dead coral; among mussels, Posidonia beds; 0-5m.  
Stations: (1958-1960) 36++, 127/128++, 169++, 176++, (post 1960) 9++, 10++, 36+++, 137+, 154++, 169++. post 1960 112+

OPHIONEREIS SEMONI (Döderlein, 1896)

Ophiotriton. Semon's Oph., in Jena Denkschr. 8 :  
288, pl. XV, figs. 8, 8a.

Type loc.: Thursday Island (Torres Strait)  
Range: East Indies, Northern Australia. Philippines, Pacific S.W. Australia from Two People Bay north to Broome.  
Habitat/Depth: no details (H.L. Clark, 1938)  
Station: (pre 1958) "Point Peron" (H.L. Clark, 1938).  
363-89 Woodman Pt. coll. 18.1.88.

Family: OPHIOCOMIDAE Ljungman, 1867  
Subfamily: OPHIOCOMINAE Matsumoto 1915

Genus: CLARKCOMA Devaney, 1970

CLARKCOMA CANALICULATA (Lütken, 1869)

Ophiocoma. Additamenta ad historiam Ophiuridarum.  
Pt. 3, 17: 46, 99.

Type loc.: Bass Strait

Rec. ref.: Devaney 1970: 1, figs 1-2, 8-10 and 15.  
Range: Southern Australia, N.S. Wales south to Tasmania and west to Shark Bay, W. Australia.  
Habitat/Depth: under rocks, coral rock; 0.5-20m.  
Stations: (pre 1958) Point Peron (H.L. Clark 1938); (1958-1960) 41+, 47+, 36+; (post 1960) 10+++ , 29+, 36++, 47++, "Southern Flats"++.

Genus: OPHIOCOMA Agassiz, 1837

OPHIOCOMA OCCIDENTALIS H.L.Clark, 1938  
 Echinoderms from Australia. Mem. Mus. Comp. Zool. Harv. 55 : 334, pl. 25, fig. 1.

Type loc.: Western Australia, Point Peron.  
Range: Western Australia Cape Naturaliste to Shark Bay.  
Habitat/Depth: under rocks; sand with Posidonia and Pinna, Posidonia and coral rock, sabellariid worm rock; 0-4m.  
Stations: (Pre 1960) 170+++; (post 1960) 9++, 10+, 36+, 154+, 169+, 170++.

Genus: OPHIOCOMELLA A.H. Clark, 1939

OPHIOCOMELLA SEXRADIA (Duncan, 1887)  
 On the Ophiurids of the Mergui Archipelago.  
Jour. Linn. Soc.(Zool.) 21 : 85-106.

Type loc.: Mergui Archipelago, Burma  
Syn. O. parva: H.L. Clark 1915 : 292, pl. 14, figs 3, 9.  
Range: Wide spread Indo West Pacific tropics, Cockburn Sound, Rottneest I. and northwestern Australia to Queensland.  
Habitat/Depth: no details (usually coral debris)  
Stations: (Post 1960) Central Basin +++.

Family: OPHIODERMATIDAE Ljungman, 1867  
Genus: OPHIARACHNELLA Ljungman, 1872

OPHIARACHNELLA RAMSAYI (Bell, 1888)  
Pectinura. Descriptions of four new species of ophiurids. Proc. Zool. Soc. London : 281; pl. 16, figs. 1, 2.

Type loc.: Port Jackson, N.S.W.  
Rec. ref.: H.L. Clark, 1938 : 347 - 349, pl. 14, fig. 1.  
Range: Southern Australia, N.S. Wales to vicinity of Perth.  
Habitat/Depth: under rocks, dead coral reef; 1-5m.  
Stations: (1958-1960) 112+; (post 1960) 36++. *post 1960 112 +*

Genus: OPHIOPEZA Peters, 1851

OPHIOPEZA ASSIMILIS Bell, 1888  
 Descriptions of four new species of ophiurids. Proc. Zool. Soc. London : 282; pl. 16, fig. 5.

Type loc.: Port Jackson, N.S. Wales  
Range: Southern Australia, N.S.W. to Dongara, W. Australia.

Habitat/Depth: under rocks, sea grass with coral rock; 4-8m.  
Stations: (1958-1960) 19+, 34+; (post 1960) 2/23++, 36+,  
"Southern Flats"+.

Genus: OPHIURODON Matsumoto, 1915

OPHIURODON OPACUM H.L. Clark, 1928

The sea-lilies, sea-stars, brittle stars and sea  
urchins of the South Australian Museum. Rec. S. Aust.  
Mus. 3 : 440-442, figs. 132a, b.

Type loc.: St. Vincent Gulf, S. Australia.  
Range: S. Australia to Cockburn Sound.  
Habitat/Depth: muddy sand, under stones; 1-20m.  
Stations: (1958-1960) 22++; (post 1960) 10+.

Family: OPHIURIDAE Lyman, 1865  
Subfamily: OPHIURINAE Lyman, 1865

Genus: OPHIURA

OPHIURA (OPHIURA) KINBERGI (Ljungman, 1867)

Om nagra nya arter af Ophiurider. Ofvers. K. Vetensk-Akad.  
Forh 1866 : 166.





Type loc.: 'Sidney, New Holland'.  
Rec. ref.: A.M. Clark and F.W.E. Rowe, 1971 : 128, figs 46a,b;  
pl. 22, figs 5-6.  
Range: Widely distributed tropical Indo-West Pacific, also  
temperate Australia, N.S. Wales, Victoria to  
Cockburn Sound, Rottneest, Abrolhos and N.W. Australia.  
Habitat/Depth: grey mud to muddy sand, fine silty sand and  
Posidonia; 9-20m.  
Stations: (Post 1960) 15+++ , 19/30/43/55++ , 27/46++ , 30+ , 42++ ,  
77/96++ , 97/100++ , 115++ , 121+++ , 122/133/134/140+++ ,  
125/131+++ , 142/149++ , 160++.

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17 : 54-119, 98 figs.
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 241-254.
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 les mers d'Australie et dans l'Archipel Malais. Vidensk. Meddr.  
dansk naturh. Foren. 89 : 1-295, 22 pls.

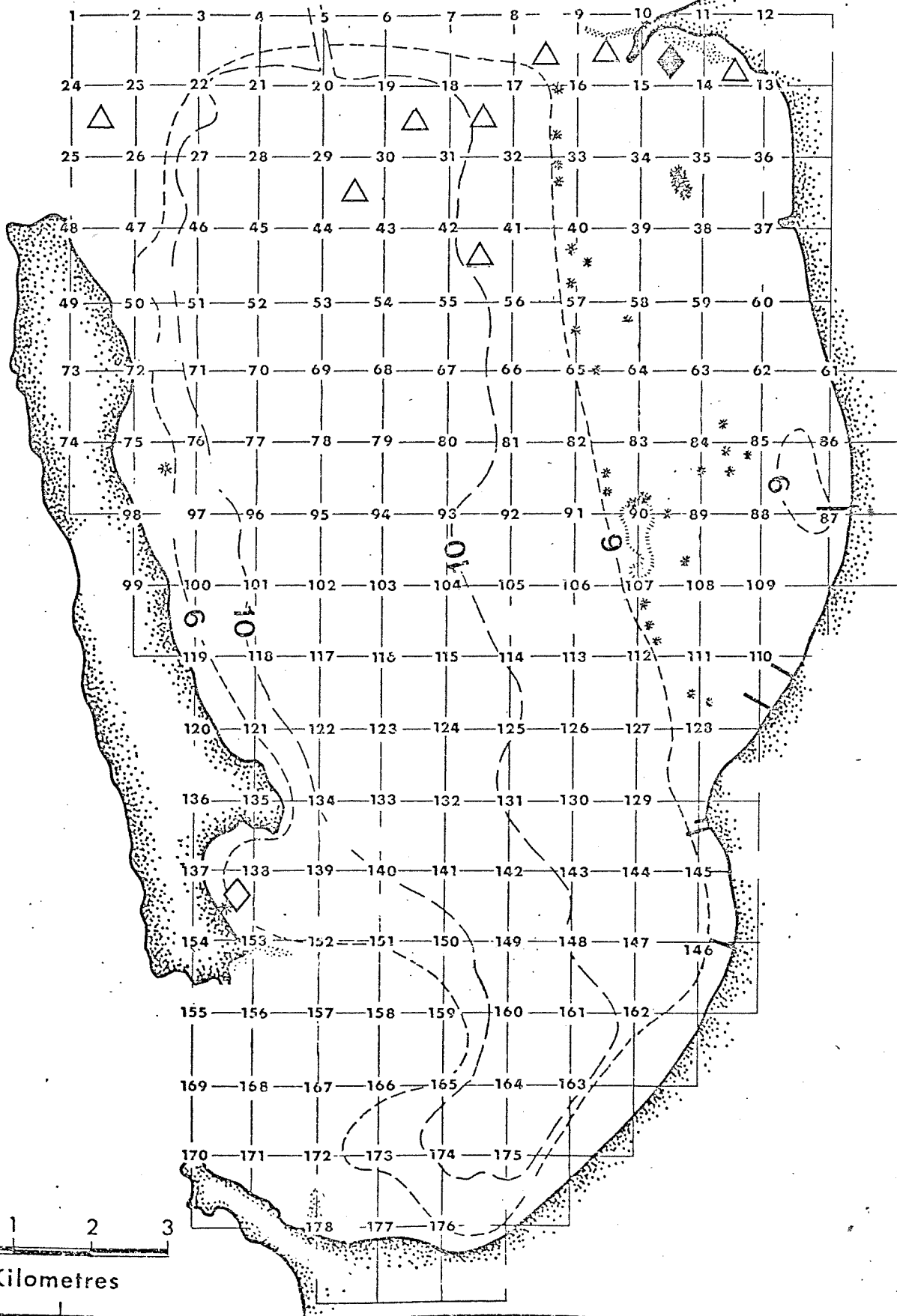
FIGURES SHOWING STATION RECORDS OF SELECTED SPECIES COMMON IN COCKBURN SOUND DURING THE W.A. NATURALISTS CLUB 1956-60 SURVEY AND SUBSEQUENT COLLECTIONS.

Key:

	1956-60	common to abundant
	1956-60	single record
	Post 1960	common to abundant
	Post 1960	single record.



32° 08'



32° 17'

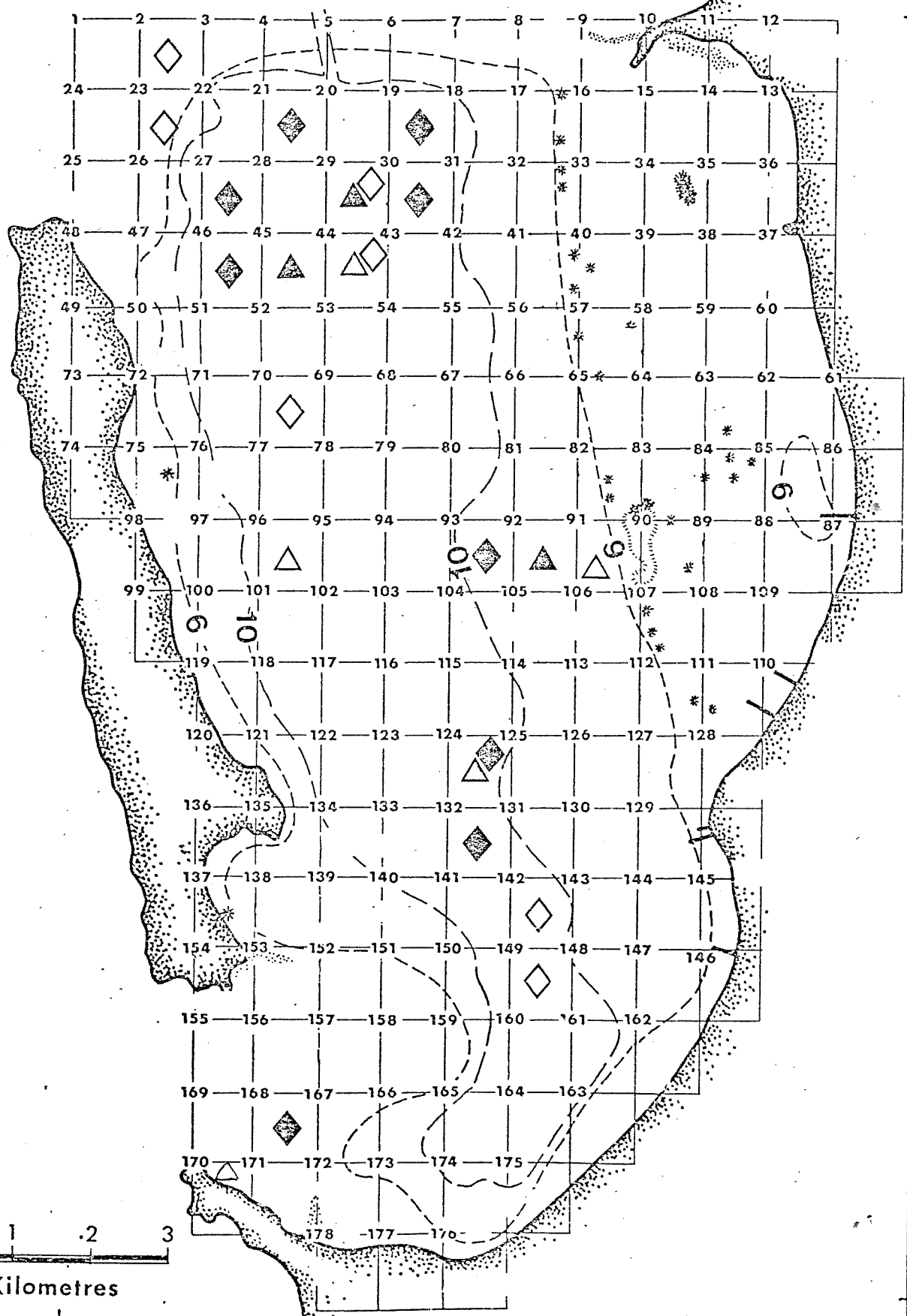
115° 40'

OPHIOMYXA AUSTRALIS





32° 08'



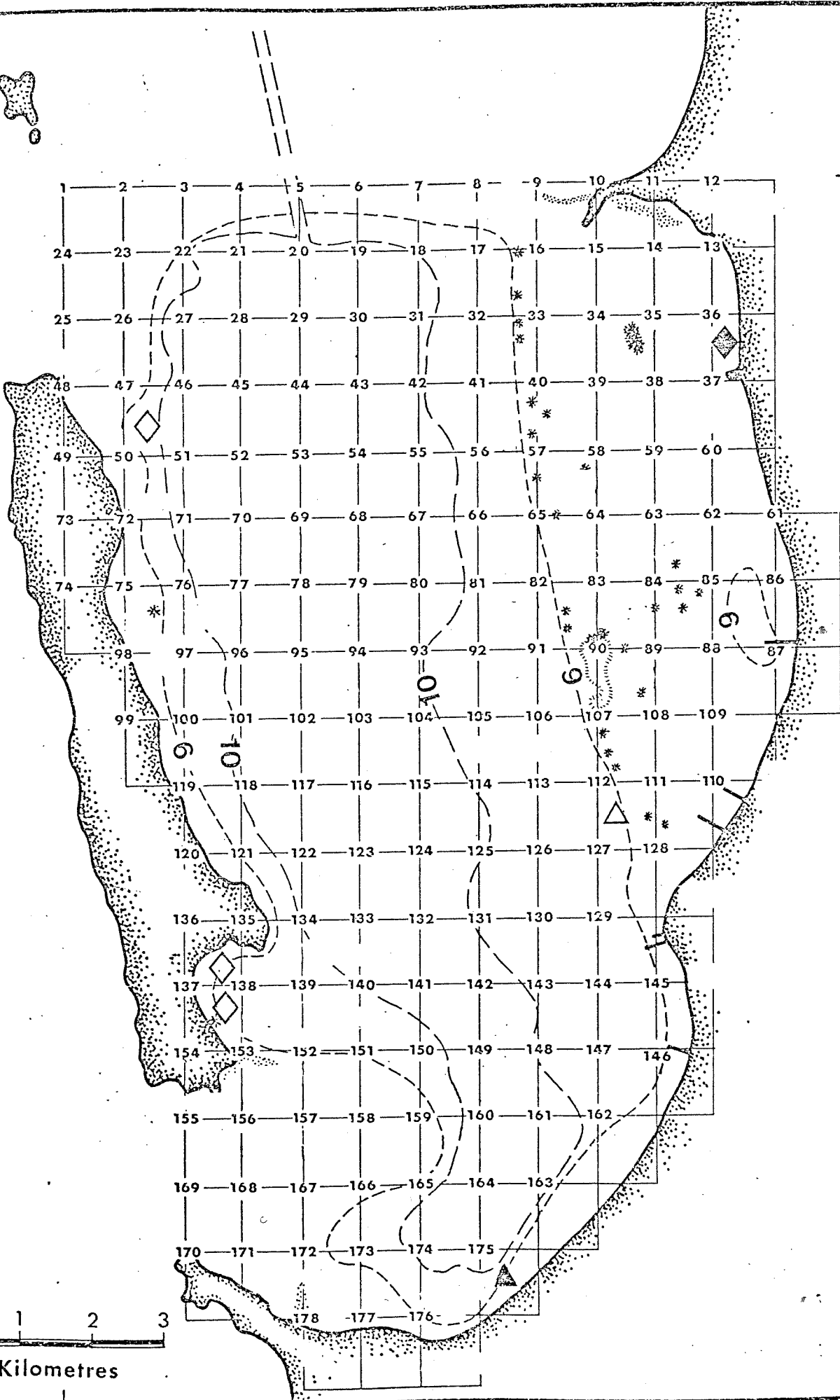
Kilometres

32° 17'

115° 40'

AMPHIOPLUS (LYMANELLA) DEPRESSUS

32° 08'

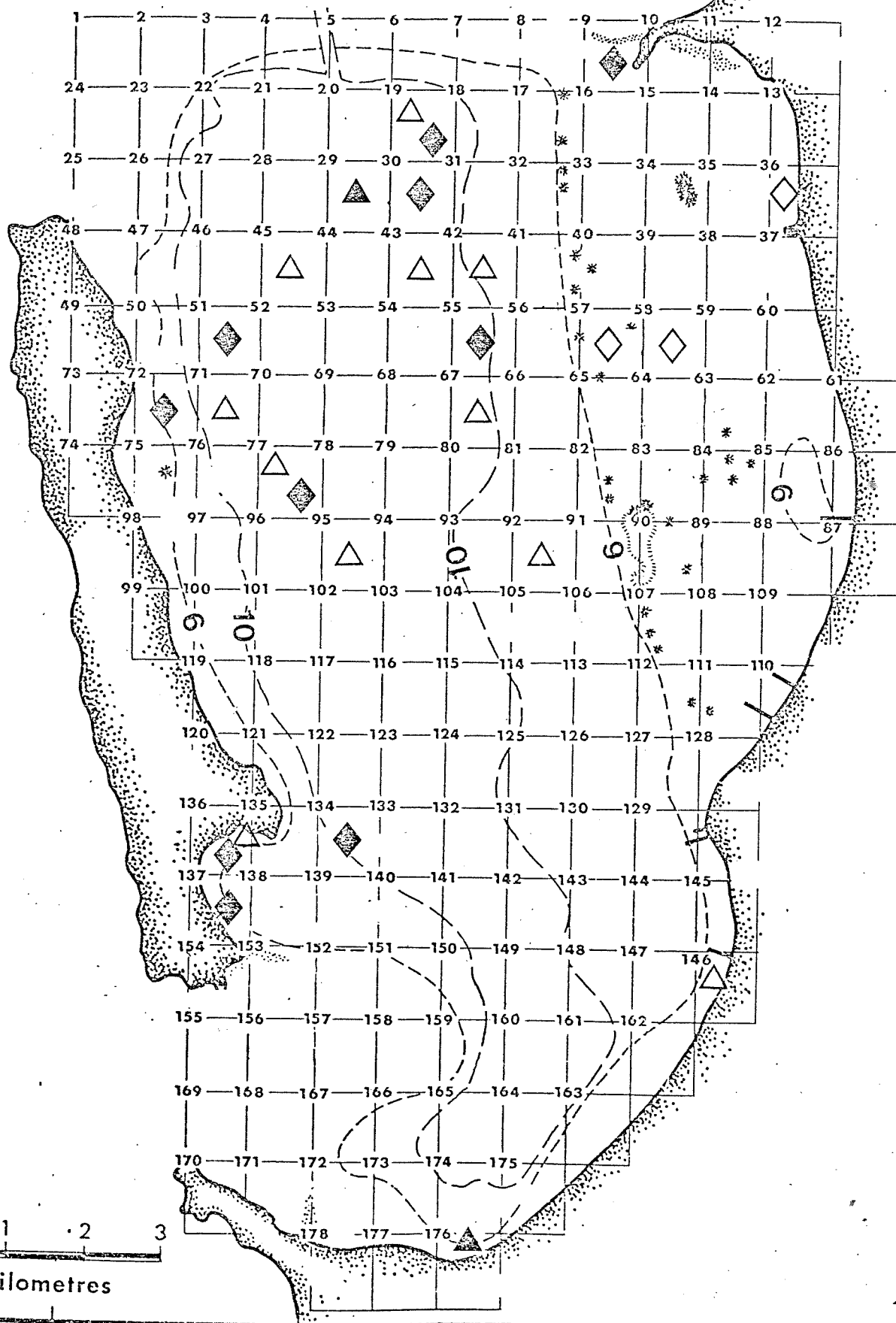


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0 1 2 3  
Kilometres

115° 40'

