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DISTRIBUTION OF STOMATOPODS (CRUSTACEA) IN THE LAGOONS OF NEW CALEDONIA AND CHESTERFIELD ATOLL

B. Richer de Forges and **M. K. Moosa**

ABSTRACT. - A large survey of more than 1400 dredged stations on soft bottoms, collected 69 stomatopod species from four lagoons in New Caledonia and the Chesterfield Islands. The six main species *(Gonodactylus affinis, G. incipiens, Haptosquilla trispinosa, Pseudosquilla ciliata, Clorida chlorida* and *C. fallax)* are studied. The occurrences of species are compared for each lagoon. An analysis of the distribution of these species in different lagoons in relation to sediments show that : the two *Clorida* live only in muds with a significant terrigeneous component (>50% mud); the two *Gonodactylus* are associated with coral rubble near reefs and passes; and the two other, *H. trispinosa* and *P. ciliata,* are found on sandy bottoms with strong currents. In the Chesterfield atoll, with no terrigenous inputs, only *G. incipiens* and *P. ciliata* were commonly found; *Clorida fallax* was found principally in the North lagoon of New Caledonia, around Belep Islands at depths more than 25 metres; *G. affinis,* mentioned from the Great Barrier Reef, was not found in the Chesterfield group. Distribution maps are presented for each species in New Caledonia and Chesterfield lagoons with some biogeographical comparisons with the Great Barrier Reef.

INTRODUCTION

Between 1984 and 1989, an intensive programme of sampling of the soft bottoms of the lagoons of New Caledonia by dredging resulted in the collection of a large quantity of zoological material. This material, now deposited in the Muséum national d'Histoire naturelle de Paris (MNHN), has been sorted and then allocated to specialists for detailed study. With the results of these studies to hand, it now becomes possible to exploit on sound taxonomic bases the ecological data related to them.

The stomatopod crustaceans are present in all the tropical ecosystems, but are not well known in New Caledonia, where only ten species have been recorded. After the identifications of the material obtained from 230 dredgings in the Chesterfield Islands (Richer de Forges *et al.*, 1988)

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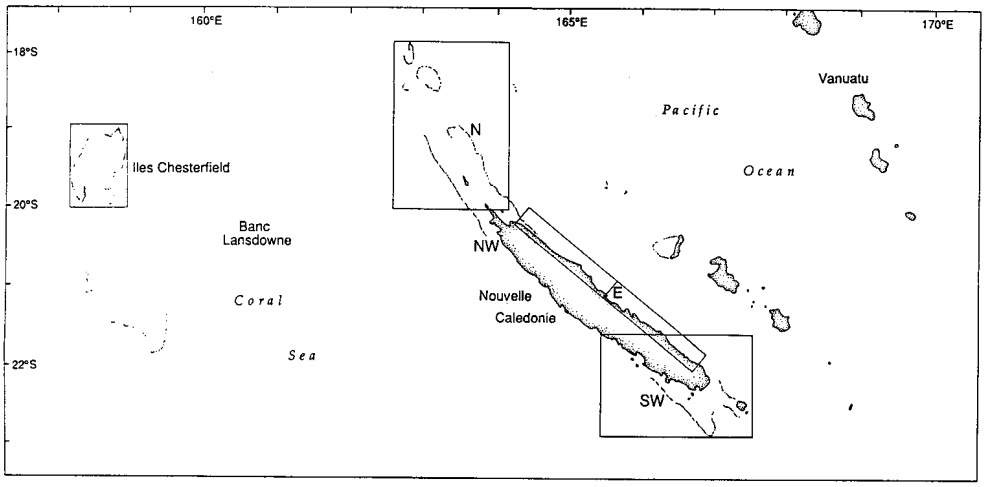

Fig. 1. Situation maps with studied areas in the economic zone of New Caledonia.

and 1217 dredgings in the lagoons in New Caledonia (Richer de Forges, 1990, 1991), we found 69 species belonging to 10 families and 31 genera (Moosa, 1991). Amongst these 69 species (Table 1), six are relatively frequent and have very different distributions in the lagoons. The distribution of these species in relation with the conditions of the environment allows us to define for each of them its preferred habitat (Fig. 1).

