

DECAPOD AND ISOPOD CRUSTACEANS FROM THE WEST COAST OF SOUTHERN AFRICA, INCLUDING SEAMOUNTS VEMA AND TRIPP

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(With 9 figures)

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ABSTRACT

Seven species of isopods (including *Stenetrium vema* sp. nov. and *Jaeropsis monsmarinus* sp. nov.) and nineteen species of decapods (including *Pseudodromia cacuminis* sp. nov. and *Macropodia cirripilus* sp. nov.) are recorded from seamounts Vema and Tripp, and the Lüderitz area. Zoogeographically, the isopods show strong affinities with the South African fauna, while the decapods include mainly South African and west African forms, with single Indo-Pacific and Austral species.

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INTRODUCTION

The benthic fauna of the continental shelf and seamounts off the west coast of South Africa has barely been investigated. What information exists is to be found in scattered reports, and we are still a long way from even a superficial overview.

The material dealt with in this report comes from several sources and emphasizes the fragmentary state of our knowledge. It was thought useful, however, to publish several new records and species, and to summarize the little that is known about Seamount Vema's crustacean fauna.

Seamount Vema, first discovered in 1957, was visited by personnel from the University of Cape Town and the South African Museum in 1964 and 1966. In 1978 the University of Cape Town did further collecting on the summit peak. Lying about 650 km off the west coast of South Africa at 31°38'S 08°02'E (Fig. 1), and rising steeply from the 5 000 m deep sea-floor, the summit plateau averages about 40 m below the surface. Collecting on this plateau has been done both with air-lift dredge and by scuba divers (see Grindley 1967). Most

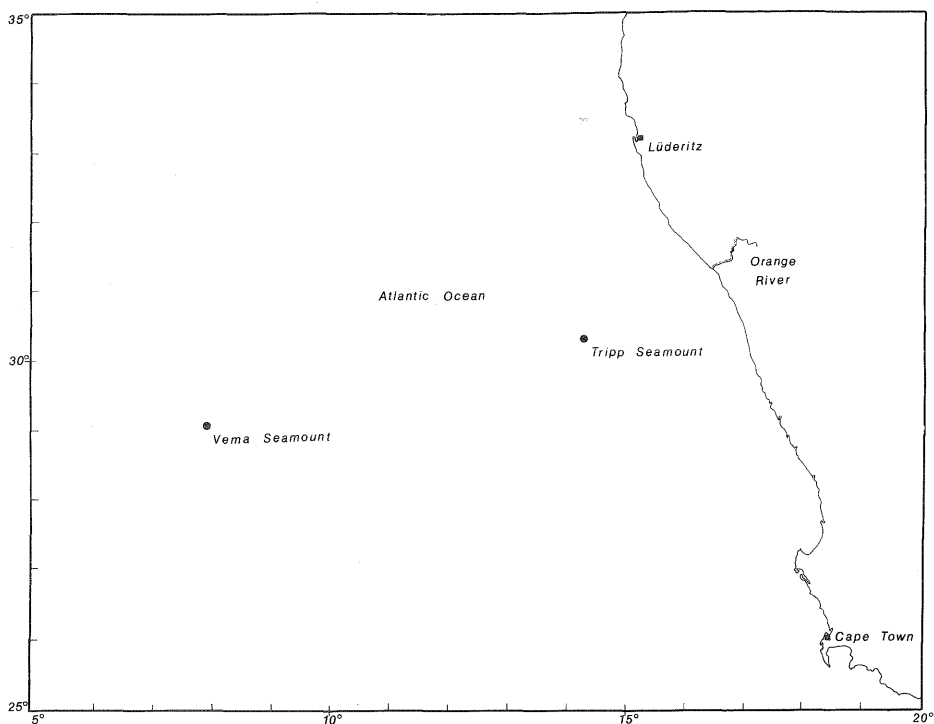


Fig. 1. Map showing localities.

of this material has been deposited in the South African Museum, while a preliminary account of the fauna was given by Berrisford (1969). The Decapoda in this latter report were given preliminary identifications by J. Forest and D. Guinot of the Paris Museum.

Material from Seamount Tripp was collected in the late 1960s by the then Division of Sea Fisheries and the South African Museum, and a few specimens came from commercial fishing boats on the west coast. Seamount Tripp (20°36'S 14°15'E) has received even less attention than Vema, the three specimens mentioned here having been accidentally caught during hydrographic operations. The summit is about 150 m below the sea surface.