MACROPHIOTHRIX MICHAELSONI



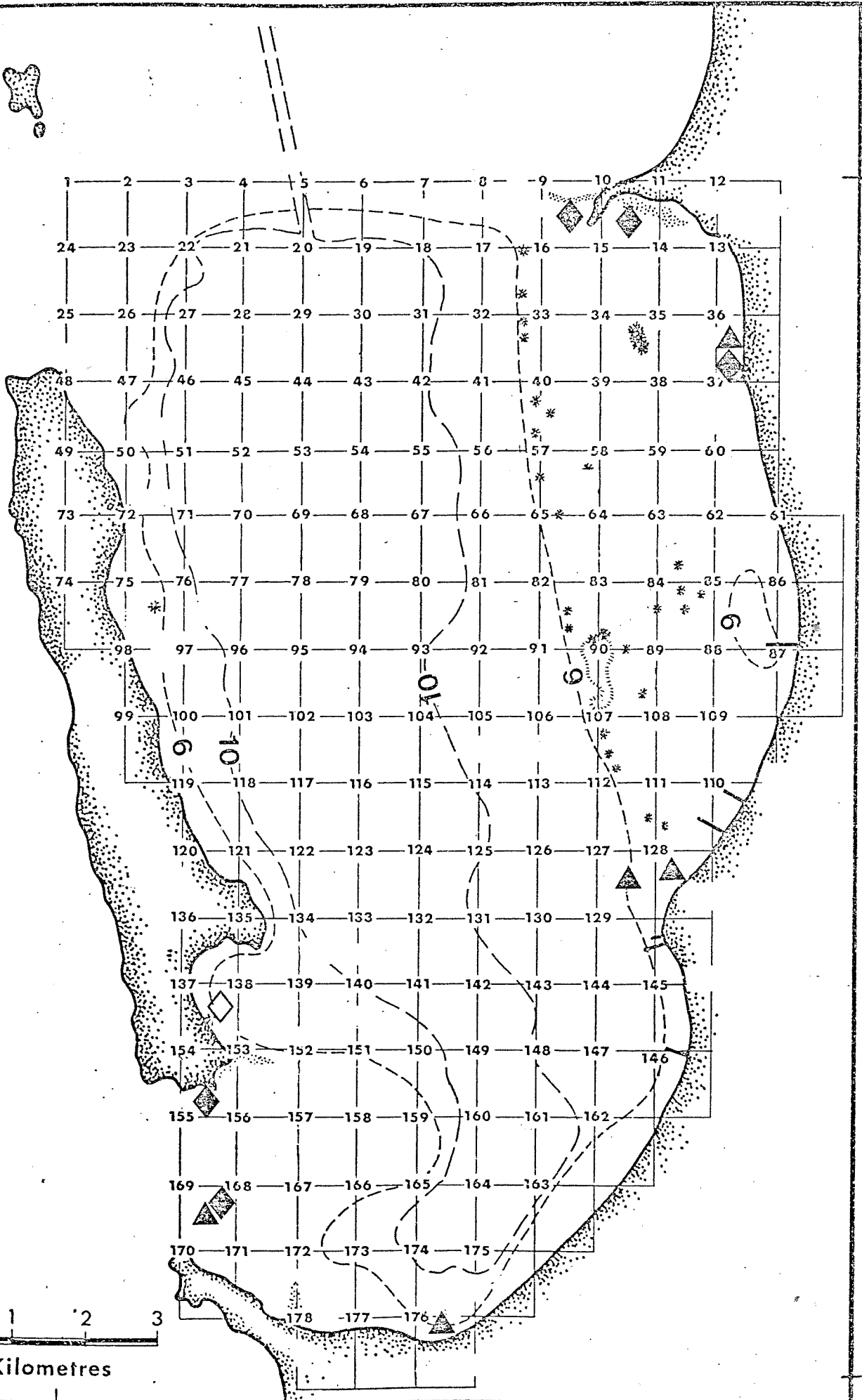
32° 08'

Kilometres

115° 40'

OPHIOTRICH (PLACOPHIOTRICH) SPONGICOLA

32° 17'



32° 08'

32° 17'



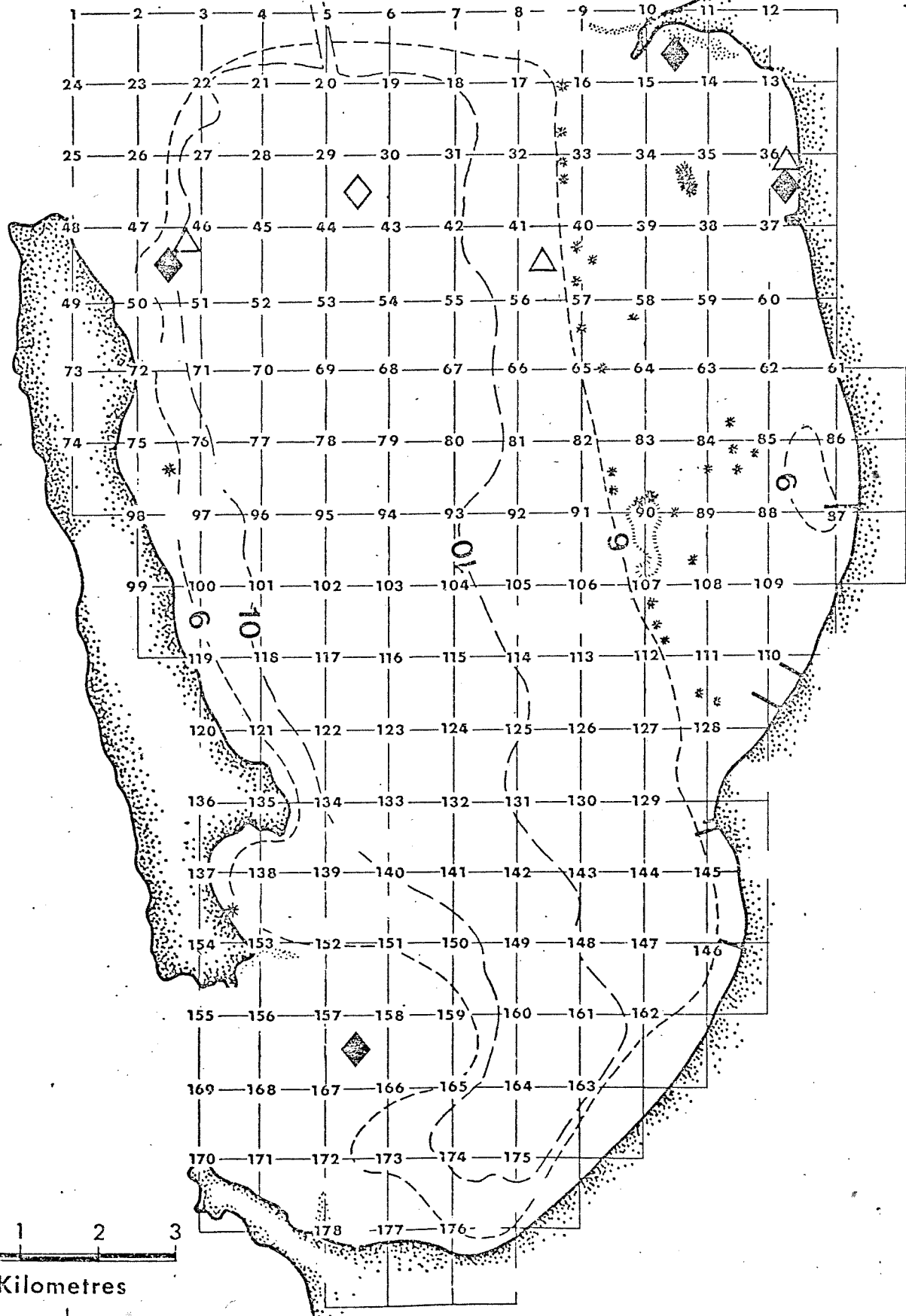
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115° 40'

OPHIONEIS SCHAYERI



32° 08'



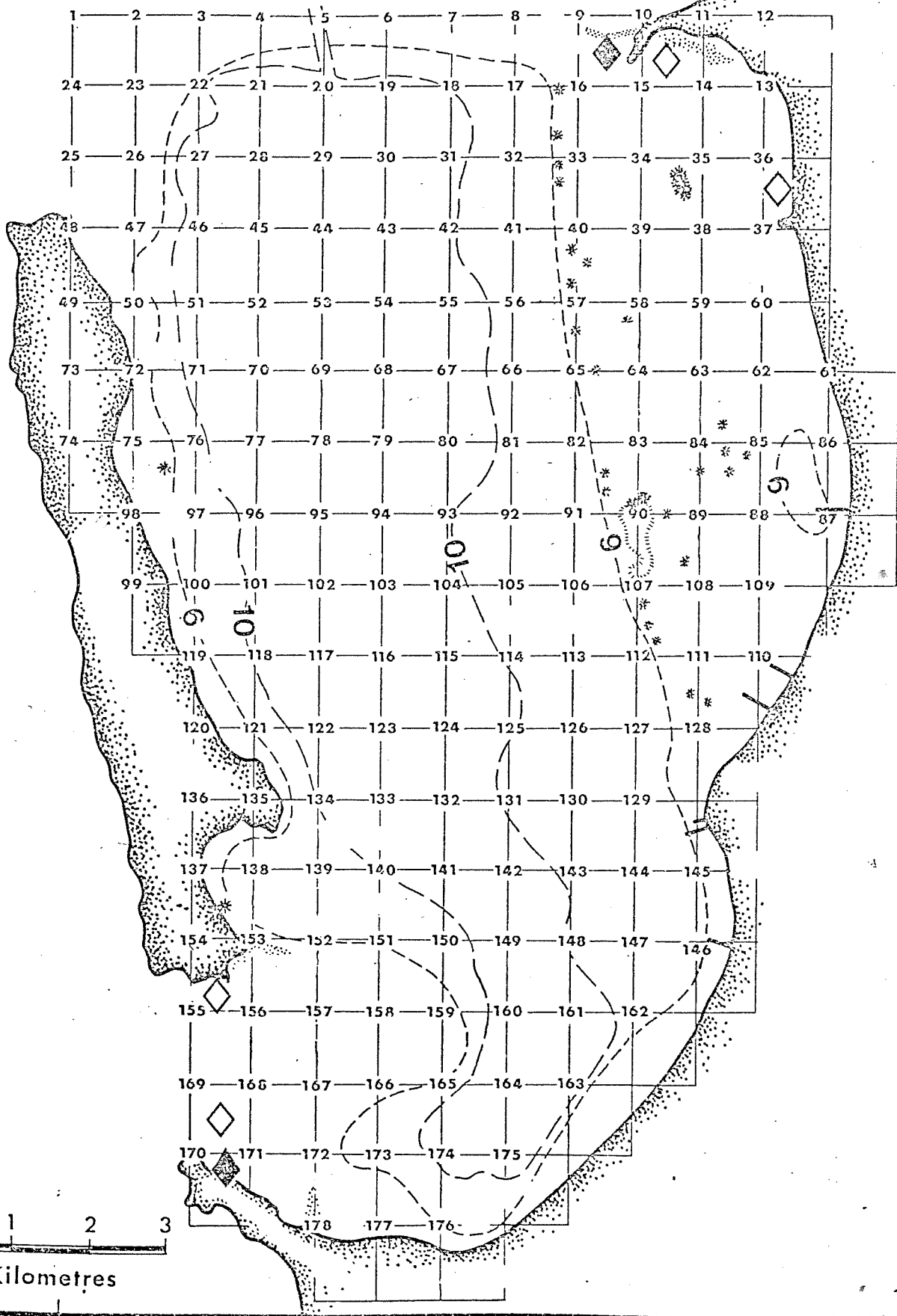
Kilometres

32° 17'

115° 40'

CLARKCOMA CANALICULATA

32° 08'

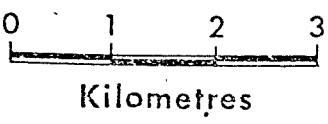
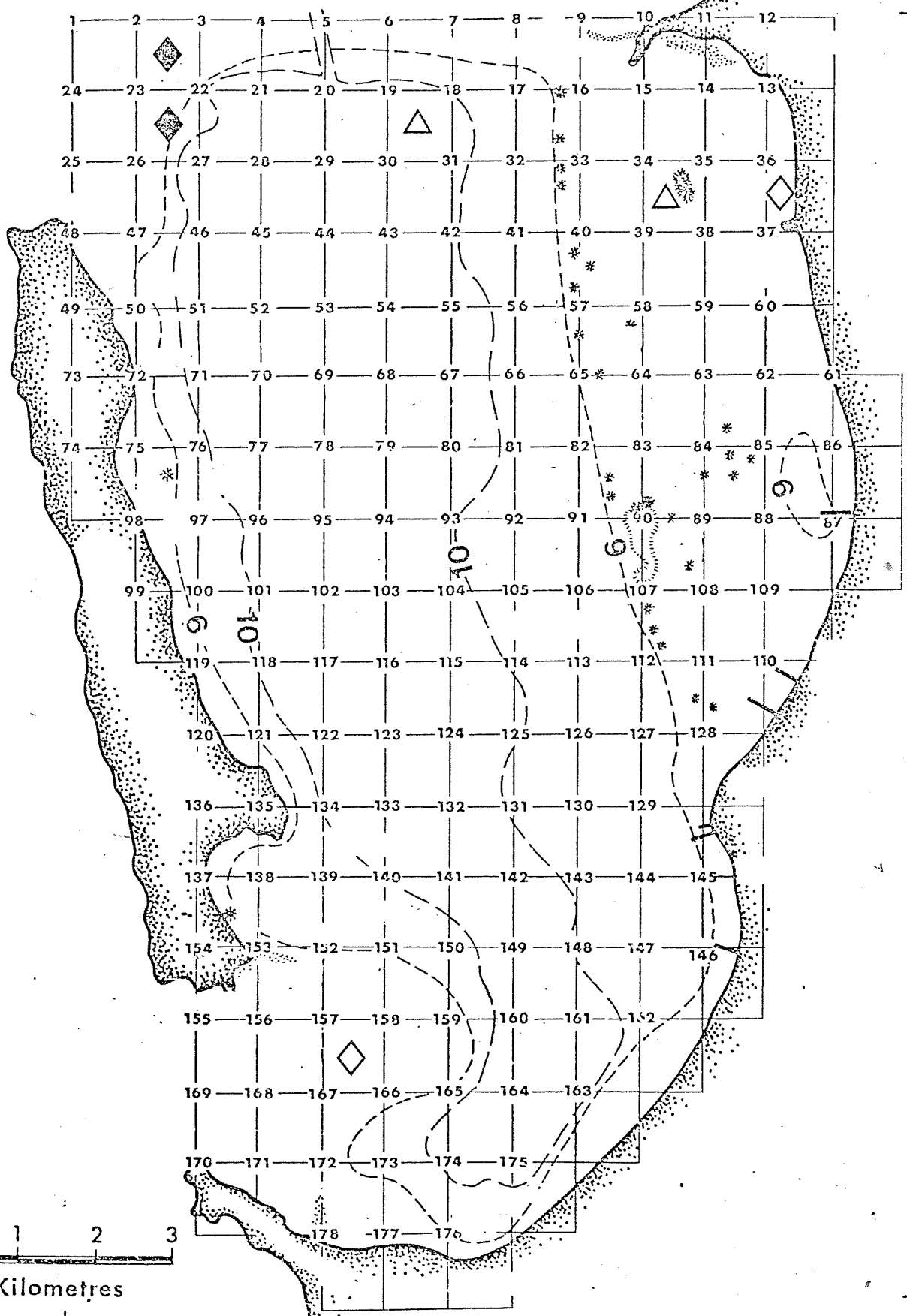


32° 17'

115° 40'

OPHIOCOMA OCCIDENTALIS

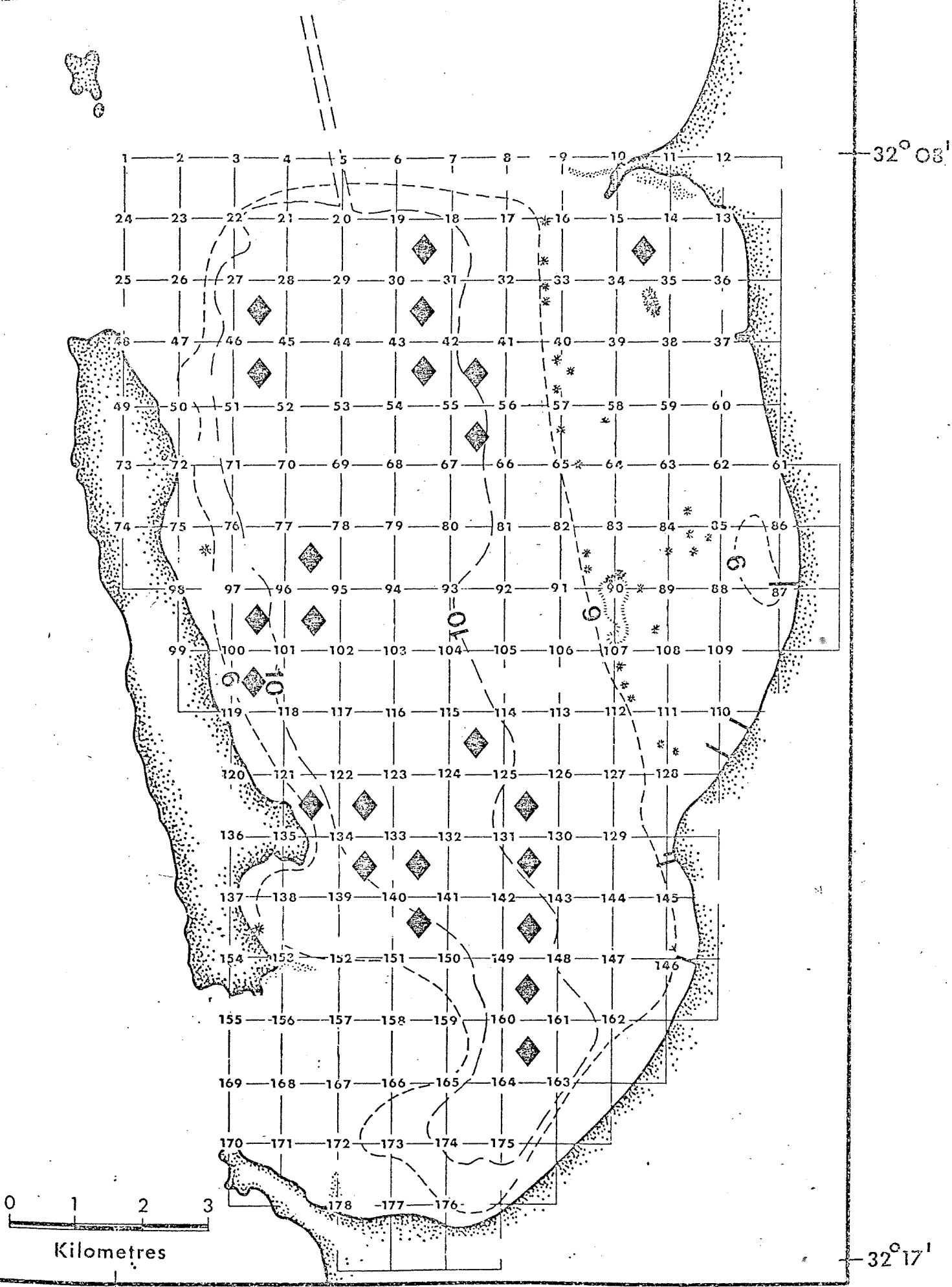
32° 08'



32° 17'

115° 40'

OPHIOPEZA ASSIMILIS



OPHURA (OPHIURA) KINBERGI



THE BENTHIC FAUNA OF COCKBURN SOUND, WESTERN AUSTRALIA  
PART 4. ECHINODERMATA (Crinoidea, Asteroidea, Echinoidea  
and Holothuroidea)

L.M. Marsh.

Introduction

A unique combination of geographical position, diverse habitats and substrate types has given Cockburn Sound a rich echinoderm fauna including three species of crinoids, twenty six species of asteroids and twelve species each of echinoids and holothurians; a total of 53 species in the four groups. There are also twenty two species of ophiuroids which are dealt with separately (Devaney, this report).

The material included here has been identified by A.M. Clark (B.M.N.H.), crinoids, D.L. Pawson (U.S.N.M.), holothurians, asteroids and echinoids by the author. The crinoid and holothurian lists are preliminary in nature but those of the asteroids and echinoids are believed to be a complete list of species recorded from Cockburn Sound.

The Hamburg Expedition of 1905 worked several stations in Cockburn Sound from two of which (Port Royal, Garden Island and South Channel) echinoderms were collected. Holothurians (Erwe, 1913) and echinoids (Döderlein, 1914) were reported but no asteroids or crinoids were included in the expedition reports. Echinoderms were also recorded from Cockburn Sound by H.L. Clark (1938 and 1946). A.M. Clark (1953) discussed the asteroid genus Tosia from the Sound and Shepherd (1967) discussed specimens from Cockburn Sound in a revision of the asteroid genus Uniophora. Two species (Luidia australiae and Uniophora dyscrita) have their type locality within Cockburn Sound.