MATERIAL AND METHODS

The material studied here comes mainly from samplings effected with a Waren dredge 80 cm wide. The stations were set up according to a distance of two nautical miles and each pass with the dredge took place for 5 min. at one knot, or a maximum surface covered of 120 m^2. The sediments taken at each of the stations have allowed us to draw up sedimentological maps (Chevillon & Clavier, 1988; Chevillon & Richer de Forges, 1988; Chevillon, 1989, 1990). The majority of the collections took place in depths of more than 5 m, on soft bottoms where the techniques of capture described by Reaka & Manning (1989) are not applicable. It is certain that even on soft bottoms, the dredge is a poor sampling device for burrowing and very mobile fauna like stomatopods. The surface sampled by the dredge varies considerably from one station to another mainly by reason of the nature of the substratum, and the results presented here are thus qualitative.

The taxonomic study of the collection of stomatopods was done in 1989 by one of us (M. K. Moosa) at the MNHN (Paris), where all the specimens are deposited (Moosa, 1991).

From the results of the presence/absence of species in the stations, occurrence frequencies have been calculated by depths and in relation to the nature of the sediment. The classes of depth selected are : <10 m, from 10 to 20 m, from 20 to 30 m, from 30 to 50 m, and >50 m. To classify the sediment, it is their content of lutites (particles <0.063 mm) which has been used : <5%, from 5 to 25 %, from 25 to 50 %, from 50 to 75 %, and >75 %.

RESULTS

Frequency of occurrence in the dredgings

For each of the species of stomatopods, the frequency of occurrence has been calculated in relation to the total number of dredges effected in the lagoons of New Caledonia and Chesterfield atoll at less than 100 m depth (Table 1). This number of stations is therefore 1155 for New Caledonia and 230 for Chesterfield.

Table 1. List of species of stomatopods collected in New Caledonian lagoons and in Chesterfield atoll with their percentage of occurrence in the dredgings (after Moosa, 1991).

Stomatopods	New Caledonia % on 1155 stations	Chesterfield % on 230 stations
Coronidopsis bicuspis Hansen, 1926	0.09	0
Eurysquilla crosnieri Moosa, 1991	0	0
Eurysquilloides sibogae (Hansen, 1926)	0	0
Manningia australiensis Manning, 1970	0.09	0.43
Gonodactylus affinis de Man, 1902	5.02	0
Gonodactylus botti Manning, 1975	0	0.43
Gonodactylus chiragra (Fabricius, 1781)	0	0
Gonodactylus falcatus (Forskal, 1775)	0.69	0.87
Gonodactylus glabrous Brooks, 1886	0.78	0.87
Gonodactylus incipiens Lanchester, 1903	3.38	17.83
Gonodactylus mutatus Lanchester, 1903	0	0
Gonodactylus randalli Manning, 1978	0	0.87
Gonodactylus smithii Pocock, 1893	0.95	1.74
Gonodactylus viridis Serène, 1954	0	0
Mesacturoides spinosocarinatus (Fukuda, 1909)	0	0
Odontodactylus brevirostris (Miers, 1884)	0.69	0
Odontodactylus cultrifer (White, 1850)	0.17	0
Odontodactylus hawaiiensis Manning, 1967	0	0
Odontodactylus scyllarus (Linnaeus, 1758)	0.17	0
Chorisquilla excavata (Miers, 1880)	0.43	0.43
Chorisquilla spinosissima (Pfeffer, 1899)	1.21	5.65
Chorisquilla tuberculata (Borradaile, 1907)	0.09	0
Chorisquilla tweediei (Serène, 1950)	0	0
Echinosquilla guerinii (White, 1861)	0.09	0
Haptosquilla glyptocercus (Wood-Mason, 1875)	0	0
Haptosquilla trispinosa (Dana, 1852)	3.55	5.22
Alainosquilla foresti Moosa, 1991	0	0
Pseudosquilla ciliata (Fabricius, 1758)	7.27	11.74
Pseudosquilla hieroglyphica Manning, 1972	0.17	1.3
Pseudosquilla komaii Moosa, 1991	0	0.43
Pseudosquilla megalophthalma Bigelow, 1893	0.26	0.34
Pseudosquilla ornata Miers, 1880	0	0.43
Pseudosquilla richeri Moosa, 1991	0.09	0
Heterosquillopsis danielae Moosa, 1991	0	0
Lysiosquilla maculata (Fabricius, 1793)	0	0

Table 1 (Cont'd)