Abbreviations used

CL—carapace length

CW—carapace width

IK—Isaacs Kidd trawl

juv.—juvenile(s)

ovig.—ovigerous

SAM—South African Museum

USNM—United States National Museum

VEM—Vema station numbers

Remarks

The present species belongs to the groups of species possessing well-separated obliquely-inserted uropods (Barnard 1965: 200), which includes *J. stebbingi* Kensley, 1975, *J. paulensis* Vanhöffen, 1914, and *J. waltervadi* Kensley, 1975. Both *J. waltervadi* and *J. stebbingi* each possess a pleon with serrate margins. *J. monsmarinus* most closely resembles *J. paulensis*, especially in rostral shape and mouthparts. Vanhöffen's species, however, does not have a hook on the inner distal angle of the uropod, while the triangular terminal part of the pleopod 1 ♂ is broader than in the present species. Considering the isolated nature of Vema, *J. monsmarinus* possibly represents a population of *J. paulensis* (known from Gough, St Paul and Amsterdam Islands) which has become genetically isolated.

Etymology

The specific name is the Latin for 'seamount'.

Order DECAPODA

SPECIES LIST

	<i>Material</i>	<i>Station No.</i>	<i>Locality</i>	<i>Distribution</i>
* material not seen				
Family Penaeidae				
<i>Funchalia villosa</i> (Bouvier)	11 ♂ 7 ♀ 40 juv.		Vema, from tuna stomach	eastern and western North Atlantic, Caribbean, South and Central Atlantic to Natal
Family Oplophoridae				
<i>Notostomus auriculatus</i> Barnard	1 ♀	IK 52	Vema	off Cape Point
Family Alpheidae				
* <i>Alpheus macrocheles</i> (Hailstone)			Vema	Mediterranean, Great Britain, Antilles, Guinea, Sao Tome Guinea, Sao Tome, Cape Verde Is., Principe, Annobon
<i>Synalpheus huluensis africanus</i> Crosnier & Forest	5 ♂ 5 ovig. ♀ 12 juv. 1 ♀	VEM 2.3 VEM 4.6	Vema, 39 m Vema, 42 m	
Family Hippolitidae				
<i>Eualus ctenifera</i> (Barnard)	1 ♂ 11 ♂ 16 ♀ 1 ovig. ♀ 1 ♀ 1 ♀	VEM 2.2 VEM 3.2 VEM 3.3	Vema, 39 m Vema, 48 m Vema, 50 m	Port Elizabeth to Natal, Walter's Shoal
Family Crangonidae				
* <i>Pontophilus sculptus</i> (Bell)			Vema	False Bay to Durban, Mediter- ranean, North Atlantic
Family Palinuridae				
<i>Jasus tristani</i> Holthuis			Vema	Tristan da Cunha
Family Paguridae				
* <i>Pagurus chevreuxi</i> Bouvier <i>Pagurus cuanensis</i> (Bell)	1 ♂	VEM 4.5	Vema Vema, 42 m	Mediterranean False Bay to Port Elizabeth, North Atlantic, west Africa, Mediterranean
Family Galatheidae				
<i>Eumunida picta</i> Smith	1 ♀ 1 ♂ 1 ♀		Off Lüderitz Seamount Tripp	North-western Atlantic, Cuba, Florida, New Zealand, Austra- lia
<i>Galathea</i> sp.	1 ♂	VEM 2.3	Vema, 39 m	
Family Lithodidae				
<i>Lithodes murrayi</i> Henderson	2 ♂ 3 ♂		Off Lüderitz Off South West Africa	St Paul and Amsterdam Is. Prince Edward Is., Crozet Is., off Natal
Family Dromiidae				
<i>Pseudodromia cacuminis</i> sp. nov.	1 ♂ 1 ♂ 1 ♀ 1 ♀	VEM 3.2 VEM 4.2 VEM 4.4 VEM 4.6	Vema, 48 m Vema, 40 m Vema, 40 m Vema, 42 m	
Family Homolidae				
<i>Paromola alcocki</i> (Stebbing)	1 ♀		Off Lüderitz 800 m	Port Elizabeth, Mozambique, Maldives
<i>Paromola cuvieri</i> (Risso)	1 ♂ 1 ovig. ♀		Off Lüderitz, 800 m Seamount Tripp	eastern North Atlantic, Medi- terranean, west Africa

Previous records

False Bay, Port Elizabeth, Port Shepstone, Durban.

Material

SAM-A 16792 1 ♂ 4 juv. 39 m Vem 2.3

SAM-A 16793 1 ♂ 50 m Vem 3.3

Remarks

The six small specimens from Vema agree well with the South African material with which it has been compared. The true identity of this species, however, is an open question. Barnard (1950) was careful to note that his figures and description were based solely on South African material, which he suspected differed from the Indo-Pacific *P. hirsutus* Stimpson. Comparison with material from the Indo-Pacific shows some distinct differences. The Vema/South African species possesses stiff hairs as well as longer flexible hairs. The larger chela is proportionally squatter, with a shorter fixed finger in the Vema/South African species. Unfortunately, the latter material is dry and in poor condition, making further comparison difficult.