Zoogeography

The Cockburn Sound echinoderms have a predominantly temperate or southern Australian distribution with twenty of the 53 species (other than Ophiuroidea) known from the whole of southern Australia and a further 18 species endemic to southwestern Australia, some with restricted west coast distributions, others range from Shark Bay or the Abrolhos to South Australia. Thus 38 species (72%) of the four groups of echinoderms can be regarded as having a warm temperate Australian distribution, while 14 species (26%) have an extra Australian tropical distribution in the east Indian or Indo-west Pacific region. One species Echinocardium cordatum has a cosmopolitan distribution in temperate waters.

Two species which occur in Cockburn Sound are widely distributed in sheltered bays in Western Australia but are not known to occur beyond the State. These are Echinaster varicolor found from Broome to Esperance and Anthenea australiae from Broome to the Fremantle area.

The common Western Australian species of Archaster (A. laevis H.L. Clark, 1938) was thought to have a similar distribution but recent work by Sukarno and Jangoux (1977) has shown that it cannot be distinguished from the more widespread A. angulatus.

Euretaster insignis, a tropical Indo-Pacific species, is found in Cockburn Sound but occurs on the outer continental shelf as far south as Cape Naturaliste.

Stellaster inspinus has been regarded as an endemic west coast species but it may prove to be indistinguishable from the tropical species S. equestris.

Most of the southern Australian species recorded from Cockburn Sound are characteristic of open coast biotopes of rock, sand or seagrass meadows and are not common in Cockburn Sound. Exceptions are Luidia australiae, Tosia australis (long considered to be a distinct species, T. nobilis), Patiriella brevispina and Allostichaster polyplax, which are more common within Cockburn Sound than on the open coasts. Among the endemic southwestern Australian species Temnopleurus michaelsoni, Astropecten preissi, Goniodiscaster seriatus and Uniophora dyscrita are more common in Cockburn Sound than on the open coast.

A few open coast species rarely enter Cockburn Sound and are only found in the peripheral areas, examples are Nectria wilsoni, Austrofromia polypora, Nepanthia troungtoni, Echinaster arcystatus, E. glomeratus and Plectaster decanus among the asteroids and Amblypneustes leucoglobus, A. pallidus, Clypeaster telurus, Ammototrophus arachnoides, and Protenaster australis among the echinoids.

Characteristic echinoderm assemblages of the main biotopes in Cockburn Sound.

(a) Hard substrates: These include rocky bottom, dead coral outcrops, living coral, jetty piles, living and dead Pinna shells, sponges and rubble bottom often occurring in the seagrass meadows.

Epifaunal species were:

Crinoidea

Comatula pectinata

Asteroidea

Anthenea australiae

Tosia australis

Parasterina crassa

Patiriella brevispina

Echinaster varicolor

Euretaster insignis

Coscinasterias calamaria

Uniophora dyscrita

Echinoidea

Heliocidaris erythrogramma

Holothuroidea

Pentacta anceps

Stichopus mollis

Species found under rocks:

Crinoidea

Comanthus trichoptera

Asteroidea

Patiriella brevispina

Patiriella gunni

Allostichaster polyplax

Coscinasterias calamaria

Echinoidea

Heliocidaris erythrogramma

(b) The peripheral sills, spits and banks were edged with intertidal sand flats or sloping sandy shores and covered by sea-grass meadows with occasional sandy patches. Species characteristic of shallow sand and muddy sand areas were:

Astroidea

Luidia australiae  
Archaster angulatus  
Goniodiscaster seriatus

Echinoidea

Peronella lesueuri

Holothuroidea

Thyone cf. T. okeni

Those of the sea grass meadows were:

Astroidea

Anthenea australiae  
Goniodiscaster seriatus  
Patiriella brevispina

Echinoidea

Nudechinus scotiopremnus  
Temnopleurus michaelsoni

Holothuroidea

Thyone nigra  
Thyone sp.  
Cucumella mutans  
Stichopus mollis

Temnopleurus michaelsoni was infrequently found amongst sea grass during the 1956-60 survey but M. Cambridge (pers. comm.) reported high densities of this species on Posidonia meadows near Kwinana in the early nineteen seventies.

(c) The central basin was characterised by species favouring a soft mud substrate although several species characteristic of sand substrate were found on the slopes and near the northern end of the central basin.

Astroidea

Luidia australiae  
Astropecten preissi  
Stellaster inspinosus

Echinoids

Temnopleurus michaelsoni  
Peronella lesueuri  
Echinocardium cordatum

Holothuroidea

Pentacta quadrangularis

Two echinoid species, Temnopleurus michaelsoni and Echinocardium cordatum were extremely abundant in the soft mud substrate.

Recent work:

Dredge sampling between 1970 and 1976 has shown little change in the abundance and distribution of species in the central basin compared with the 1956-60 records. However two species (Astropecten preissi and Pentacta quadrangularis) characteristic of a muddy substrate are now found on areas of the northeastern shelf where they did not occur previously. The bottom in this area is denuded of the former sea-grass meadows and now has a muddy substrate.

Sampling of rocky areas in the vicinity of Jervoise groyne and Woodman's Point in the mid nineteen seventies indicates that the echinoderm fauna has not changed from the earlier surveys. However the sea-grass meadows, except those close to Woodman's Point have not been recently sampled.

Wells (1978) taking random samples in Cockburn Sound by Van Veen grab obtained only seven of the seventy five species of echinoderm previously recorded from Cockburn Sound. This technique thus gives a very incomplete qualitative picture of the fauna of the Sound if it is assumed that the fauna has not changed greatly since 1976.

The habitat and depth records given for each species refer only to Cockburn Sound data.

PHYLUM : ECHINODERMATA

Class : CRINOIDEA

Order : ARTICULATA

Family COMASTERIDAE A.H. Clark,

Genus COMANTHUS A.H. Clark, 1908.

COMANTHUS PARVICIRRUS (J. Müller, 1841)

Alecto. Ueber die Gattungen und Arten der Comatulen.  
Arch. Naturgesch. 7 (1) : 139-148. Type loc.: unknown.  
Rec. ref.: Clark, A.H., 1931 : 631; figs 184, 209-218,  
221. Range: Tropical Indo-Pacific from Madagascar  
to Tonga north to Japan and south to Moreton Bay on the  
east coast of Australia and Cockburn Sound on the west  
coast.

Under and amongst rocks; 1-5 m.  
Stations : (1964) 36+; (1970) 112+.

COMANTHUS TRICHOPTERA (J. Müller, 1846)

Comatula. Nachtrag zu der Abhandlung über die comatulen.  
Monatsber. K. preuss. Akad. Wissensch, Berlin : 178.  
Type loc.: King George Sound, W.A. Rec. ref.: Clark, A.H.,  
1931: 531, 579, figs. 4, 203. Range: Southern Australia  
from Dongara on the west coast to northern New South  
Wales and Lord Howe Island.

Under and amongst rocks; 0-5 m.  
Stations: (1956-60) 61+; (1964) 36+; (1966) southern  
flats.

Genus COMATULA Lamarck, 1816

COMATULA PECTINATA (Linnaeus, 1758)

Asterias. Systema Naturae, ed. 10, 1 : 663. Type loc.:  
Indian Seas. Rec. ref.: Clark, A.H. 1931: 339; figs.  
49, 100-109, 111, 114. Range: Eastern Indian Ocean to  
Japan; northern Australia from Port Curtis, Queensland  
to Cockburn Sound, W.A.

Rocks and algale : 0-15 m.  
Stations: (1956-60) 61+, 86+, 146+; (1964) 36+;  
(1966) southern flats st.c.

Crinoids indet.

Black and white crinoid.

With Pinna, sand and seagrass; 0-9 m.  
Stations: (1956-60) 61+, 84+, 111+, 146+; (1973) 38/39+,  
63+, 89+.

Class : STELLEROIDEA  
Subclass : ASTEROIDEA  
Order : PLATYASTERIDA Spencer, 1951  
Family : LUIDIIDAE Verrill, 1899  
Genus : LUIDIA Forbes, 1839

LUIDIA AUSTRALIAE Döderlein, 1920

Die Gattung Luidia und ihre Stammesgeschichte. "Siboga" rept., 88 (46b): 266. Type loc.: Port Royal (Careening Cove, Cöckburn Sound). Rec. ref.: Dakin, W.J., 1952 : 321-322, pl. 82. Range: Southern Australia from the vicinity of Fremantle to southern Queensland.

Sand or mud; 0-20 m.

Stations: (pre 1958) Döderlein (1920), Port Royal; (1956-60) 6+, 10+, 19+, 30+, 36+, 43+, 44+, 69+, 71+, 112+, 137+, 140+, 148+, 149+, 157+, 176+; (1961-66) 10+, 137+, 139+, 151+, 153+, 156+, 158+, 159+, 167+; (1970-76) 6+, 2/23+, 10+, 19/30/43+, 38/39+, 63+, 89+, 112+, 134+.

Order : PAXILLOSIDA Perrier, 1884  
Suborder : DIPLOZONINA Spencer & Wright, 1966  
Family : ASTROPECTINIDAE Gray, 1840  
Genus : ASTROPECTEN Gray, 1840

ASTROPECTEN PREISSI Müller and Troschel, 1843

Neue Beiträge zur Kenntniss der Asteriden. Arch. f. Naturgesch., 9 (1) : 119. Type loc.: Southwestern Australia. Rec. ref.: Döderlein, 1917 : 161, pl. 5, figs 4-6. Range: Southwestern Australia from Shark Bay to St. Vincent Gulf, South Australia.

Sand or mud; 0-20 m.

Stations: (1956-60) 4+, 6+, 19+, 22+, 24+, 28+, 30+, 42+, 43+, 44+, 45+, 47+, 52+, 55+, 69+, 71+, 91+, 92+, 93+, 95+, 96+, 114++, 115++, 116++, 117+, 118+, 119+, 125+, 126+, 129++, 131+, 132+, 135+, 138+, 139++, 140+, 142+, 143++, 144++; (1961-66) 137+; (1970-76) 2/23+, 19/30/43+, 27+, 38+, 39+, 41+, 54+, 68+, 77+, 79++, 89+, 93+, 94+, 96+, 97+, 100+, 101+, 116+, 129+, 133+, 134++, 142+.

ASTROPECTEN TRISERIATUS Müller and Troschel, 1843

Neue Beiträge zur Kenntniss der Asteriden. Arch. f. Naturgesch., 9 (1) : 118. Type loc.: Southwestern Australia. Rec. ref.: Döderlein, 1917 : 125-127, pl. 5, figs 2-3, pl. 11, figs 5, 6-6a. Range: Coast of Western Australia and the Central Pacific (Fiji and Easter I.)

Sand and mud; 0-15 m.

Stations: (1956-60) 36+, 137+, 138+; (1961-66) 36+, 137+; (1970-76) 2/23+.

Order : VALVATIDA Perrier, 1884  
Suborder : GRANULOSINA Perrier, 1894  
Family : ARCHASTERIDAE Viguiet, 1878  
Genus : ARCHASTER Müller & Troschel, 1840

ARCHASTER ANGULATUS Müller and Troschel, 1842

System der Asteriden : 66.  
Type loc.: uncertain. Syn.: A. laevis, H.L. Clark, 1938 : 75, pl. 17, fig. 2. Rec. ref.: Jangoux, 1977 : 830-834, fig. 2B, 3B, pl. 5, fig. 5, pl. 6, figs 1-6.  
Range: Indian Ocean from East Africa to the Philippines; Western Australia from the Kimberley coast to Doubtful Islands bay on the south coast.

Sand; 0-10 m.

Stations: (pre 1956) 10+, 137+; (1956-60) 11+, 24+, 36+, 37+, 84+, 146+, 176+; (1961-66) 10+, 36+, 153+, 168+; (1970-76) 2/23+, 38/39++, 63+, 89+.

Family : GONIASTERIDAE Forbes, 1841

Genus : NECTRIA Gray, 1840

NECTRIA WILSONI Shepherd and Hodgkin, 1965

A new species of Nectria (Asteroidea, Goniasteridae) from Western Australia. Jour. Roy. Soc. W.A. 48 (4): 119-121, fig 1a - g. Type loc.: Sorrento beach near Perth W.A. Range: Southwestern Australia, from Beagle I. (29°50'S) to Cheyne Beach.

Mussel beds, amongst Posidonia, on algal covered rock; 2-5 m.

Stations: (1961-66) 156+, 159+, 168+.

Remarks: N. Wilsoni is found on reefs in the shallow sublittoral of semi-sheltered open coasts in south western Australia and scarcely enters Cockburn Sound.

Genus : PENTAGONASTER Gray, 1840

PENTAGONASTER DUEBENI Gray, 1847

Descriptions of some new genera and species of Asteroidea. Proc. Zool. Soc. London, pt. 15 : 79. Type loc.: Western Australia. Rec. ref.: Clark, A.M., 1953 : 400-403, text fig. 13b, pls 43, 44. Range: Southern Australia from the Houtman Abrolhos to southern Queensland.

Algal covered rocks; 0-5 m.

Stations: (1956-60) 36+, 112+; (1961-66) 36+; (1970) 112+.

Remarks: P. duebeni is a common species on the open coast, seldom found in Cockburn Sound.

Genus : STELLASTER Gray, 1840

STELLASTER INSPINOSUS H.L. Clark, 1916

"Endeavour" sea lilies, starfishes, brittle-stars and sea-urchins. Repts. Dept. Trade and Customs; Fisheries, Sydney, N.S. Wales, 4 : 48-49, pl. 13, figs 1-2. Type loc.: Between Geraldton and Cape Naturaliste, W.A. Range: West coast of Western Australia, from Exmouth Gulf to Mandurah.

Mud, occasionally sand; 1-20 m.

Stations: (1956-60) 4+, 10++, 18++, 19++, 20+, 21+, 22++, 24+, 28++, 29+++, 31+, 42+, 44+, 45+, 46+, 47++, 70+, 84+, 97+, 115+, 116+, 118+, 119+, 121++, 125++, 126+, 129++, 130+, 132+, 136+, 138++, 139++, 140+, 143+++, 147+++, 148+++, 149+++, 161+++, 176+; (1961-66) 10+, 137+; (1970-76) 11+, 19++, 27+, 30++, 42+, 43++, 55+, 63+, 129+, 130+, 134+++, 138+.

Genus : TOSIA Gray, 1840

TOSIA AUSTRALIS Gray 1840

A synopsis of the genera and species of the class Hypostoma. Ann. Mag. Nat. Hist., 6 : 281. Type loc.: "Swan River, Port Lincoln, and van Diemen's Land". Syn. Tosia nobilis Müller & Troschel, Clark, A.M. 1953 : 406-408, pl. 45, figs 3, 4, 6, 7; pl. 46, figs 1, 2. Range: Southern Australia, from the Fremantle area to Tasmania.

Rock or jetty piles, mussel beds and amongst Posidonia on sand flats; 1-8 m, rarely 20 m.

Stations: (pre 1956) 36++; (1956-60) 9+, 10+, 11+, 36+, 61+, 65+, 98+, 115+, 136+, 137+, 176+; (1961-66) 9+, 10+, 36+, 137+, 159+; (1970-76) 9+, 10+, 37+, 40+, 136+.

Family : OREASTERIDAE Fisher, 1911

Genus : GONIODISCASTER H.L. Clark, 1909

GONIODISCASTER SERIATUS Müller and Troschel, 1843

Neue Beiträge zur Kenntniss der Asteriden. Arch. f. Naturgesch., 9 (1) : 117. Type loc.: Southwestern Australia. Rec. ref.: Döderlein, 1935 : 80, pl. 20, fig. 5; pl. 21, figs 4, 4a. Range: South western Australia, from the vicinity of Fremantle to Geographe Bay.

Mussel beds and Posidonia, sand, muddy sand or mud; 0-20 m. Stations: (pre 1956) 36++; (1956-60) 10+, 36+, 61+; (1961-66) 10+, 36+, 139+, 153, 156+, 159+; (1970-76) 6+, 10+, 38/39+, 63+, 89+, 136+.



Genus : ANTHENEA Gray, 1840

ANTHENEA AUSTRALIAE Döderlein, 1915

Die Arten der Asteroiden - Gattung Anthenea Gray.  
Jb. nassau. Ver. Naturk. 68: 52-54, pl. 9, figs 1-4,  
pl. 10, figs 1-3. Type loc.: Fremantle, W.A. Range:  
From Broome, north western Australia, to Cockburn  
Sound.

On algal covered rock, among Pinna and Posidonia,  
mussel beds, rubble and sand, mud; 2-20 m.  
Stations: (1956-60) 9+, 10+, 11+, 34+, 36+, 37+, 46+,  
61+, 82+, 85+, 112+, 116+, 135+, 172+, 176+; (1961-66)  
9+, 10++ , 36+, 37++, 153+, 156+, 159+; (1970-76)  
2/23+, 6+, 9+, 10+, 19/30/43+, 27+, 37+, 38/39++,  
45+, 63+, 89+, 112+, 127+, 134+.

Genus : ANTHASTER Döderlein, 1915

ANTHASTER VALVULATUS Müller & Troschel, 1843.

Oreaster. Neue Beiträge zur Kenntniss der Asteriden.  
Arch. f. Naturgesch., 9 (1) : 115. Type loc.:  
Southwestern Australia. Rec. ref.: Döderlein, 1915 :  
29-31, pl. 3, figs 1-4. Range: South Western Australia,  
from the vicinity of Fremantle to South Australia.

On algal covered rock, mussel beds, seagrass or mud;  
0-10 m.  
Stations: (1961-66) 156+, 159+; (1970-76) 10+, 37+.

Family : ASTEROPSEIDAE Hotchkiss & Clark, 1976

Genus : PETRICIA Gray, 1847

PETRICIA VERNICINA Lamarck, 1816.

Asterias. Histoire naturelle des animaux sans vertèbres,  
2: 554. Type loc.: "les mers australes? Péron et le  
Sueur". Syn. P. obesa, H.L. Clark, 1938 : 142, pl. 10,  
fig. 1 (col.). Range: Southern Australia, from the  
Houtman Abrolhos to southern Queensland.

Rock; 0-10 m.  
Stations: (1956-60) 34+, 36+, 112+, 137+; (1970-76) 112+.

Family : OPHIDIASTERIDAE Verrill, 1867

Genus : AUSTROFROMIA H.L. Clark, 1921

AUSTROFROMIA POLYPORA H.L. Clark, 1916.

"Endeavour" sea lilies, starfishes, brittle-stars and sea-  
urchins. Repts. Dept. Trade and Customs : Fisheries,  
Sydney, N.S. Wales, 4 : 51-53, pl. 14, figs 1-2.  
Type loc.: East of Maria Island, Tasmania. Range:  
Southern Australia from the Houtman Abrolhos to New South  
Wales and Tasmania.

On algal covered rock; 2-5 m.  
Stations: (1956-60) 177+; (1961-66) 156+.

Order : SPINULOSIDA Perrier, 1884  
Suborder : EUGNATHA Spencer & Wright, 1966  
Family : PTERASTERIDAE Perrier, 1875  
Genus : EURETASTER Fisher, 1940

EURETASTER INSIGNIS (Sladen, 1882)

Retaster. "Challenger" Pterasteridae. Jour. Linn. Soc. (Zool.) 16 : 200. Type loc.: Arafura Sea. Range: Tropical Indo-West Pacific, Western Australia to Cape Naturaliste.

On algal covered rock, mussel beds, sand or mud; 2-20 m.  
Stations: (1956-60) 10+, 11+, 31+, 34+, 36+, 37+, 84+;  
(1961-66) 10++, 36++, 37+, 156+, 159+; (1970-76) 6+,  
10+, 38/39+, 89+, 112+, 129/144+.

Suborder : LEPTOGNATHINA Spencer & Wright, 1966  
Family : ASTERINIDAE Gray, 1840  
Genus : NEPANTHIA Gray, 1840

NEPANTHIA CRASSA (Gray, 1847)

Patiria. Descriptions of some new genera and species of Asteriadae. Proc. Zool. Soc. London pt. 15: 83.  
Type loc.: Western Australia. Rec. ref.: Fisher, 1941: 453; pl. 70, fig. 2. Range: West coast of Western Australia from Point Cloates to Geographe Bay.

Rock or jetty piles; 0-20 m.  
Stations: (pre 1956) 36+; (1956-60) 10+, 11+, 28+, 36+, 55+, 112+, 137+, 176+, 178+; (1961-66) 10+, 36+, 153+, 158+, 159+; (1970-76) 6+, 37+, 38/39+, 63+, 97/100+, 112+, 134+, 136+.

NEPANTHIA TROUGHTONI (Livingstone, 1934)

Parasterina. Two new asteroids from Australia. Rec. Aust. Mus., 19 (3) : 179, pl. 18, figs 1-6. Type loc.: Albany, King George Sound, W.A. Syn. Parasterina occidentalis H.L. Clark, 1938 : 180, pl. 21, fig. 5. Range: Southern Australia from about 30°S on the west coast to Victoria.