Stomatopods	New Caledonia % on 1155 stations	Chesterfield % on 230 stations
Paracoridon johrae Moosa, 1991	0	0
Parvisquilla multituberculata (Borradaile, 1894)	0	0
Acanthosquilla derijardi Manning, 1969	0.09	0.43
Acanthosquilla multifasciata (Wood-Mason, 1895)	0.69	0
Pullosquilla pardus Moosa, 1991	0.09	0
Harpiosquilla intermedia Manning & Michel, 1973	0.35	0
Alima guinotae Moosa, 1991	0.09	0.43
Alima laevis (Hess, 1865)	0.17	0
Paralimopsis carinatus Moosa, 1991	0	0.43
Alimopsoides tuberculatus Moosa, 1991	0.09	0
Anchisquilla fasciata (de Haan, 1844)	1.3	0
Areosquilla indica (Hansen, 1926)	0.09	0
Carinosquilla carinata (Serène, 1950)	0.09	0
Carinosquilla lirata (Kemp & Chopra, 1921)	0.09	0
Clorida caledonica Moosa, 1991	0.17	0
Clorida chlorida (Brooks, 1886)	4.07	0
Clorida fallax (Bouvier, 1914)	3.9	0.87
Clorida gaillardi Moosa, 1985	0	0
Clorida inflata Moosa, 1991	0.43	0
Clorida jurichi Makarov, 1979	0.09	0
Clorida malaccensis Manning, 1968	0.61	0
Clorida merguiensis (Tiwari & Biswas, 1952)	0	0
Clorida microphthalma (H. Milne Edwards, 1837)	0.17	0
Clorida moluccensis Moosa, 1973	0.17	0
Clorida nazasaensis Garcia & Manning, 1982	0.35	0
Kempina mikado (Kemp & Chopra, 1921)	0	0
Lenisquilla pentadactyla Moosa, 1991	0	0
Leptosquilla schmeltzii (A. Milne Edwards, 1873)	0	0
Neoanchisquilla semblatae Moosa, 1991	0	0.43
Oratosquilla calumnia (Townsley, 1953)	0.43	0
Oratosquilla fossulata Moosa, 1985	0	0
Oratosquilla inornata (Tate, 1883)	1.12	0
Oratosquilla nepa (Latreille, 1828)	0.17	0
Oratosquilla subtilis Manning, 1978	0.78	0

Some of the species which appear on the list were taken at more than 100 m : *Alainosquilla foresti* was found up to 200 m during the MUSORSTOM 4 campaign (Richer de Forges, 1990); *Heterosquillopsis danielae* is present at about 300 m; *Eurysquilla crosnieri, Eurysquilloides sibogae, Odontodactylus hawaiiensis, Paracoridon johrae, Kempina mikado, Lenisquilla pentadactyla,* were collected during the lagoon survey but the occurrence percentage are not mentioned in Table. 1.

In the list of species reported by Moosa (1991) and which we present here, some come from old collections deposited at MNHN and were not found during the dredges because they live normally on reef flats in shallow waters, in zones inaccessible to the boat which carried out the dredgings. These are: *Gonodactylus chiragra, G. mutatus, G. viridis, Mesacturoides spinosocarinatus, Chorisquilla tweediei, Haptosquilla glyptocercus, Lysiosquilla maculata, and Parvisquilla multituberculata.* Finally, the big species *Clorida gaillardi,* very common in

St Vincent Bay (SW lagoon) was taken solely by trawling, and its frequency has not been noted (Kulbicki & Wantiez, 1990).

The majority of the species are seldom collected by the dredge for they live either in the intertidal zone which has not been sampled, or else on hard bottoms which have only been sampled accidentally. Several species are burrowers and dig deep burrows or live under the blocks and are thus barely accessible to the dredge (Reaka & Manning, 1989).

We notice that 43 species have been collected in New Caledonia but not in the Chesterfield lagoon, while six were found in the Chesterfield area only, 20 species being present in the two areas. The most frequent species in New Caledonia are: *Gonodactylus affinis* (5.02%), *G. incipiens* (3.38%), *Haptosquilla trispinosa* (3.55%), *Pseudosquilla ciliata* (7.27%), *Clorida chlorida* (4.07%) and *C. fallax* (3.90%).

In the Chesterfield Islands, we find *G. incipiens* (17.83%) and *P. ciliata* (11.74%) frequently, but also *Chorisquilla spinosissima* (5.65%) which is rare in New Caledonia.

As is generally the case in a tropical environment, the specific richness is great, but the frequencies of each species are low. However, in the lagoon of Chesterfield atoll, whose bottoms are much more homogenous than those of New Caledonia, the frequencies observed are much higher.