Comparison with the most closely related west African form, *Pilumnus inermis* A. Milne Edwards & Bouvier, also reveals several differences, especially in the carapace hairs.

ZOOGEOGRAPHIC DISCUSSION

Although the summit plateau of Seamount Vema is of somewhat limited area (about 8 km in diameter), it supports a relatively rich fauna dominated by encrusting and cryptic forms. Berrisford (1969, table 1) summarized the affinities of the 105 species of invertebrates identified. Of these, 25 per cent were South African species, 27 per cent had a scattered (cosmopolitan) distribution, 28 per cent were endemic, and 10 per cent had Indo-Pacific affinities. Millar (1968) found the ascidian fauna of Vema to have strong affinities with South Africa and no components in common with Tristan da Cunha.

Vema is about 11×10^6 years old (Simpson & Heydorn 1965), and older than Tristan. Apart from the fish and the spiny lobster species, there are few species in common, even though the prevailing oceanic conditions need not reinforce isolation. Vema is bathed in South Atlantic Central Water, with what was initially interpreted as local subsurface upwelling of Antarctic Intermediate water having a strong northerly-flowing component (Simpson & Heydorn 1965: 251). Welsh & Visser (1970), however, suggest that this apparent upwelling, which also occurs further south away from any topographical features such as seamounts, is really cyclonic upwelling caused by a 'dying' eddy moving northward. These eddies are formed in the area where the Agulhas Current meets the West Wind Drift.

The fish, being mainly pelagic forms, can be regarded as part of the Vema fauna only in the widest sense, while Penrith (1967) has recorded only one endemic species. The problem of recruitment of *Jasus tristani* is less simple, but with a planktonic life of several months, phyllosomata originating at Tristan would need to be transported in a north-easterly direction, perhaps by offshoots of the West Wind Drift encountering the north-flowing Benguela System, for successful colonization. This obviously happens, judging from the population discovered in the later 1950s. Since then, Vema's spiny lobster population has been heavily exploited. By 1967 Heydorn reported the summit almost denuded of *Jasus*, while the divers of the 1978 cruise did not see any lobsters, neither were any specimens of the grapsid crab *Plagusia chabrus* noted. This latter species was fairly commonly seen on the earlier visits. How long a time is required for this population to recover will probably be answered only by a theoretical exercise in population dynamics.

The isopods, with their strong South African affinity and lacking planktonic larvae for dispersal, perhaps reached Vema clinging to drifting kelp. The major alga of the summit is *Ecklonia biruncinata*, which also occurs off the southern Cape coast, and would provide ideal shelter for clinging animals.

Seventeen species of decapods are included in this brief discussion of zoogeography (the two mesopelagic species mentioned being excluded). Of these seventeen, six have been recorded from South Africa, including three from the east coast only (*Eualus ctenifera*, *Paromola alcocki*, *Lithodes murrayi*); *Pontophilus sculptus*, known from False Bay to Natal and also from the Mediterranean, north-western Atlantic, and Angola; *Pilumnus* sp. recorded as *P. hirsutus* from the east and south coast; and *Plagusia chabrus*, an essentially cold-temperate austral species known from South West Africa to Natal, Australia, New Zealand, Chile, and Juan Fernandez. *Lithodes murrayi* was previously regarded as an austral form, but has been recorded from deep water off Natal (Kensley 1977).

Pseudactaea corallina is a true Indo-Pacific species and has not been recorded from the east coast of South Africa.

The two new species described here, viz. *Pseudodromia cacuminis* and *Macropodia cirripilus*, are the only 'endemics'.

Five species have been recorded from West Africa; *Alpheus macrocheles*, *Synalpheus huluensis africanus*, and *Pagurus cuanensis* (also known from the Mediterranean) are regarded as true West African forms; *Paromola cuvieri* and *Eumunida picta* have a much wider range. *Pagurus chevreuxi* is known only from the Mediterranean.

With an age of eleven million years, it is not difficult to envisage colonization of Seamount Vema by West African/Mediterranean species. The species from the Indo-Pacific and the east coast of South Africa, however, must have been faced with greater problems of colonization. Perhaps the most feasible explanation is that planktonic larval forms of these species, present in southward-flowing Agulhas water, were caught in the pockets of Agulhas

water eddying northward in the South Atlantic as previously mentioned. The temperature regime in this series of events would not be a barrier to colonization. Although there is so-called upwelling of Antarctic Intermediate water in the vicinity of Vema, above the 75 m depth line the temperatures are fairly uniform (Welsh & Visser 1970: 2), being between 18° and 21° C, and comparable with east coast shallow-water temperatures.

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