Rock and jetty piles; 5 m.  
Stations: (1956-60) 176+; (1970-76) 154+.

Remarks: N. trougtoni is an open coast species usually found on reefs exposed to moderate to strong wave action.

Genus : PARANEPANTHIA Fisher, 1917

PARANEPANTHIA ROSEA H.L. Clark, 1938

Echinoderms from Australia. Mem. Mus. Comp. Zool. Harv. 55: 161, pl. 22, fig. 8. Type loc.: Rottnest Island, W.A. Range: Restricted to the west coast of W.A. from Houtman Abrolhos to Cape Peron.

In sabellariid worm tube rock; 1-2 m  
Stations: (1956-60) 169+.

Genus : PATIRIELLA Verrill, 1914

PATIRIELLA BREVISPIINA H.L. Clark, 1938

Echinoderms from Australia. Mem. Mus. Comp. Zool. Harv. 55 : 166, pl. 22, figs 2, 3. Type loc.: Koombana Bay, Bunbury W.A. Range: Southern Australia, from the vicinity of Fremantle to New South Wales and Tasmania.

On and under rocks, among Posidonia, on and among Pinna; 0-5 m.

Stations: (1956-60) 8+, 9+, 10++, 36++, 37+, 41+, 61+, 86+, 176+; (1961-66) 10++, 36++, 155+, 156+, 159+; (1970-76) 10++, 37+, 128+, 136+, 112+

PATIRIELLA GUNNI (Gray, 1840)

Asterina. A synopsis of the genera and species of the class Hypostoma. Ann. Mag. Nat. Hist. 6 : 289. Type loc.: Van Diemen's Land. Range: Southern Australia from Kalbarri on the west coast to southern Queensland.

On and under rocks; 0-3 m.

Stations: (1956-60) 9+, 10+, 36++, 176+; (1961-66) 10+, 36++, 159+; (1970-76) 9+, 10+, 153+.

Family : ECHINASTERIDAE Verrill, 1867

Genus : ECHINASTER Müller & Troschel, 1840

ECHINASTER ARCYSTATUS H.L. Clark, 1914

The echinoderms of the Western Australian Museum. Rec. W.A. Mus. 1 : 148-150, pl. 21. Type loc.: Between Fremantle and Geraldton, W.A. Range: South Western Australia from Shark Bay to South Australia.

Rock; 6 m.

Stations : (1956-60) 10+.

ECHINASTER GLOMERATUS H.L. Clark, 1916

"Endeavour" sea lilies, starfishes, brittle stars and sea-urchins. Repts Dept. Trade and Customs : Fisheries, Sydney, N.S.Wales, 4 : 62, pls. 22, 23. Type loc.: Kangaroo I., South Australia. Range: South western and South Australia from the vicinity of Fremantle to Cape Jervis S.A.

Rock; 6 m.

Stations: (1973) 9+.

ECHINASTER VARICOLOR H.L. Clark, 1938

Echinoderms from Australia. Mem. Mus. Comp. Zool. Harv. 55 , pl. 11, fig. 1 (col.). Type loc.: Broome, W.A. Range: Northwestern to southwestern Australia, Broome to the Recherche Archipelago.

Rock; 2-10 m.

Stations: (1956-60) 10+, 11+, 34++, 36+, 37+, 112+; (1970-76) 10+, 37+, 112+.

Genus : PLECTASTER Sladen, 1889

PLECTASTER DECANUS (Müller & Troschel, 1843)

Echinaster. Neue Beiträge zur Kenntniss der Asteriden. Arch. f. Naturgesch., 9 (1) : 114. Type loc.: Port Jackson, N.S.W.? Rec. ref.: H.L. Clark, 1916 : 66, pl. 26, figs 1,2. Range: Southern Australia, from the vicinity of Fremantle to N.S.W.

On old boom; 4 m.  
Stations: (1961-66) 156+.

Remarks: Plectaster decanus is an open coast species found to a depth of 165 m.

Order : FORCIPULATIDA Perrier, 1884

Suborder : ASTERIADINA Fisher, 1928

Family : ASTERIIDAE Gray, 1840

Genus : COSCINASTERIAS Verrill, 1867

COSCINASTERIAS CALAMARIA (Gray, 1840)

Asterias. A synopsis of the genera and species of the class Hypostoma. Ann. Mag. Nat. Hist., 6 : 179. Type loc.: uncertain. Rec. ref.: Clark, H.L. 1916: 74, pls 31, 32 (as C. gemmifera). Range: Southern Australia, South Africa and New Zealand; the west and south coasts of Western Australia, to North West Cape.

Rock, sand or mud; 0-21 m.  
Stations: (1956-60) 9+, 10+, 36+, 44+, 65+, 95+, 112+, 176+; (1961-66) 10+, 36+, 153+, 154+, 156+, 159+; (1970-76) 10+, 29+, 38/39+. 1978: 17

Genus ALLOSTICHAster Verrill, 1914

ALLOSTICHAster POLYPLAX (Müller & Troschel, 1844)

Asteracanthion. Beschreibung neuer Asteriden. Arch. f. Naturgesch., 10 (1): 178. Type loc.: Rec. ref.: Koehler, 1920 :85, pl. 18, figs 7-11. Range: Southern Australia and New Zealand, to Geraldton on the west coast of W.A.

Under and among rocks; 0-20 m.  
Stations: (1956-60) 9+, 10+, 36+, 37+, 61+, 112+, 169+; (1961-66) 153+, 159+, 168+; (1969) 36+; (1970-76) 10+, 29+, 38/39+.

Genus : UNIOPHORA Gray, 1840

UNIOPHORA DYSCRITA H.L. Clark, 1923

Some echinoderms from Western Australia. Jour. Linn. Soc. (Zool.) 35 : 244. Type loc.: Garden I., W.A. Rec. ref.: Shepherd, 1967: 7-8, pl. 1, figs 1, 2. Range: Southwestern Australia from 31°S to King George Sound.

On or under rocks, among mussels and Pinna, seagrass meadows, muddy sand; 2 - 10m.

Stations: (pre 1956) 36++; (1956-60) 9+, 36+, 61+, 172+,  
176+, 178+; (1961-66) 9+, 10+, 36+, 153+, 154+, 156+,  
158+, 159+, 167+, 168+; (1970-76) 2/23+, 10+, 37+,  
38/39+, 136+.

Class : ECHINOIDEA  
Order : CIDAROIDA Claus, 1880  
Family : CIDARIDAE Gray, 1825  
Genus : GONIOCIDARIS Desor in Agassiz & Desor,  
1846

GONIOCIDARIS TUBARIA (Lamarck, 1816)

Cidarites. Histoire naturelle des animaux sans vertèbres,  
3 : 57. Type loc.: "les mers de la Nouvelle-Hollande.  
Péron et le Sueur". Rec. ref.: Mortensen, 1928a : 156,  
pl. 12, figs 1-7. Range: southern Australia, Geraldton  
to N.S.W.

Rocks and jetty piles; 2-20 m.  
Stations: (1956-60) 10+, 22+, 176+; (1966) 138+,  
151+, 153+, 156+; (1970-1976) 6, 29.

Genus : PHYLLACANTHUS

PHYLLACANTHUS IRREGULARIS Mortensen, 1928.

New Cidaridae. Papers from Dr Th. Mortensen's Pacific Exped.  
1914-16. Vidensk. Medd. Dansk Nat. Foren 85 : 74.

Type loc.: Rottneest Island, Western Australia. Rec. ref.:  
Mortensen, 1928a : 520; pls. 58-61; fig. 1.  
Range: Southwestern Australia from the Houtman Abrolhos  
to Port Willunga, South Australia.

Rock; 2-20 m.  
Stations: (1956-60) 10+, 34+, 36+, 37+; (1970) 112+.

Order : TEMNOPLEUROIDA Mortensen, 1942  
Family : TEMNOPLEURIDAE A. Agassiz, 1872  
Genus : AMBLYPNEUSTES L. Agassiz, 1841.

AMBLYPNEUSTES LEUCOGLOBUS Doderlein, 1914.

Fauna Sudwest-Australiens 4 : 463-466, figs 3, 4, pl. 9  
figs 8, 9. Type loc.: Bunbury, Western Australia.  
Rec. ref.: Mortensen 1943a : 195-196, pls. 13, figs 29-30,  
48, figs 1, 8, 10, 25. Range: Southwestern Australia  
from Carnarvan to St Vincent Gulf, South Australia.

Seagrass; 2-20 m.  
Stations: (1956-60) 65+; (1974) 19+.

AMBLYPNEUSTES PALLIDUS (Lamarck, 1816)

Echinus. Histoire naturelle des animaux sans vertèbres,  
3 : 48. Type loc.: unknown. Rec. ref.: Mortensen,  
1943a : 207-210, fig 112; pls 13, figs 3-7, 17-22; 47,  
figs 3, 5; 48, figs 11, 16.  
Range: Southwestern Australia from the Houtman Abrolhos  
to South Australia.

Algae and seagrass; 2-20 m.  
Stations: (1966) 159+.

Genus : TEMNOPLEURUS L. Agassiz, 1841

TEMNOPLEURUS MICHAELSENI (Döderlein, 1914).

Salmacis. Fauna Sudwest-Australiens 4 : 454, fig. 1.  
Type loc.: Shark Bay, Western Australia. Rec. ref.:  
Mortensen, 1943a : 105-109, fig. 65, 66, pls 3 figs  
4-5, 13-15; 45, figs 19, 25, 26, 29-31. Range: Southwestern  
Australia from Shark Bay to St. Vincent Gulf, South  
Australia.

Mud or seagrass; 1-20 m.

Stations: (1956-60) 9+, 11+, 17+, 18++, 19+++, 20++,  
21+, 22+++, 24+, 28+, 29+, 31+, 42+, 44+, 46+, 47+,  
55+, 68+, 69+, 70+++, 71+++, 80+, 91+, 92++, 93+, 94+,  
95++, 96++, 97+, 101+++, 104+, 113++, 114+++, 115+, 116++,  
117+, 118++, 124+, 126+, 130+, 132+, 135+, 136+, 138+++,  
139++, 140+++, 142++, 143++, 144+++, 147+, 148++, 149+,  
153+, 160++, 161++, 164+++, 176+; (1966) 137+, 155+,  
156+, 167+, 168+; (1970-76) 19+, 27++, 30+, 41+, 42+,  
46++, 51+++, 55+, 68+++, 71+++, 77++, 79++, 93++, 94++  
96++, 97++, 100++, 101++, 103+, 116++, 118++, 121++,  
123+, 129+, 130+, 132+, 133++, 134++, 140++, 142++,  
150++, 159+, 174+; 1978: 142, 113, 122, 132, 126, 127, 128

Family : TOXOPNEUSTIDAE Troschel, 1872

Genus : NUDECHINUS H.L. Clark, 1912.

NUDECHINUS SCOTIOPREMNUM H.L. Clark, 1912.

Hawaiian and other Pacific echini. Mem. Mus. Comp. Zool.  
34 (4) : 277; pl. 97, figs 4-6. Type loc.: Gulf of  
Suez, Red Sea. Rec. ref.: Mortensen, T., 1943a; 401-408,  
pl. 22, figs 18-29; pl. 51, figs 6-8, 13, 25. Range:  
Red Sea, and the northwestern and western coast of  
Western Australia.

Amongst algae or seagrass; 0-20 m.

Stations: (1956-60) 8+, 9+, 10+, 18+, 19+, 24+, 36+;  
(1966) 138+, 151+, 152+, 153+, 154+, 158+, 159+, 168+;  
(1970-76) 2+, 23+, 36+, 38+, 137+. 1978: 17, 38

Remarks: This is an open coast species only marginally  
incurring into Cockburn Sound.

Order : ECHINOIDA Claus, 1876.

Family : ECHINOMETRIDAE Gray, 1825

Genus : HELIOCIDARIS L. Agassiz & Desor, 1846.

HELIOCIDARIS ERYTHROGRAMMA (Valenciennes, 1846)

Echinus. Voyage de "Venus" : Zoophytes, pl. 7, fig. 1.  
Type loc.: unknown. Rec. ref.: Mortensen, 1943b :  
343-350, figs 167-171; pls 37, figs 1-7; 38, figs 4-7;  
63, figs 12, 14, 15, 18, 20-22. Range: Southern  
Australia from Shark Bay to southern Queensland.

Rock; 0-10 m.

Stations : (1956-60) 7+, 8+, 9+, 10+, 11+, 34++, 36+, 37++, 41+, 61+, 65+, 112+, 137+, 176+; (1966) 153+, 156+, 159+; (1970-76) 10+, 37+, 112+.

Order : CLYPEASTEROIDA A. Agassiz, 1872  
Suborder : CLYPEASTERINA A. Agassiz, 1872  
Family : CLYPEASTERIDAE L. Agassiz, 1835  
Genus : CLYPEASTER Lamarck, 1801.

CLYPEASTER TELURUS H.L. Clark, 1914.

The Echinoderms of the Western Australian Museum.  
Rec. W. Australian Mus., 1 : 166, pl. 23. Type loc.:  
Between Fremantle and Geraldton, W.A. Rec. ref.:  
Mortensen, 1948 : 69-71, fig. 46, pl. 13, fig. 5; pl. 14,  
figs 7, 8; pl. 15, fig. 4; pl. 66, figs 13, 14, 21, 22.  
Range: Northern Australia and the east and west coasts to  
Fraser Island and Geographe Bay respectively.

Sand; 8 m.  
Stations: (1972) 2+.

Family : ARACHNOIDIDAE Duncan, 1889  
Genus : AMMOTROPHUS H.L. Clark, 1928

AMMOTROPHUS ARACHNOIDES (H.L. Clark 1938.)

Hesperaster. Echinoderms from Australia. Mem. Mus. Comp. Zool., 55 : 411-413, pl. 27, fig. 2. Type loc.: Between Fremantle and Rottnest Island. Range: Southwestern Australia, from the Fremantle area to Nornalup.

Sand; 8 m.  
Stations: (1972) 2+.

Suborder : LAGANINA Mortensen, 1948  
Family : LAGANIDAE A. Agassiz, 1873  
Genus : PERONELLA Gray, 1855

PERONELLA LESUEURI (Agassiz, 1841.)

Laganum. Monographies d'Echinodermes; des Scutelles : 116-117; pl. 24, figs 3-6. Type loc.: "terres australes" Peron et Lesueur. Rec. ref.: Mortensen, 1948 : 263-269; figs 177-181, pl. 47, figs 1-4, 6, 7; pl. 48, figs 1, 2; pl. 50, figs 4-11; pl. 72, figs 2, 3. Range: Eastern Indian Ocean ranging north to Hong Kong; northern Australia extending to about 20°S on the east coast and the coast of Western Australia to at least 120°E on the south coast.

Sand or mud; 0-20 m.  
Stations: (1956-60) 4+, 9+, 11+, 18+, 19++, 20+, 28+, 29++, 36+, 42+, 44+, 52+, 55+, 61+, 70+, 80+, 86+, 92+, 93+, 96+, 113+, 114+, 121+, 125+, 127+, 129+, 135+, 136++,



137+, 138++, 139+, 140+, 143+, 146+, 147+++, 149++,  
153+, 160+, 176++, 177+; (1966) 137+, 151+, 153+,  
158+, 168+; (1970-76) 19+, 30+, 38+, 39+, 42+, 55+,  
63+, 89+, 133+, 134+.

Remarks: Peronella lesueuri is more often found on sand than mud and is thus more common on the muddy sand substrate of the northern part of the central basin and the surrounding sandy sills than in the soft mud of the central and southern parts of the central basin.

Order : SPATANGOIDA Claus, 1876  
Suborder : HEMIASTERINA A.G. Fischer, 1966  
Family : SCHIZASTERIDAE Lambert, 1905  
Genus : PRENASTER Desor, 1853

PRENASTER (PROTENASTER) AUSTRALIS (Gray, 1851)

Desoria. Description of some new genera and species of Spatangidae in the British Museum. Ann. Mag. Nat. Hist., ser. 2, 7 : 133. Type loc.: unknown. Rec. ref.: Mortensen, 1951 : 224-226, figs 108, 109; pl. 53, fig. 2. Range: Southern Australia and northwards to the Fremantle area.

Sand; 2 m.  
Stations: (1966) 159+.

Suborder : MICRASTERINA A.G. Fischer, 1966  
Family : LOVENIIDAE Lambert, 1905  
Genus : ECHINOCARDIUM Gray, 1825

ECHINOCARDIUM CORDATUM (Pennant, 1777)

Echinus. British Zoology 4 : 69. Type loc.: Great Britain. Rec. ref.: Mortensen, 1951 : 152-157, fig. 79; pl. 18, figs 6, 7. Range: Cosmopolitan.

Sand and mud; 1-22 m.  
Stations: (1956-60) 4+, 9+, 11+, 18++, 19++, 20+, 21+, 24++, 28+, 29+, 31+, 42++, 43+, 44+++, 45+++, 46+, 47++, 52+, 55+++. 65+, 66+, 67++, 68+, 69+, 70++, 71+++, 77+, 80+, 91+, 92++, 93++, 94+++, 95+, 97++, 101+, 113++, 114+, 117+, 118+, 119+, 126++, 129+++, 130+, 131++, 132++, 137+, 141+++, 142+++, 143++, 144+++, 148+++, 149+++, 160+++, 161+++, 164++; (1966) 137+; (1970-76) 19+, 27++, 30++, 41++, 42++, 46++, 51+++, 54+++, 58+, 68++, 71+++, 77+++, 79+++, 93+, 94+, 96+++, 97+++, 100+++, 101+++, 103+, 116+++, 118+++, 121+++, 123++, 120+, 130++, 132+, 133+++, 134+++, 140+++, 142+, 143+, 144++, 150+++, 159++, 165+++, 174+++. (1978) 93, 17, 122, 113

Class : HOLOTHUROIDEA  
Order : DENDROCHIROTIDA Grube, 1840  
Family : PSOLIDAE Perrier, 1902  
Genus : PSOLIDIDIUM Ludwig, 1886

PSOLIDIDIUM GRANULIFERUM H.L. Clark, 1938

Echinoderms from Australia. Mem. Mus. Comp. Zool.,  
55 : 503-504, fig. 49. Type loc.: Koombana Bay,  
Bunbury, Western Australia. Range: South Western  
Australia.

Rock; 1-5 m.

Stations: (1956-60) 176+; (1970-76) 47.

Family : CUCUMARIIDAE Ludwig, 1894  
Genus : PENTACTA Goldfuss, 1820

PENTACTA ANCEPS (Selenka, 1867)

Cercodemas. Beiträge zur Anatomie und Systematik der  
Holothurien. Z. wiss. Zool. 17 : 291-374, pls. 17-20.  
Type loc.: Rec. ref.: as P. tuberculosa  
(Quoy & Gaimard), H.L. Clark, 1938 : 452-453, pl. 16, fig. 2.  
Range: East Indian region to Japan and the Western Pacific;  
northern Australia to Port Jackson on the east coast and  
Cockburn Sound on the west coast.

Among rocks, sand and seagrass; 1-5 m.

Stations: (1956-60) 61+, 86+, 136+, 176+; (1961-66) 9+,  
37+; (1970-76) 10+, 36+, 38/39+, 63+, 89+, 98+, 112+.

PENTACTA AUSTRALIS (Ludwig, 1874)

Colochirus. Beiträge zur Kenntniss der Holothurien. Arb.  
Zool.-Zoot. Inst. Würzburg, 2 : 88. Type loc.:  
Rec. ref.: Hickman, 1962 : 53-55, pl. 1,  
fig. 3; text-figs 24-37. Range: East Indies to Japan  
and circum-continental Australia, including Tasmania.

Among rocks; 1-5 m.

Stations: (1969) 36+.

PENTACTA QUADRANGULARIS Troschel, 1846

Colochirus. Neue Holothurien-Gattungen. Arch. f. Naturgesch.  
12(1) : 64. Type loc.: Rec. ref.:  
as Pentacta coerulea, H.L. Clark, 1938: 449; pl. 16, fig. 4.  
Range: From Ceylon through the east Indian region to  
Japan and northern Australia, extending to Queensland, and  
down the coast of Western Australia to King George Sound.

Sand or mud; 1-20 m.

Stations: (pre 1956) 138+, 155+ (Erwe, 1913); (1956-60)  
42+, 71+, 95+, 121+, 147+; (1970-76) 6/19/30/43++,  
10+, 38/39+, 69+, 89+, 134+.

Genus : THYONE Oken, 1815

THYONE NIGRA Joshua & Creed, 1915

South Australian Holothuroidea with descriptions of new species. Trans. Roy. Soc. S.Aust. 39: 20, pl. 3, figs 3, 4.  
Type loc.: South Australia. Range: Southern Australia from the Fremantle area to Victoria.

Among Posidonia roots; 1 m.  
Stations: (1970-76) 10+.

THYONE cf. T. OKENI Bell 1884

Echinodermata. Rept. zool. coll. Indo-Pacific Ocean, voyage of H.M.S. "Alert" 1881-82 : 149, pl. 9, fig. 11.  
Type loc.: Port Jackson, N.S.W.? Rec. Ref.: Clark, H.L., 1921 : 167. Range: Port Jackson and Torres Strait.

Buried in sand; 4.5 m.  
Stations: (1971) 10+.

THYONE SP.

Amongst Pinna and Posidonia; 1 m.  
Stations: (1970-76) 9+.