Distribution of species in different lagoons

The study of the frequencies of the catches in the different lagoons shows that the latter are very variable from one species to another (Table 2).

Table 2. Percentage observed of the six main species of stomatopods in the lagoons of New Caledonia, atolls of Huon, Surprise and Chesterfield.

Species	*G. affinis*	*G. incipiens*	*H. trispinosa*	*P. ciliata*	*C. clorida*	*C. fallax*
SW lagoon (481 st.)	0.442	4.867	6.858	11.504	1.991	0.884
E lagoon (301 st.)	10.876	4.531	0.604	4.229	6.042	1.208
N lagoon (147 st.)	3.482	0.497	0.497	2.985	8.955	17.413
NW lagoon (157 st.)	0	0	3.149	7.086	0	1.574
Huon/Surprise (46 st.)	29.545	2.272	6.818	6.818	0	0
Chesterfield (230 st.)	0	17.826	5.217	11.739	0	0.869

The lagoons of New Caledonia each have their geomorphological sedimentary and hydrological characteristics (Richer de Forges *et al.*, 1987; Richer de Forges, 1991), which, despite their relative proximity, explains the disparity in the distribution of the species (Fig. 2-5). The SW lagoon, (5554 km^2) which has a splayed shape and is broadly open to the south-east, is sensitive to the action of the swell caused by the trade winds. It consists of many coral formations (islets, cays) and very muddy bays (Fig. 2). The E lagoon (4417 km^2), which is narrow and deep, is subject to terrigenous deposits and presents bottoms which are muddier than the SW lagoon; the