Family : PHYLLOPHORIDAE Oestergren, 1907

Genus : PHYLLOPHORUS Grube, 1840

PHYLLOPHORUS THYONOIDES H.L. Clark, 1938

Echinoderms from Australia. Mem. Mus. Comp. Zool., 55 : 492-494, fig. 48. Type loc.: Cottesloe, Western Australia. Range: South Western Australia.

1-5 m.  
Stations: (1967-70) 137+, 154+.

Genus : CLADOLABES Brandt, 1835

CLADOLABES SCHMELTZI (Ludwig, 1874)

Thyonidium. Beiträge zur Kenntniss der Holothurien. Arb. Zool. - Zoot. Inst. Wurzburg, 2 : 94; pl. 6, fig. 20.  
Type loc.: Rec. ref.: Clark and Rowe, 1971 : 182-183, 205, fig. 95d, pl. 30, fig. 7. Range: East Indies to the Philippines and northern Australia, to Cockburn Sound on the west coast.

Mud; 20 m.  
Stations: (1970-76) 134+.

Genus : CUCUMELLA Ludwig & Heding, 1935

CUCUMELLA MUTANS (Joshua, 1914)

Cucumaria. Victorian Holothuroidea, with descriptions of new species. Proc. roy. Soc. Vic., n.s., 27 (1) : 4, pl.1, figs 1a-d. Type loc.: Port Phillip, Victoria. Rec. ref.: Hickman, 1962 : 55-56, pl.1, fig. 4, text-figs 38-45. Range: Southern Australia including Tasmania.

Seagrass and sand; 1-6 m.  
Stations: (1961-66) 137+; Southern flats; (1968) 10+; (1970-76) 10+.

Order : APODIDA Brandt, 1835  
Family : SYNAPTIDAE Burmeister, 1837  
Genus : LEPTOSYNAPTA Verrill, 1867

LEPTOSYNAPTA DOLABRIFERA Stimpson, 1855

Synapta. Descriptions of some new marine invertebrates : Echinodermata. Proc. Acad. Nat. Sci. Philadelphia, 7 : 386  
Type loc.: Rec. ref.: Heding, 1928: 221, figs 34 (1-4), 35 (1-5). Range: Southern Australia from Lord Howe Island to the west coast of Western Australia.

Under rock; 2 m.  
Stations: (1956-60) 176+.

Order : ASPIDOCHIROTIDA Brandt, 1835  
Family : STICHOPODIDAE Haeckel, 1896  
Genus : STICHOPUS Brandt, 1835

STICHOPUS MOLLIS (Hutton, 1872)

Holothuria. Catalogue of the Echinodermata of New Zealand, with Diagnoses of the Species. James Hughes, Wellington : 15  
Type loc.: New Zealand. Syn. Stichopus simul(t)ans  
Erwe, 1913 : 388 pl. 8, fig. 23a-d. Range: New Zealand and southern Australia northwards to the Fremantle area.

Under rocks and amongst Posidonia; 1-6 m.  
Stations: (1961-66) 9+, 36+; (1970-76) 9+, 10+.

STICHOPUS SP

Rock; 3-6 m.  
Stations: (1961-66) 137+.

Family : HOLOTHURIIDAE Ludwig, 1894

Genus : HOLOTHURIA Linnaeus, 1791

HOLOTHURIA (STAUROPORA) MODESTA Ludwig, 1874

Beiträge zur Kenntniss der Holothurien. Arb. Zool-Zoot. Inst Würzburg, 2 : 106, pl. 7, fig. 26. Type loc.: Cape York, Queensland. Rec. ref.: Erwe, 1913 : 382, pl. 7, fig. 18, a - e. Range: Northern Australia and the East Indies.

"Schlick und Algen"; 14.5 - 18 m.

Stations: (pre 1956) 138+ (Erwe, 1913).

Remarks: H.L. Clark (1946) notes that the above record was based on poor material and needs verification. The species has not been found subsequently.

-22-







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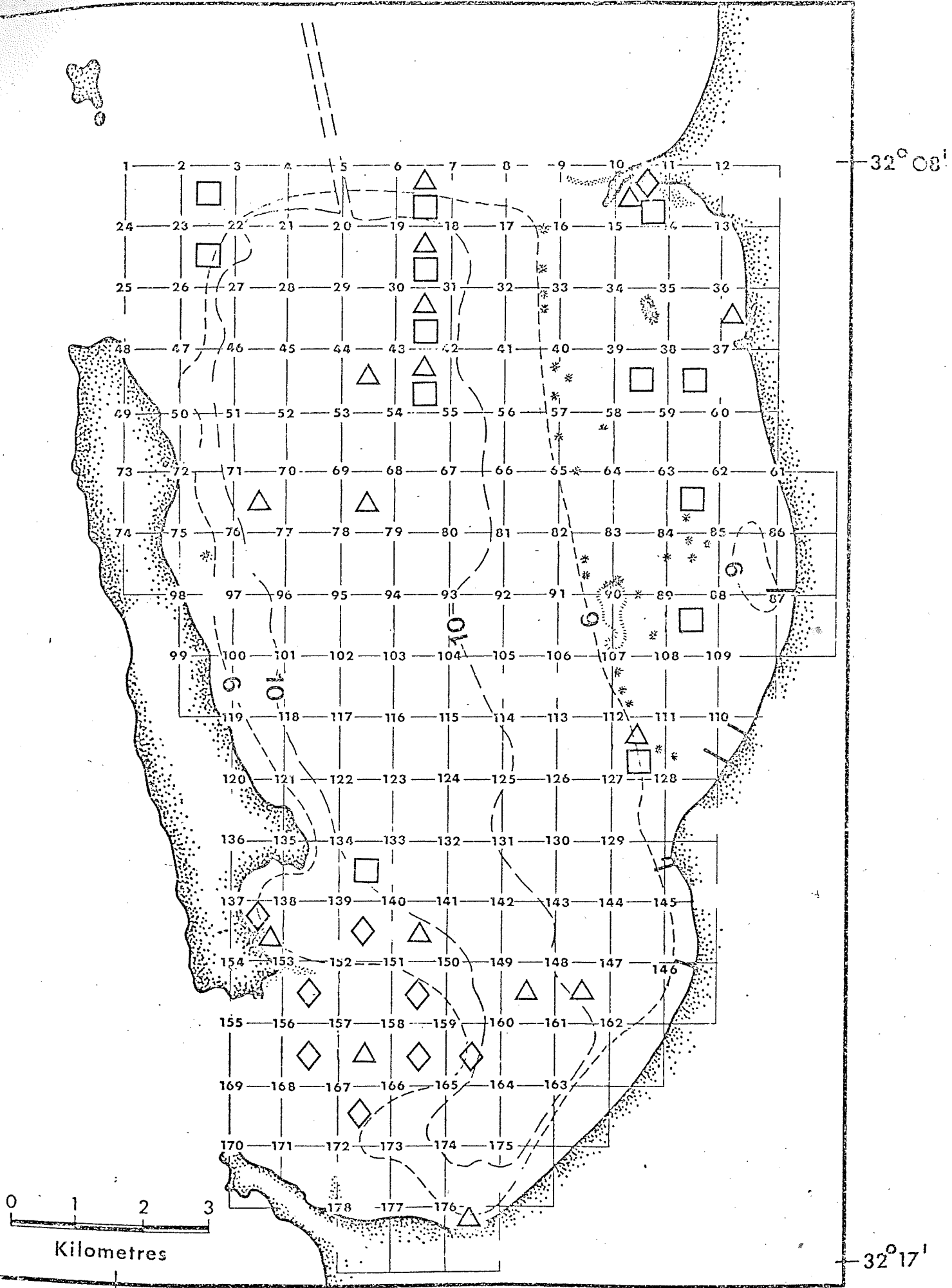
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FIGURES SHOWING STATION RECORDS OF SELECTED SPECIES COMMON IN COCKBURN SOUND DURING THE W.A. NATURALISTS CLUB 1956-60 SURVEY AND SUBSEQUENT COLLECTIONS.

Key:

	1956-60	common to abundant
	1956-60	single record
	1961-66	common to abundant
	1961-66	single record
	1970-76	common to abundant
	1970-76	single record.





32°08'

32°17'

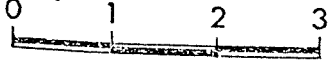
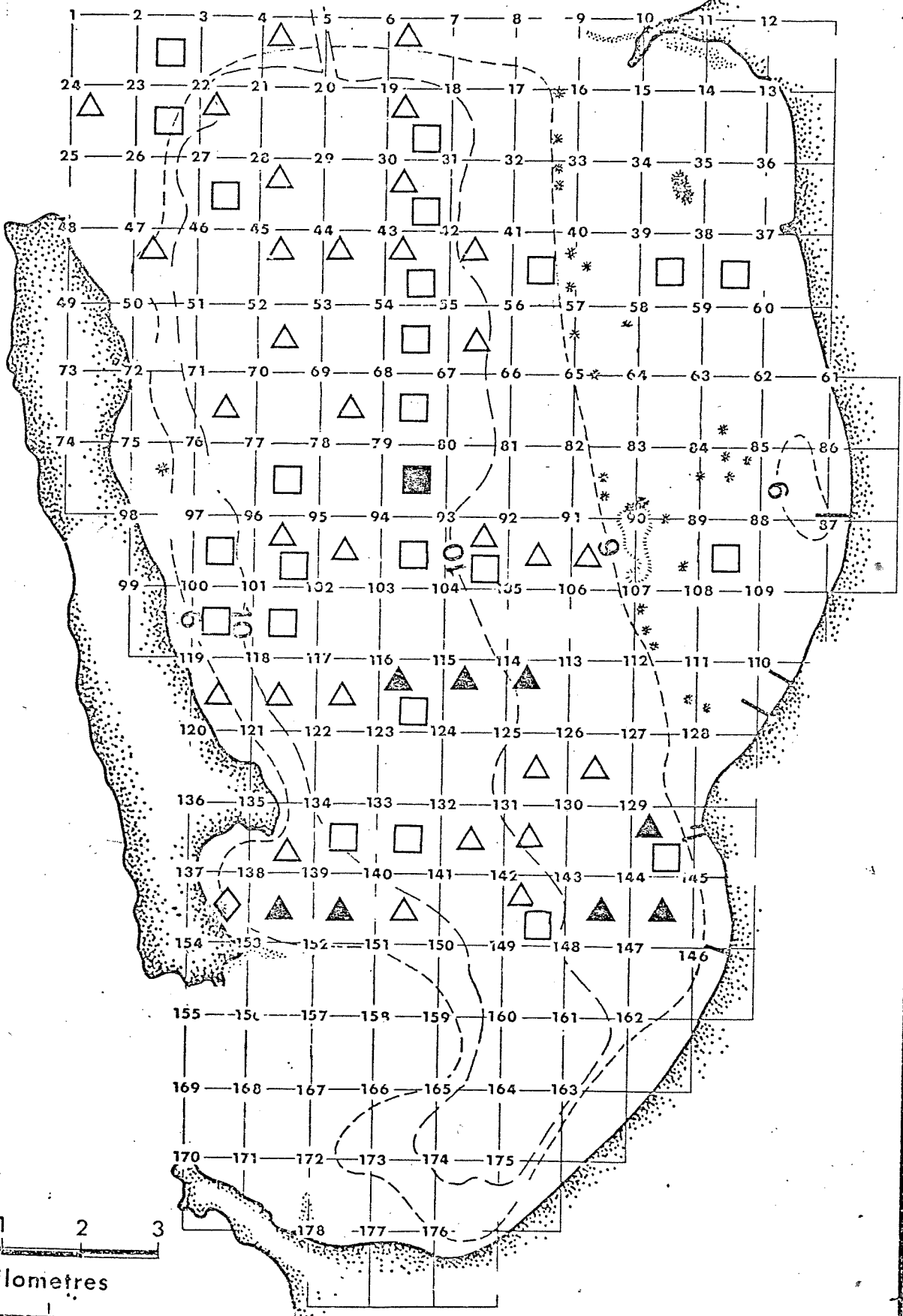
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LUIDIA AUSTRALIAE



32° 08'

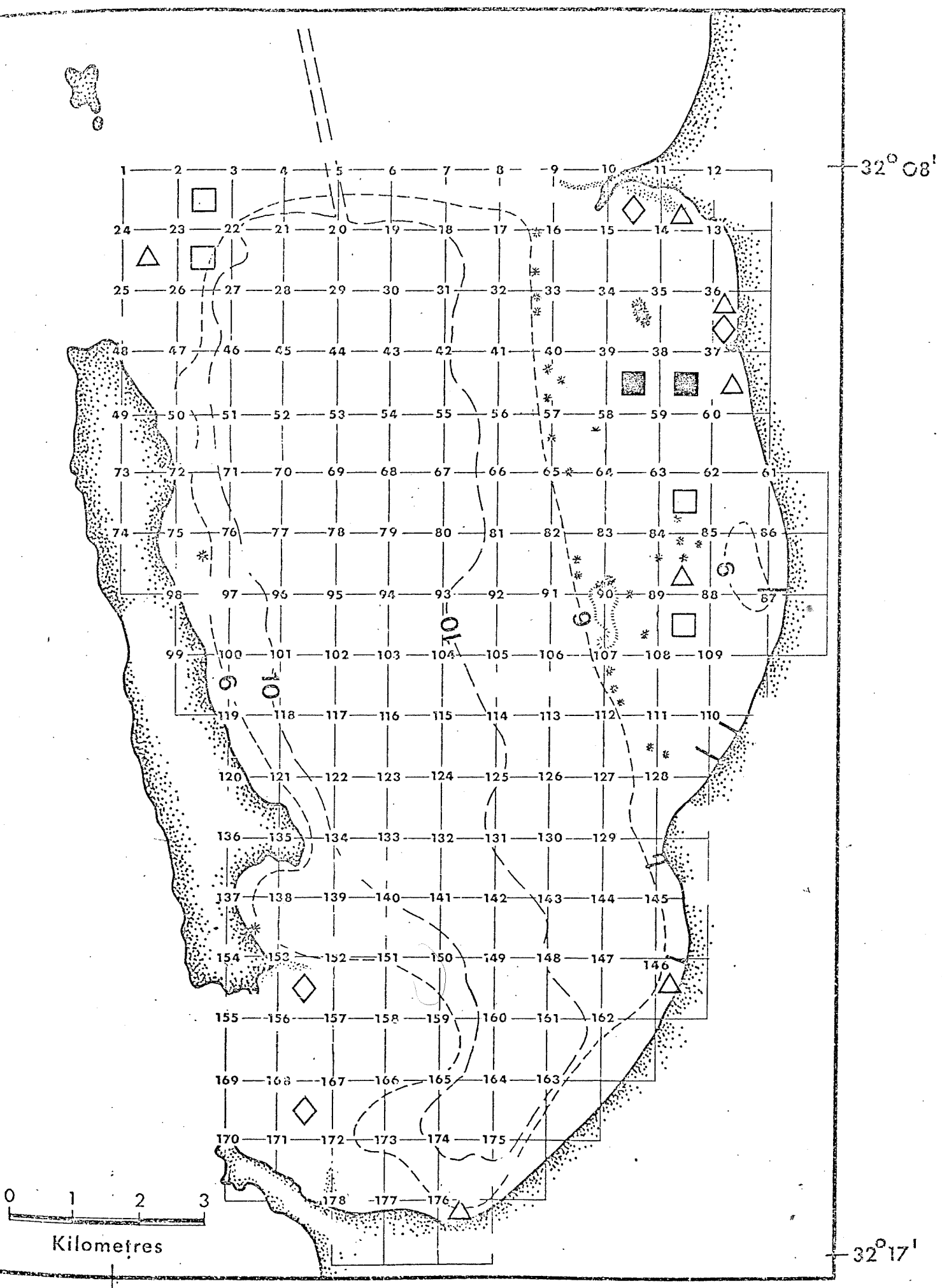


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32° 17'

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ASTROPECTEN PREISSI



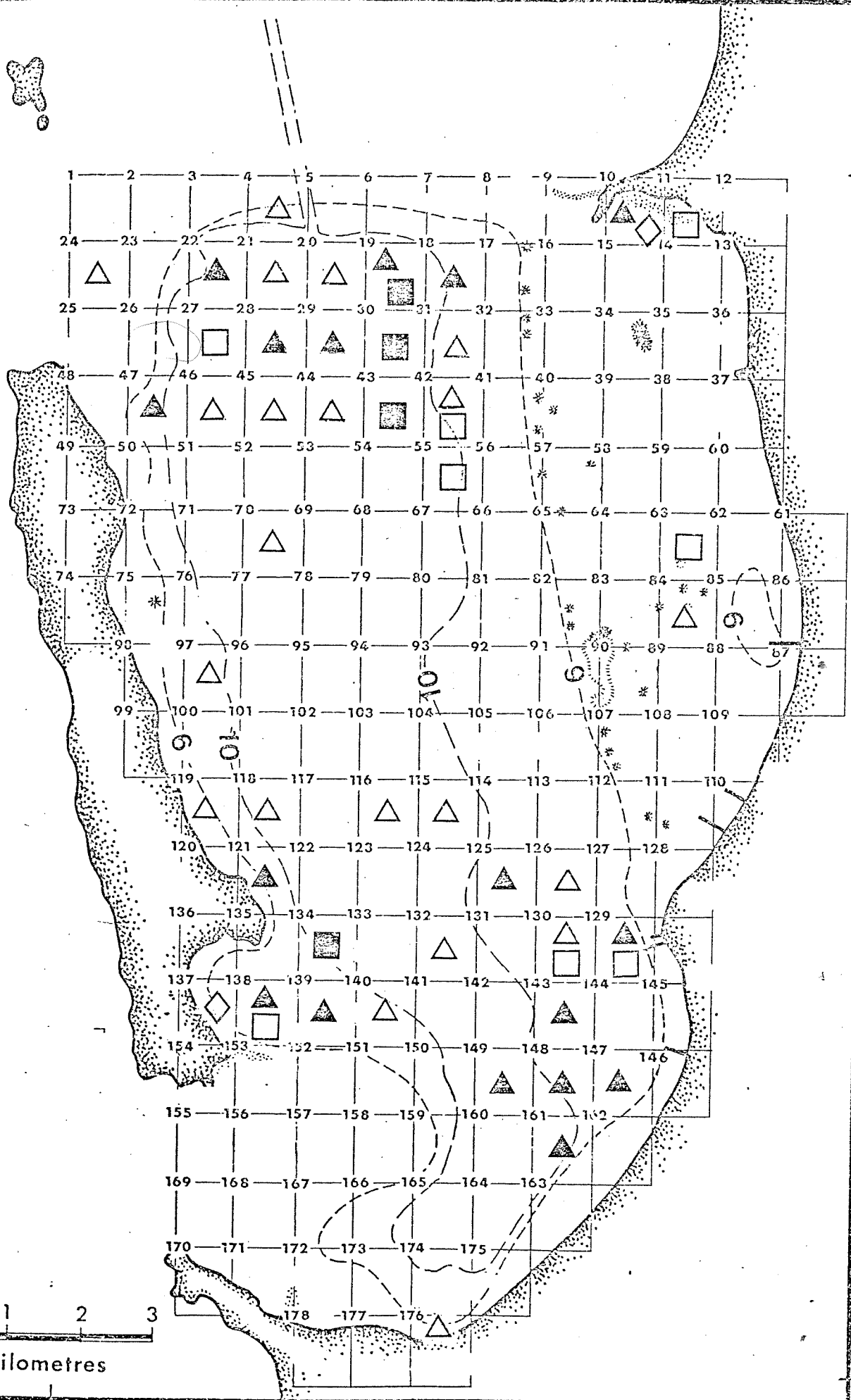
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ARCHASTER ANGULATUS



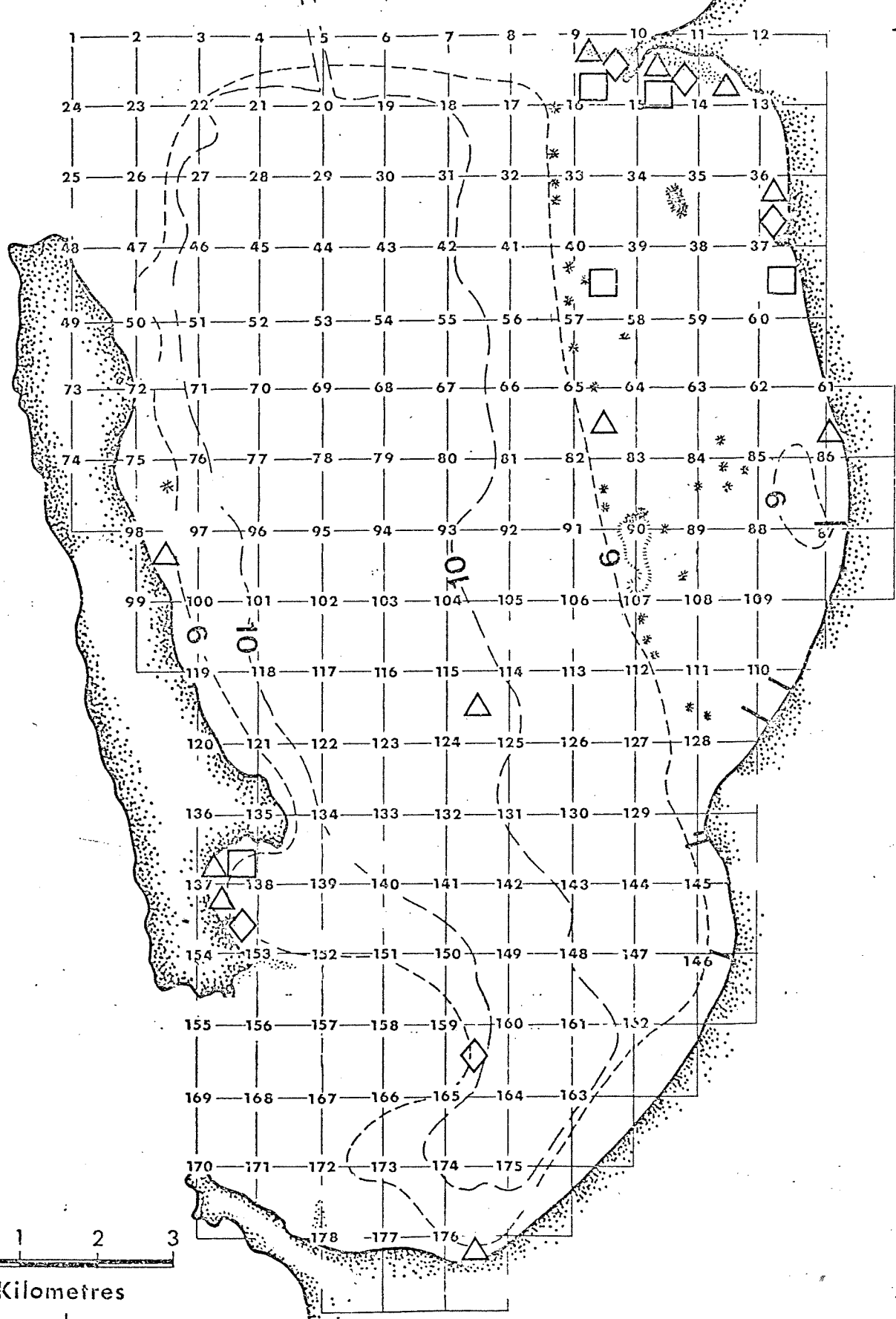
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STELLASTER INSPINOSUS



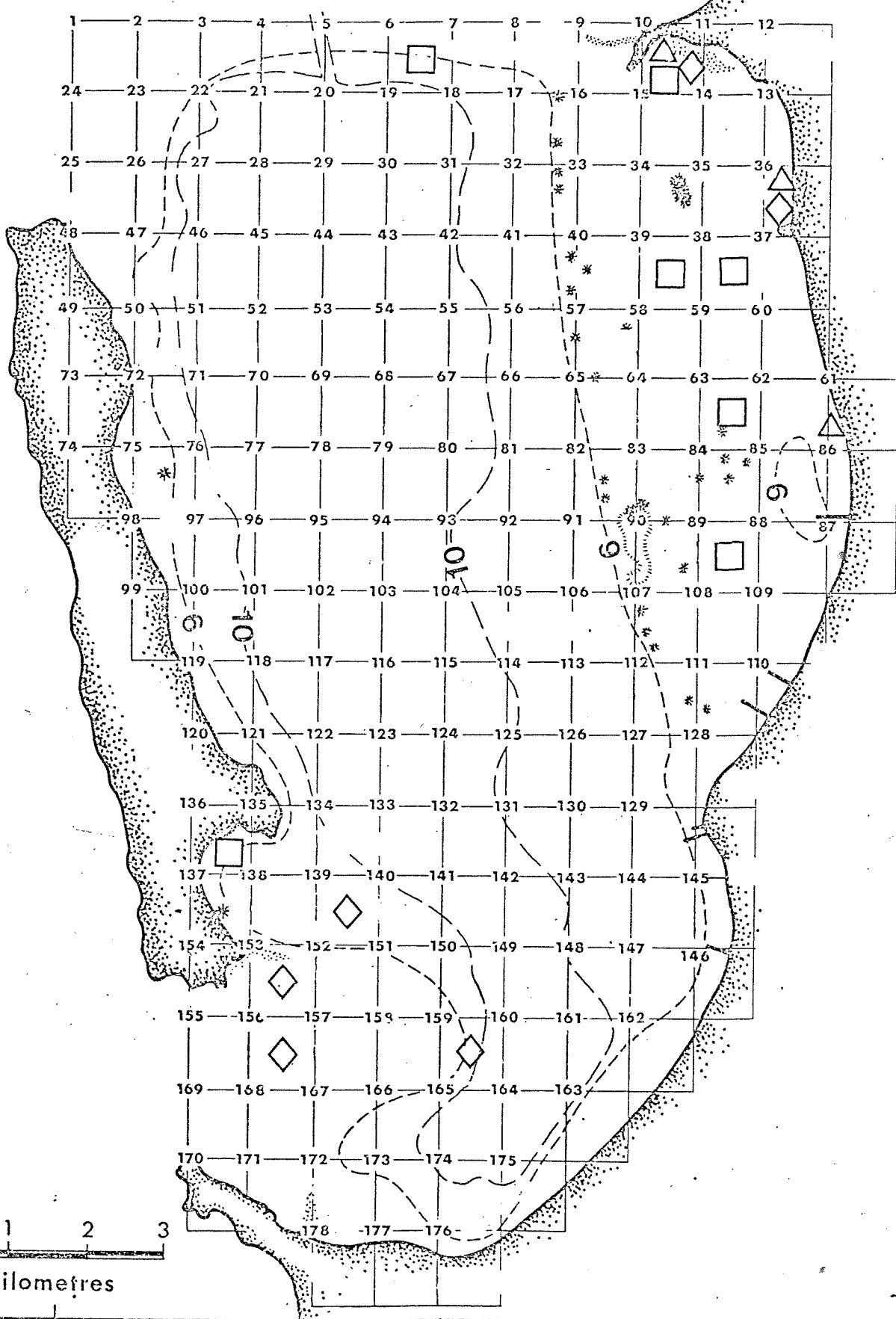
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115° 40'

TOSIA AUSTRALIS



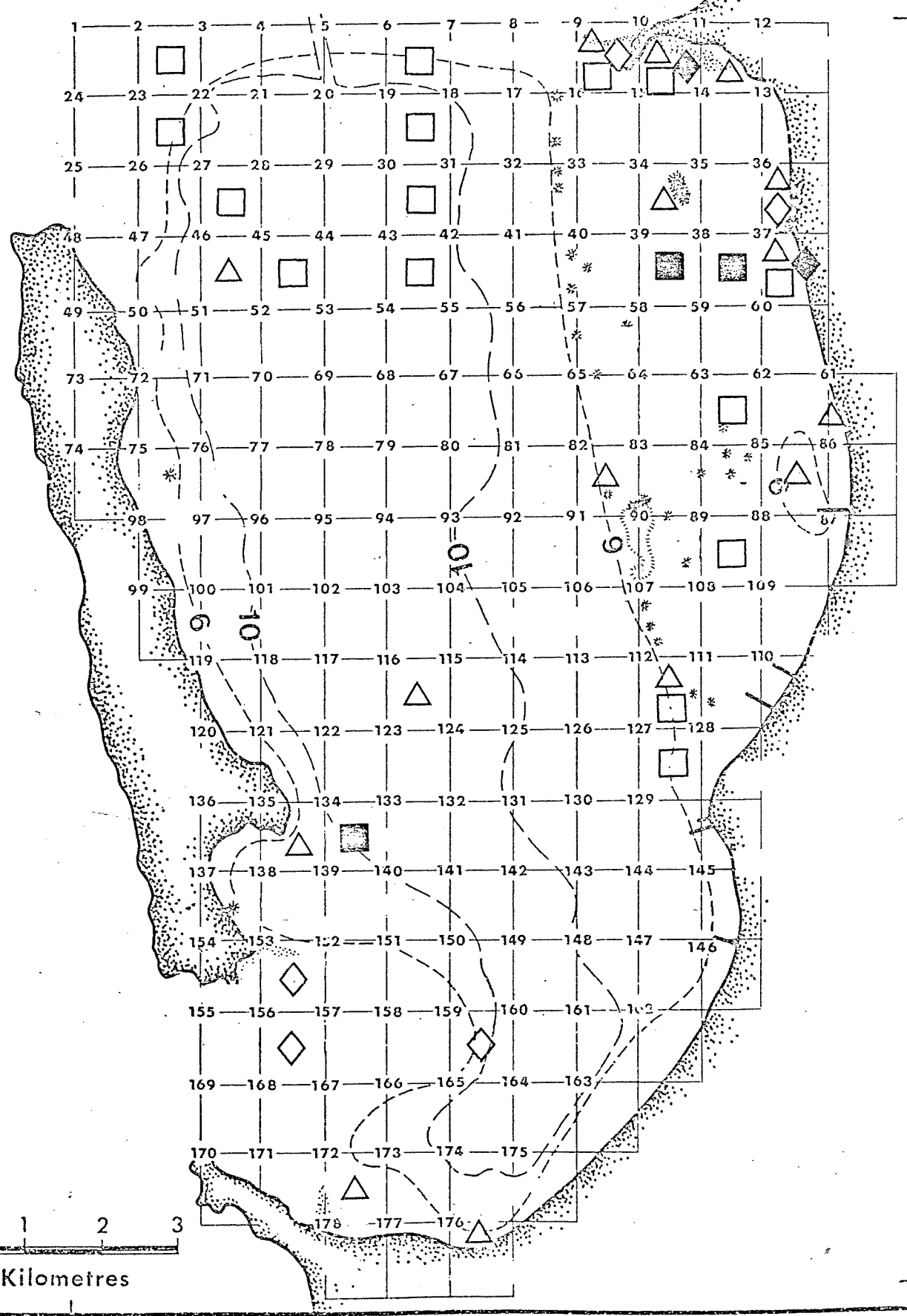
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GONIODISCASTER SERIATUS



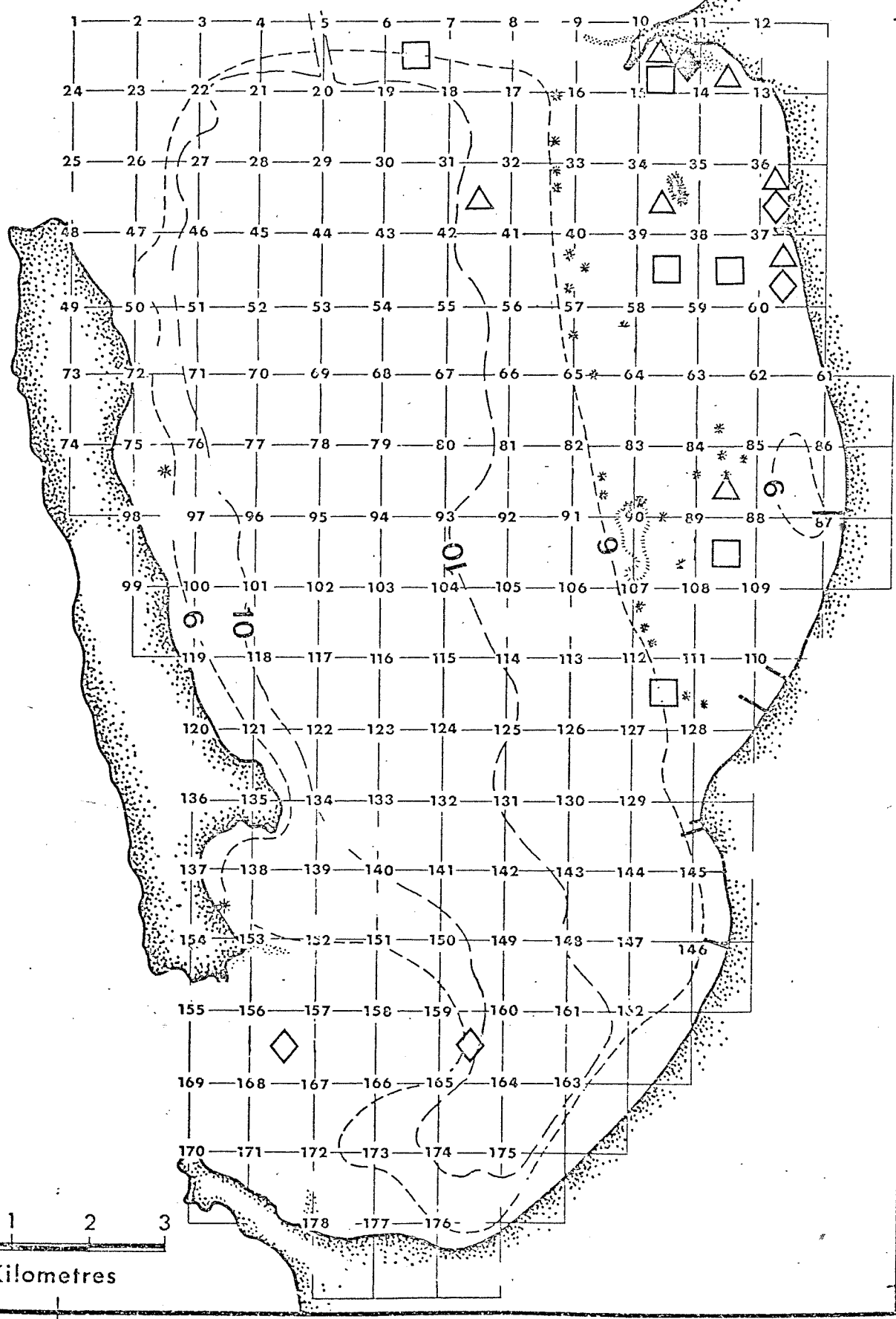
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115° 40'

32° 17'

ANTHENEAE AUSTRALIAE



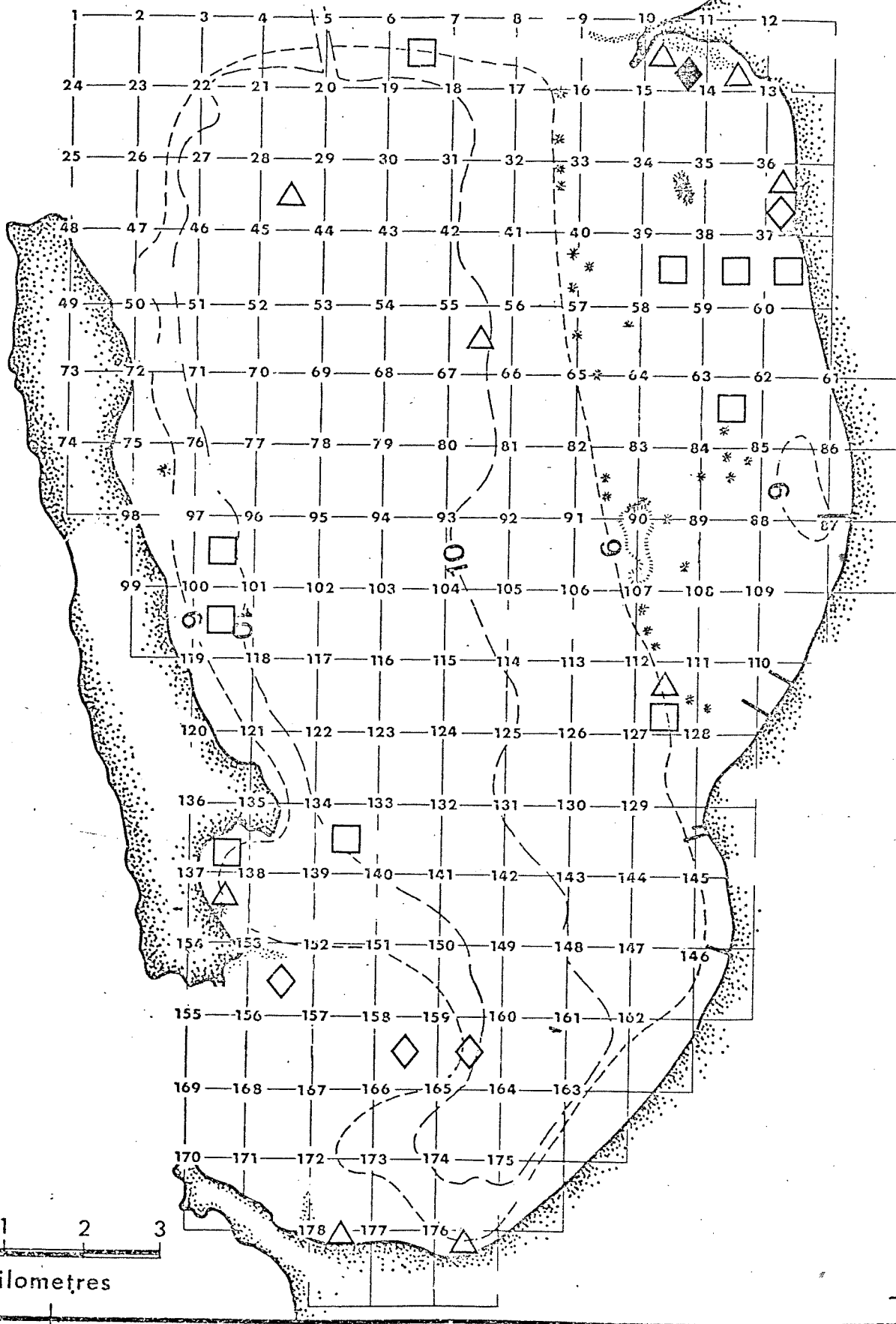
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32° 17'

115° 40'

EURETASTER INSIGNIS





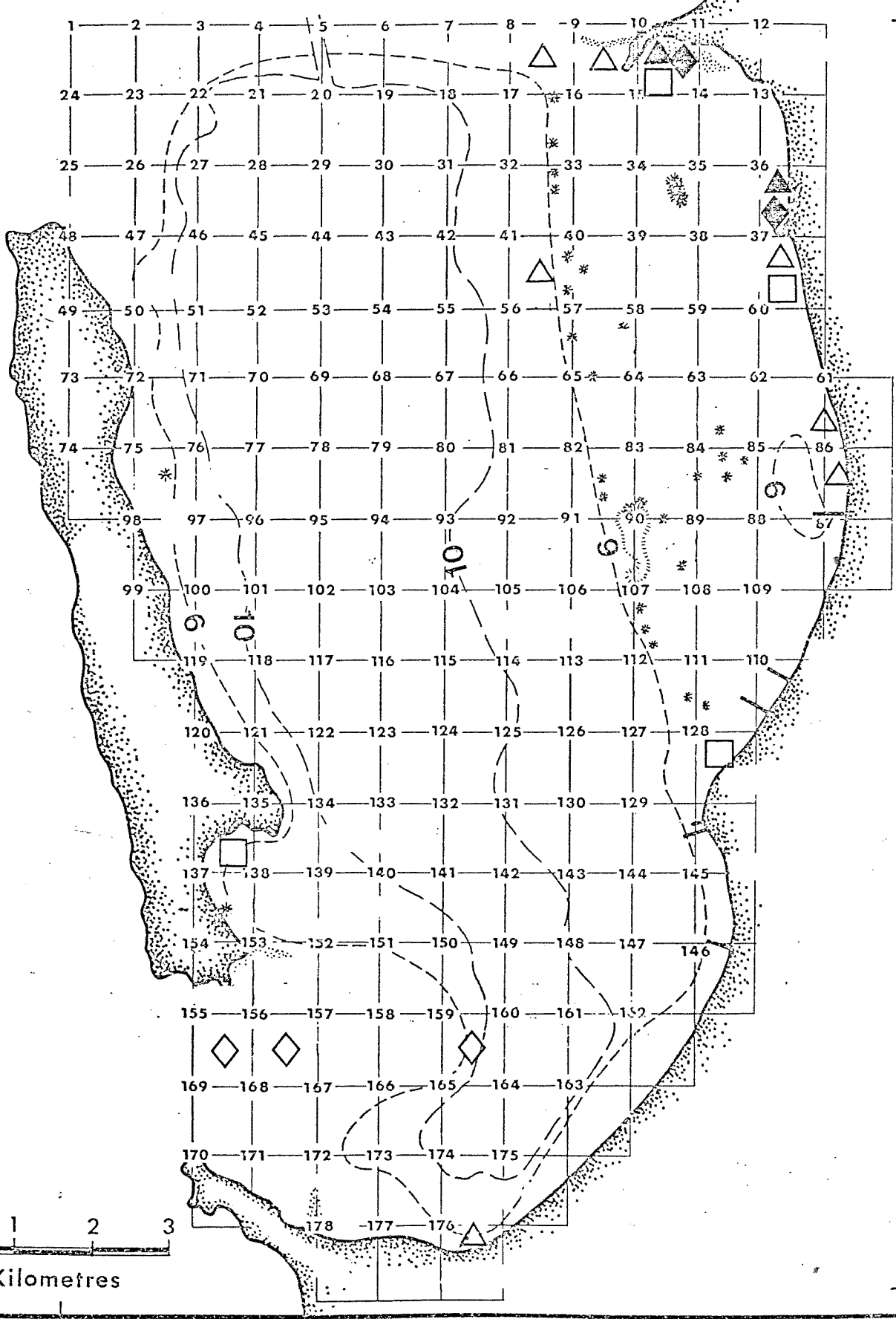
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32° 17'

Kilometres

115° 40'

NEPANTHIA CRASSA



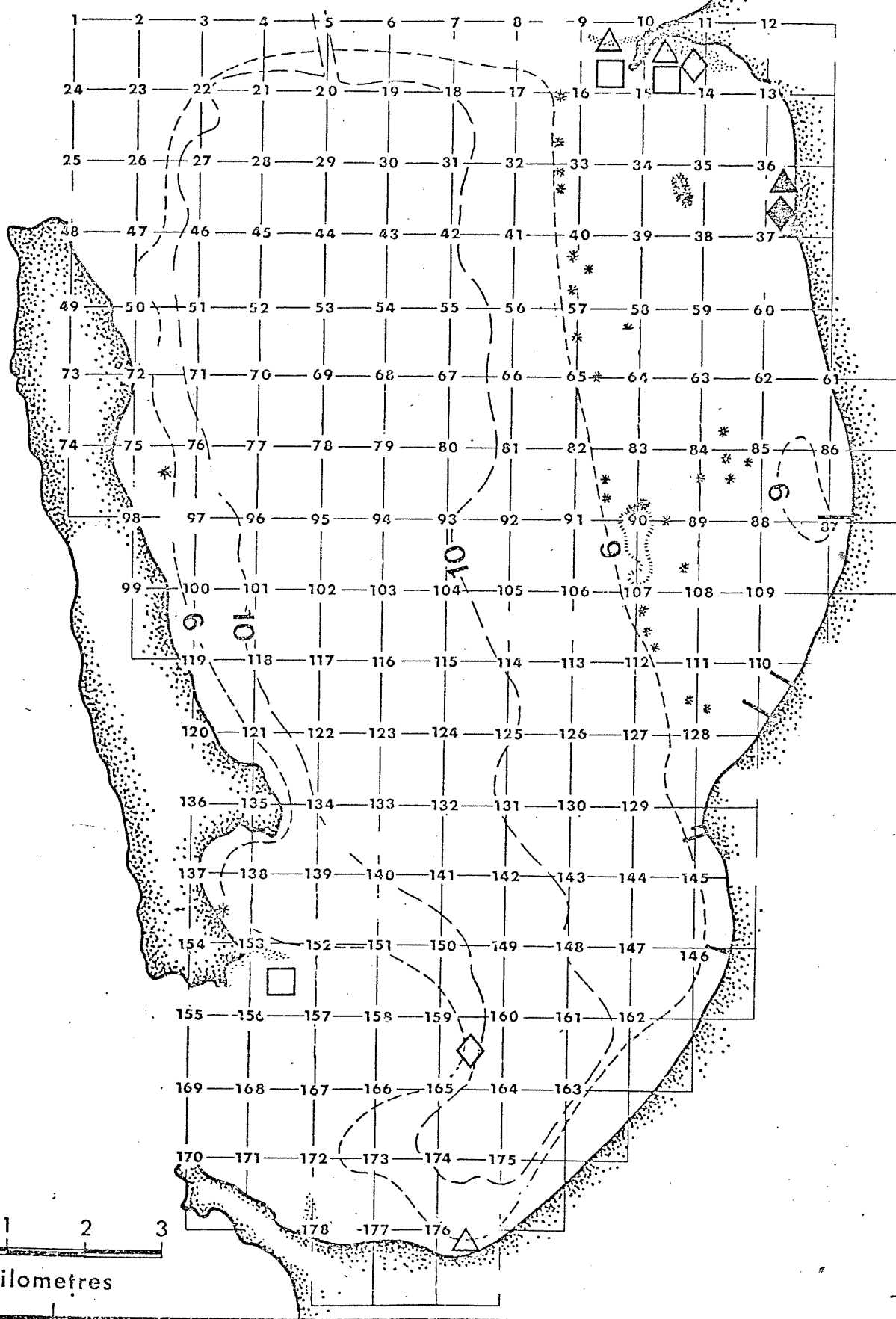
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32° 17'

Kilometres

115° 40'

PATIRIELLA BREVISPINA



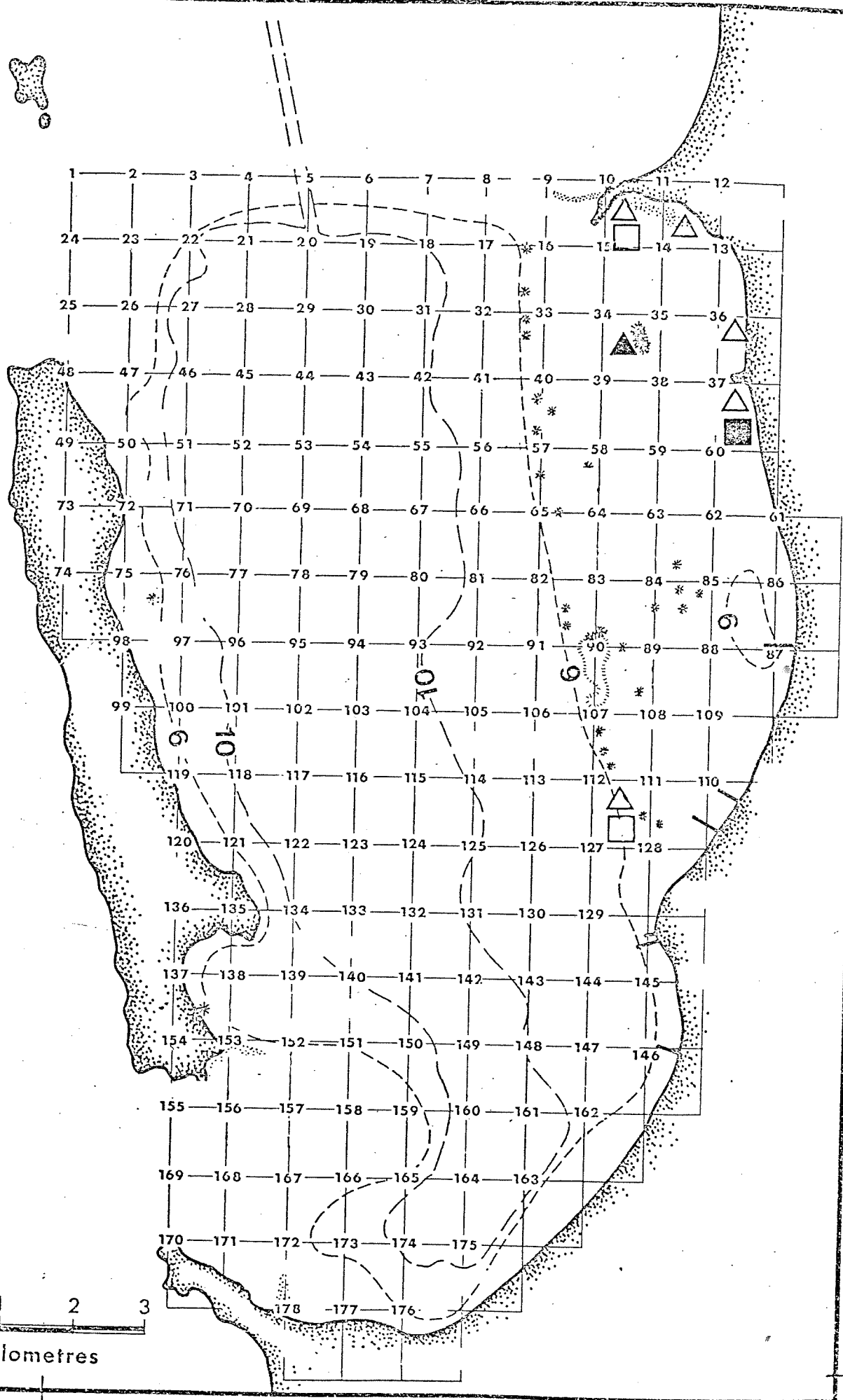
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PATIRIELLA GUNNI



32° 08'



Kilometres

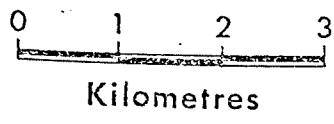
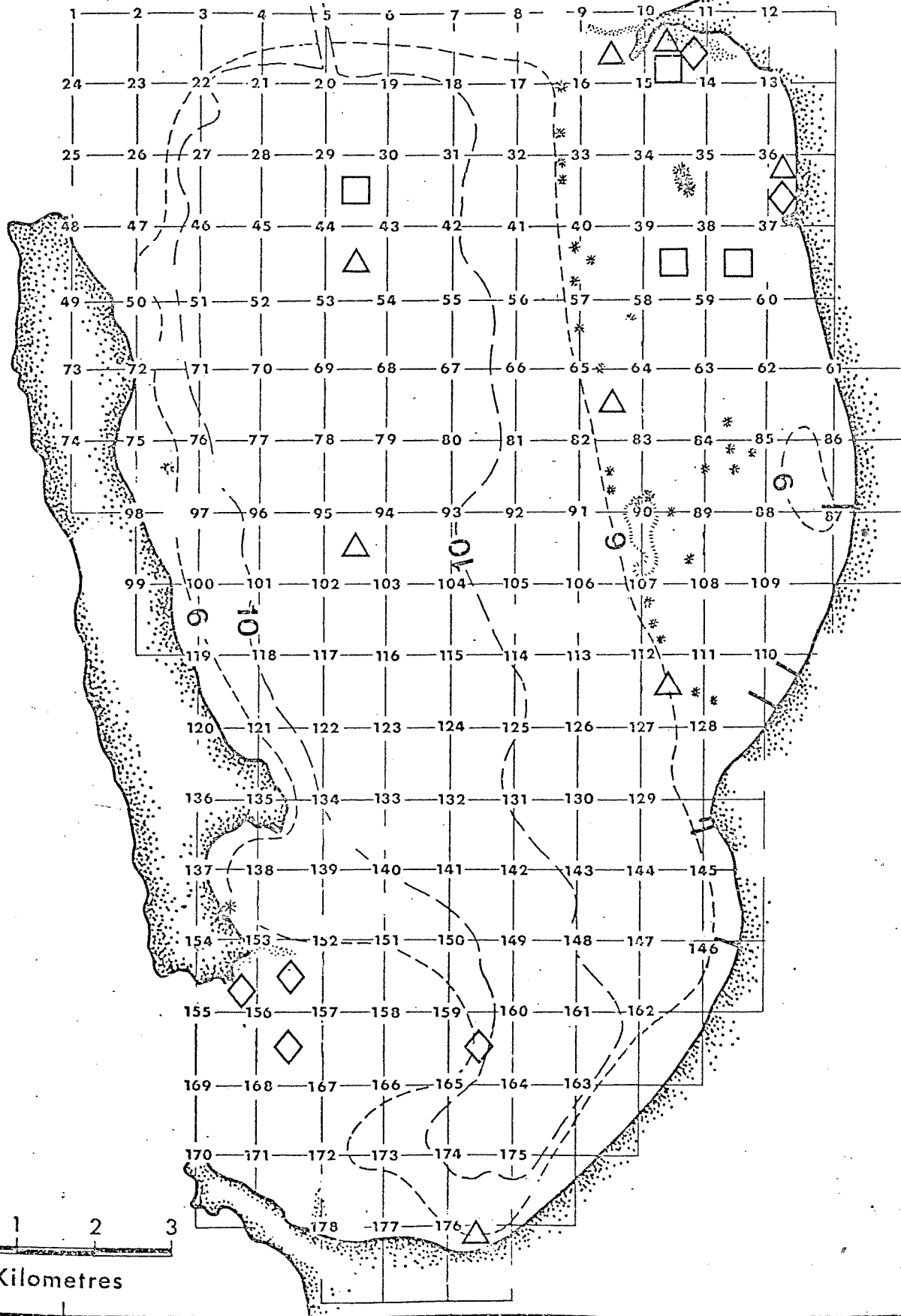
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ECHINASTER VARICOLOR



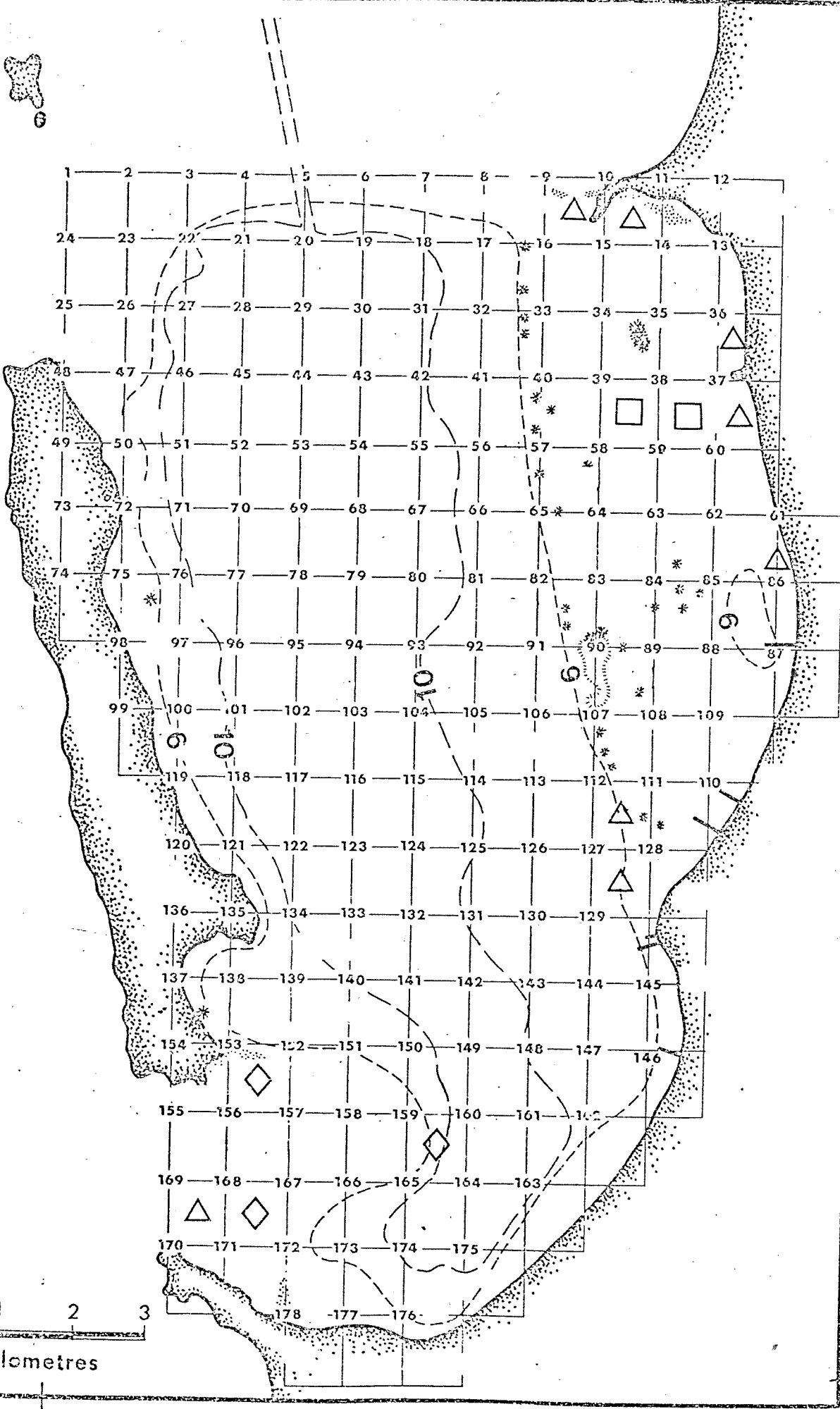
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COSCINASTERIAS CALAMARIA



32° 08'

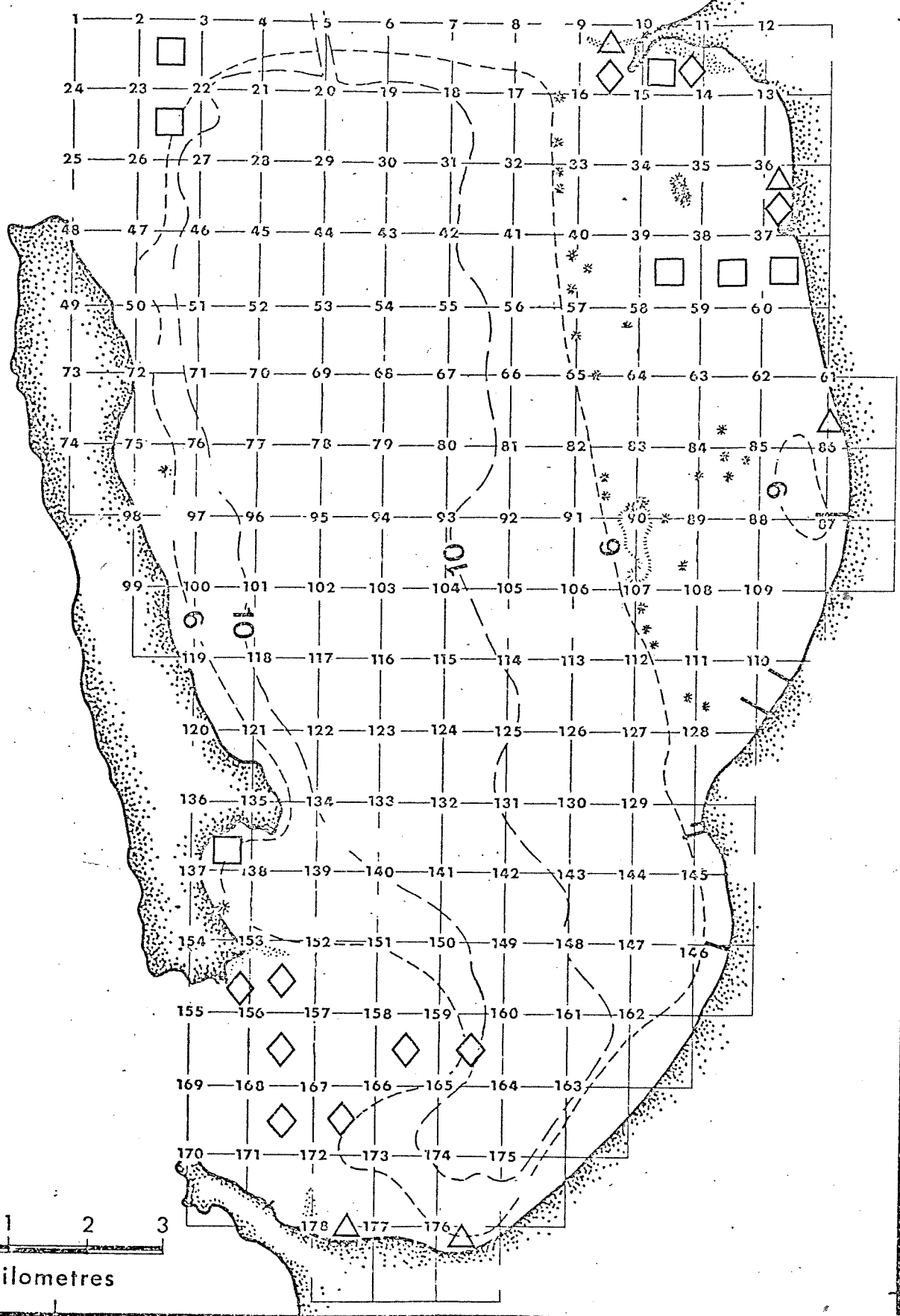
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ALLOSTICHAETER POLYPLAX



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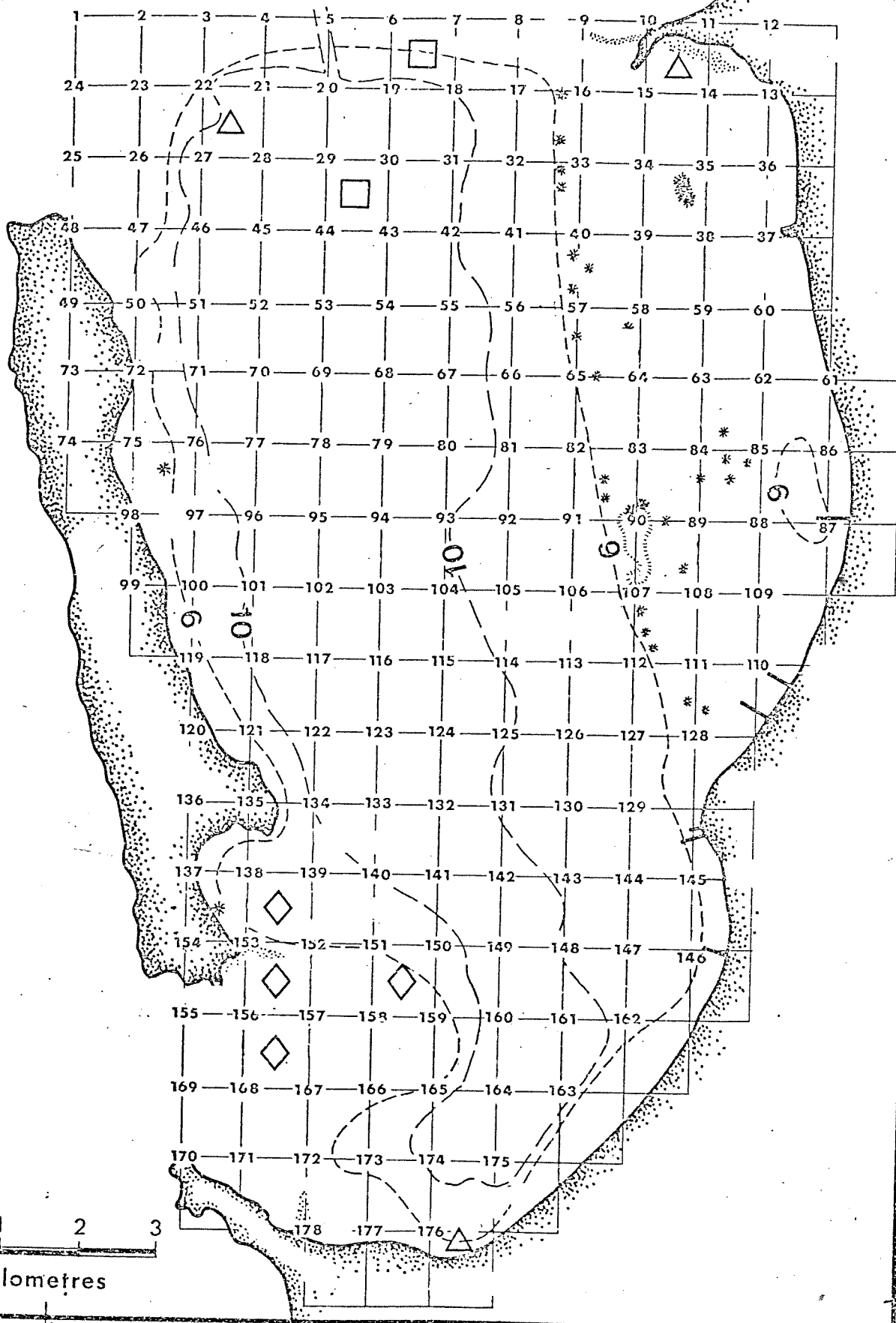


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UNIOPHORA DYSCRITA



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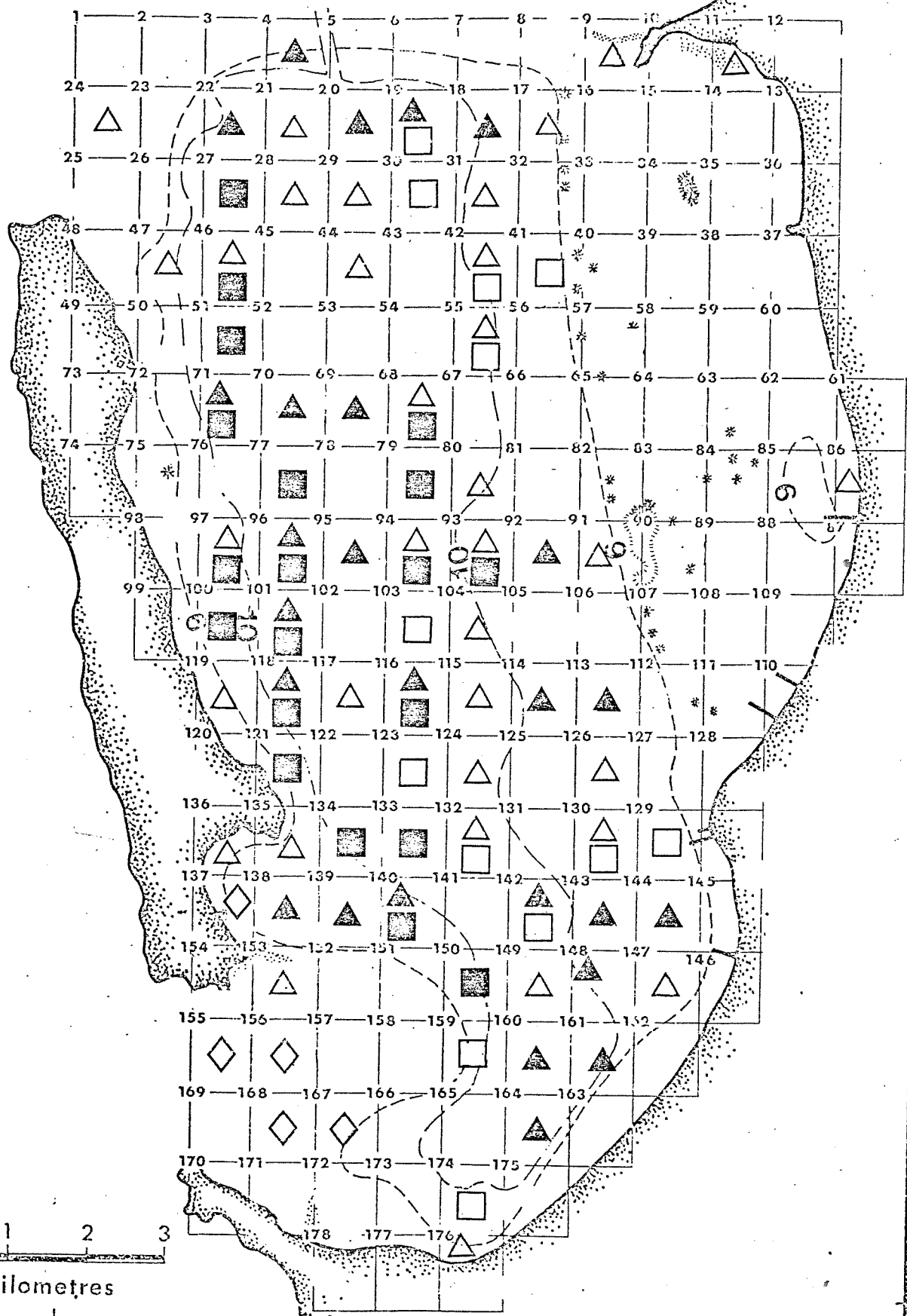
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GONIOCIDARIS TUBARIA





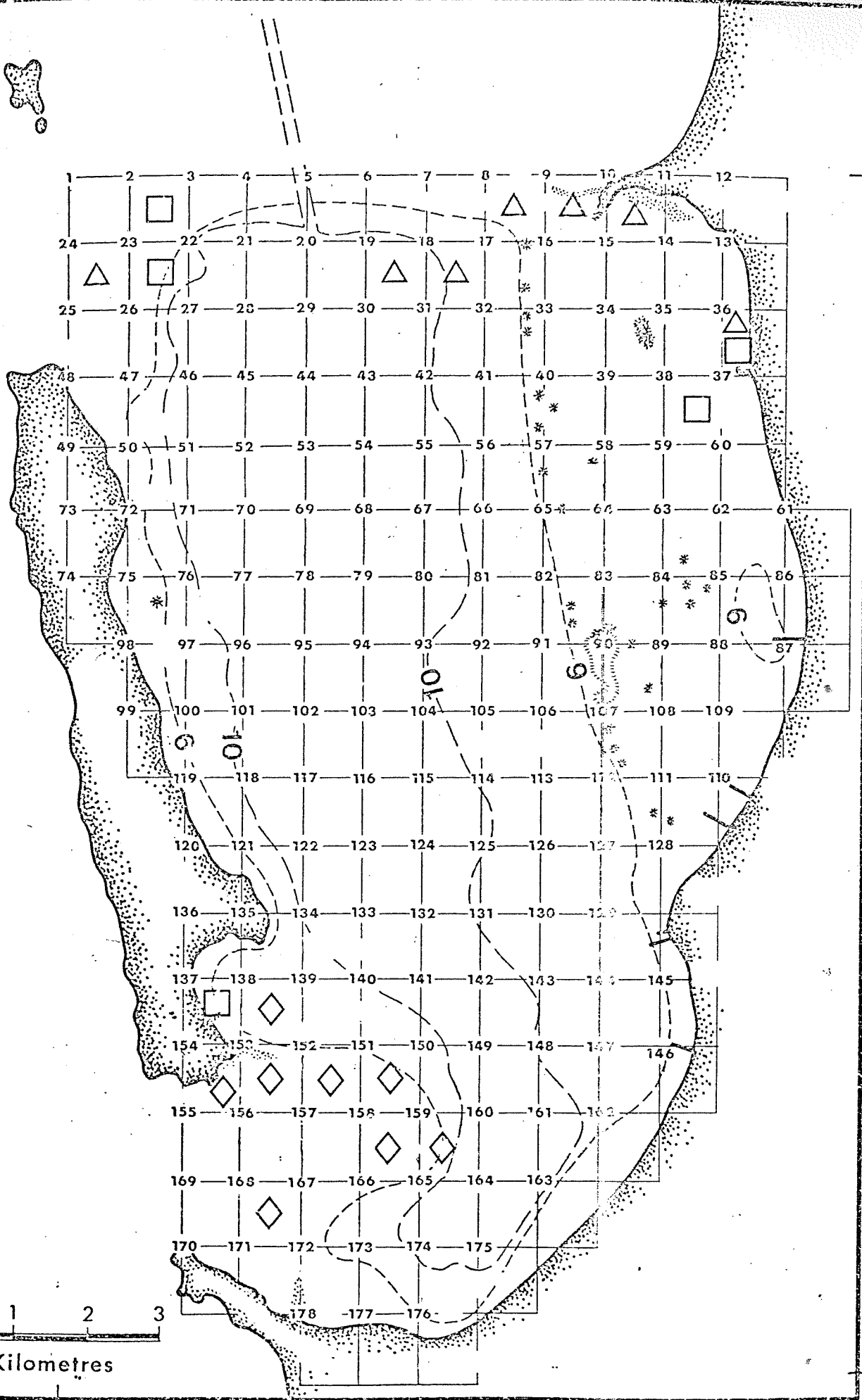
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TEMNOLEURUS MICHAELSENI

32° 17'



32° 08'

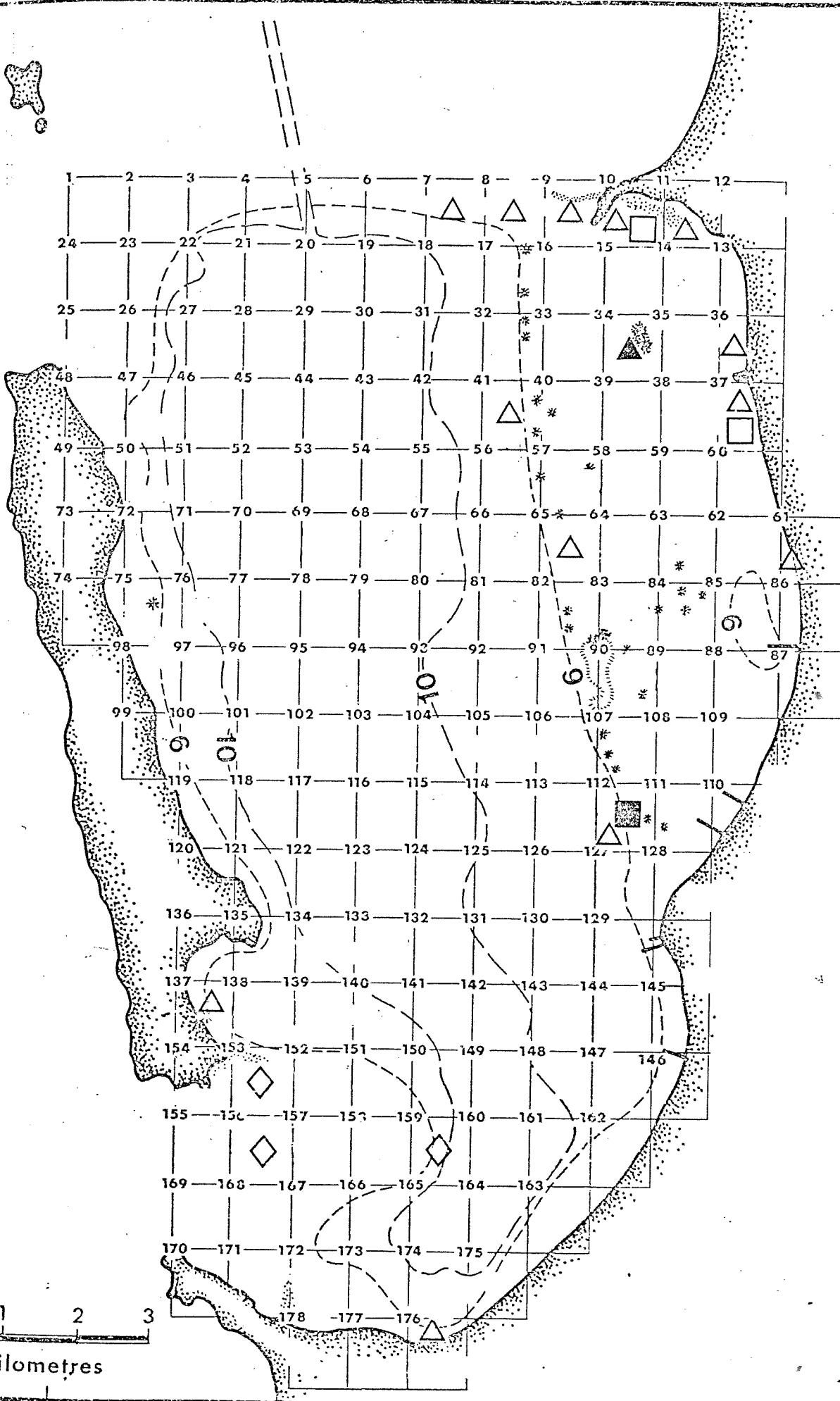
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Kilometres

115° 40'

NUDECHINUS SCOTIOPREMNUM



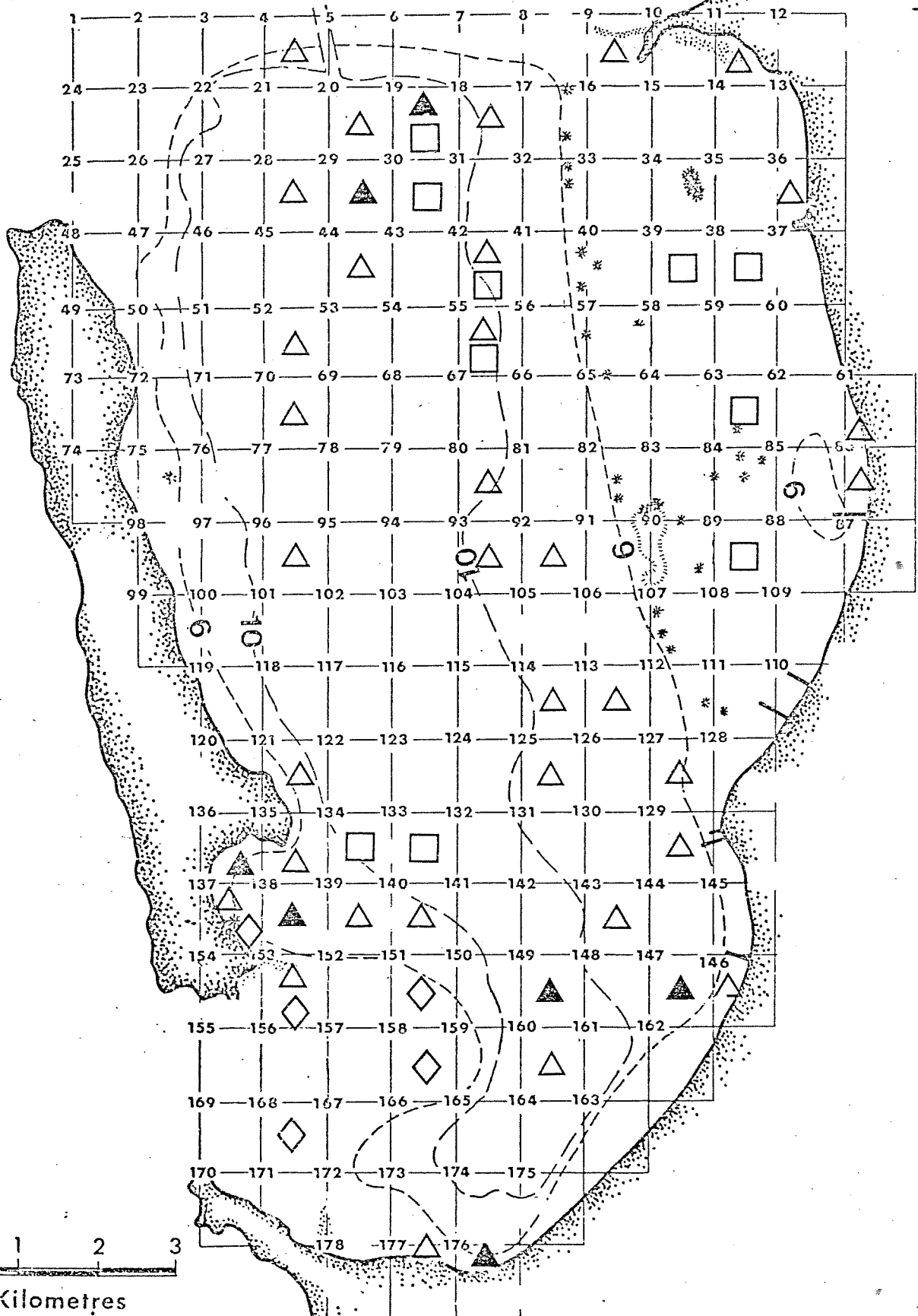
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32° 17'

115° 40'

HELIOCIDARIS ERYTHROGRAMMA

32° 08'

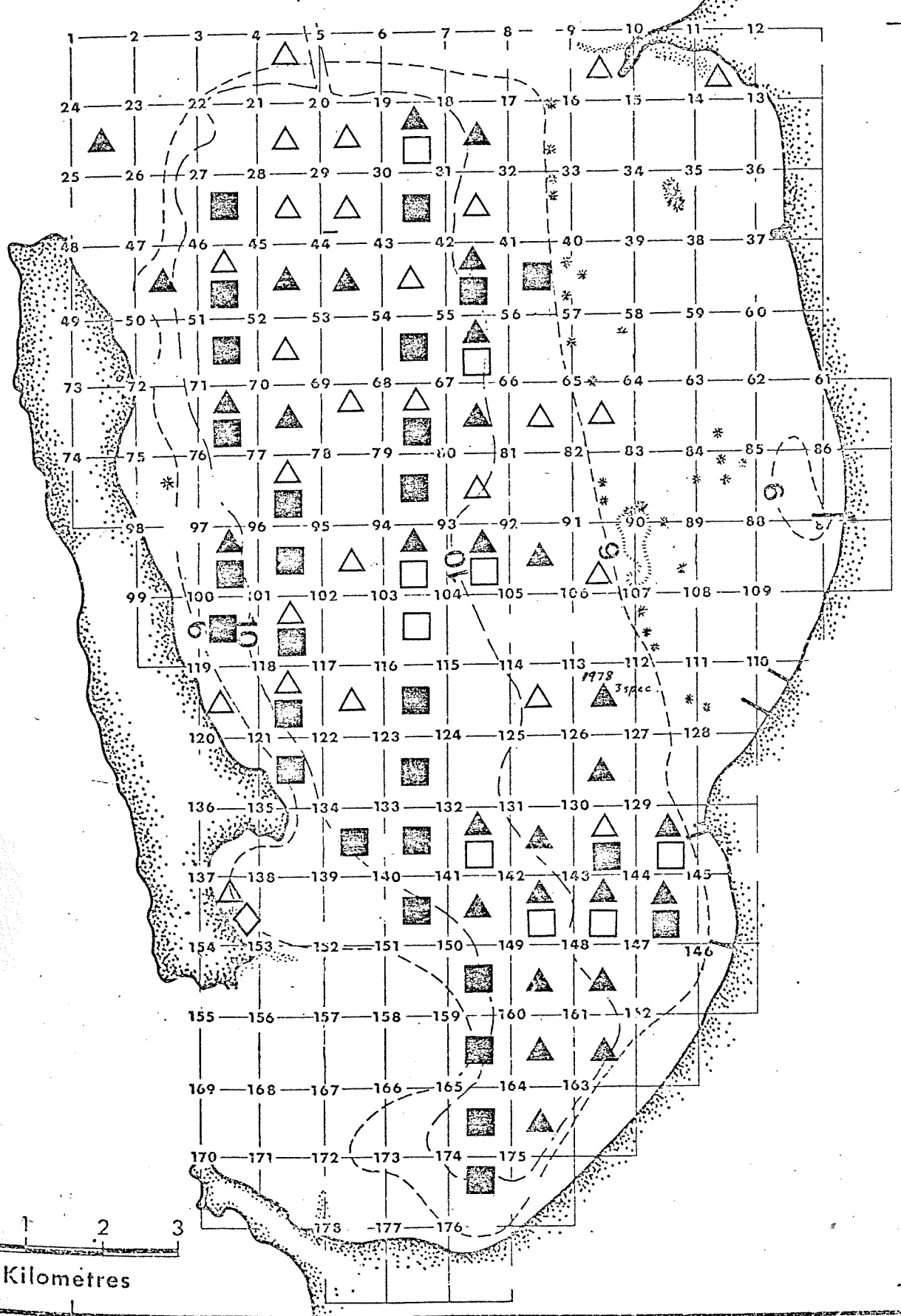


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Kilometres

115° 40'

32° 17'

PERONELLA LESUEURI



32° 08'

32° 17'

0 1 2 3  
Kilomètres

115° 40'

ECHINOCARDIUM CORDATUM