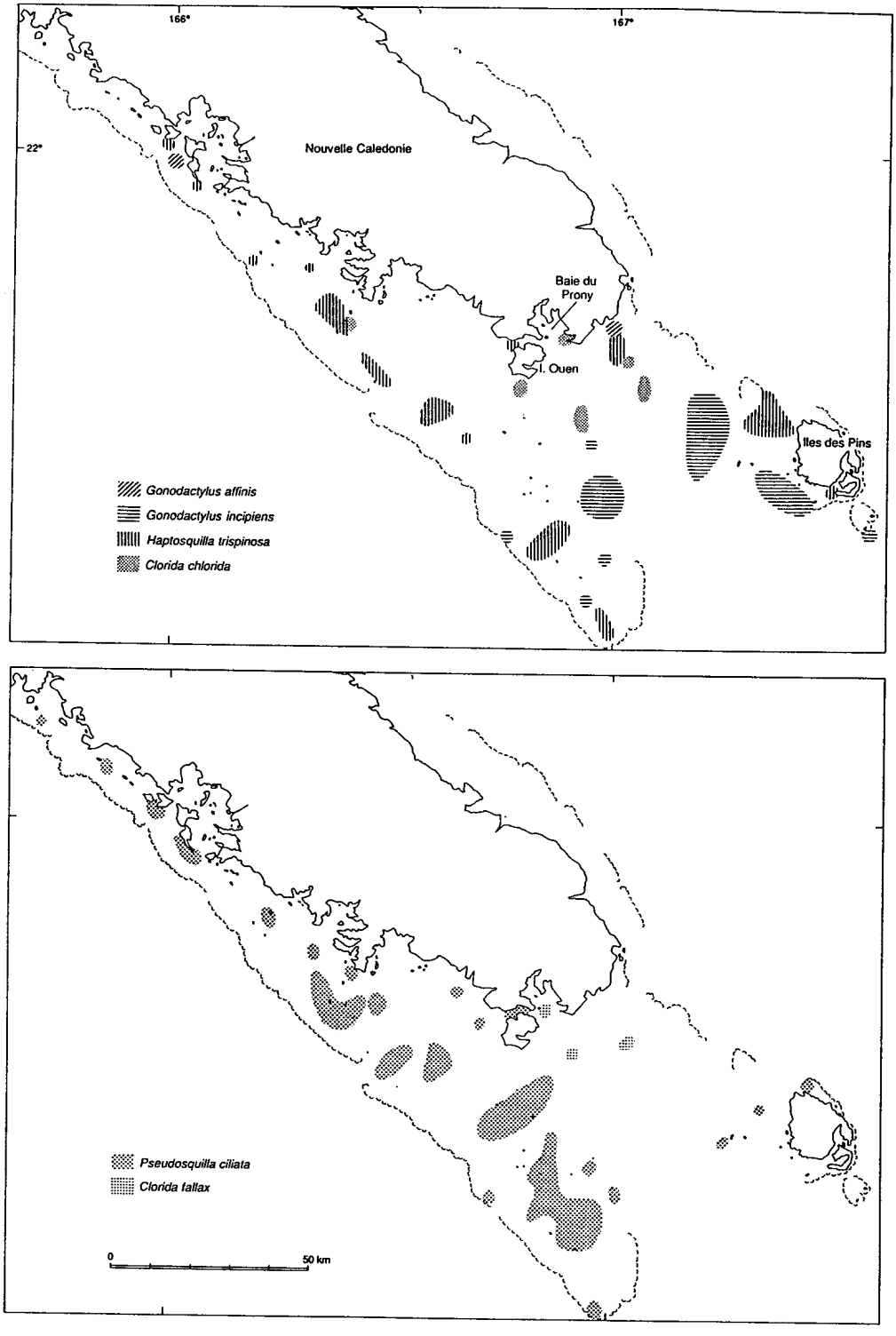

Fig. 2. — Distribution of species in the SW lagoon of New Caledonia.

coral barrier is submerged and does not offer an efficient obstacle to the action of the swell (Fig. 3). The NW lagoon (2242 km^2) is similar to the SW one, with however lesser depth and important terrigenous deposits. The N lagoon is extremely big (8400 km^2) and deep (>50 m). It presents muddy bottoms around the Belep islands. This N lagoon is separated from the atolls of Huon and Surprise by depths of more than 600 m (Fig. 4). Chesterfield atoll, situated equidistant from New Caledonia and the Great Barrier Reef, is deep and purely coral. However fine sediments and even carbonated mud is found there (Fig. 5).

The species *Gonodactylus affinis* presents the highest occurrencies in the E lagoon (10.88% of the stations), near the reef barrier and in Surprise atoll (29.54%). It is curious that this species has not been found during the 230 dredges carried out at the Chesterfield Islands. This is even stranger since the species is reported from the Great Barrier Reef (Reaka & Manning, 1987). In the SW lagoon it has only been collected in two places situated in channels (Fig. 2). In the N lagoon, *G. affinis* has been found solely in the north-east section which forms a pseudo-lagoon (Fig. 4).

Gonodactylus incipiens is relatively rare in the lagoons of New Caledonia, with a maximum frequency of 4.78% in the SW lagoon, while it is frequent in Chesterfield atoll (17.83% of stations). In the SW lagoon it is present only in the southern part which is more corallian, and near the Isle of Pines (Fig. 2).This species was mostly found in coral environments with a strong hydrodynamism, was collected in 33.3% of the stations sampled on the Lansdowne bank, which is a former atoll submerged, near Chesterfield (Fig. 1). This habitat corresponds well with what Reaka & Manning (1987) describe at Enewetak, coral blocks.

Haptosquilla trispinosa is present in all the lagoons but not frequent. In the SW and E lagoons, it was found everywhere in reefs and zones with strong currents, near channels (Figs 2, 3).

Pseudosquilla ciliata is present in the SW and E lagoons in the coral zones with strong currents. It is especially frequent in the south horn of the SW lagoon (11.5%) and in the Chesterfield Islands (11.74%), that is to say in the zones without terrigenous influence. In the N lagoon, it has only been taken in the pseudo-lagoon of the north-east, towards the north barrier, and south of the Belep Islands (Fig. 5). It is also present in purely reef environments on Lansdowne bank (13.3%).

In our samples, *Clorida chlorida* is practically absent from the SW lagoon where it has only been found in a very muddy bay (Prony Bay) and on muddy bottoms in the south of Ouen Island (Fig. 2). However it is fairly frequent in the E lagoon (6.04%), in the middle of the lagoon and especially in the N lagoon (8.95%). It is totally absent from pure coral environments like the atolls of Huon, Surprise and Chesterfield (Figs 4, 5).

Clorida fallax is closely linked to muddy substrata and has only been found frequently in the decantation basins of the N lagoon (17.41%), (Fig. 4). In the SW lagoon it has been found four times in the south of the bay of Prony, on bottoms of coarse muddy sands (Chevillon & Richer de Forges, 1988). In the E lagoon, the rare stations where it is present are found in former river beds which are very muddy. Its unexpected presence in Chesterfield lagoon in a station with a mud content from 20 to 50% indicates that it is certainly the granulometry which conditions its presence, and not the existence of terrigenous inputs.

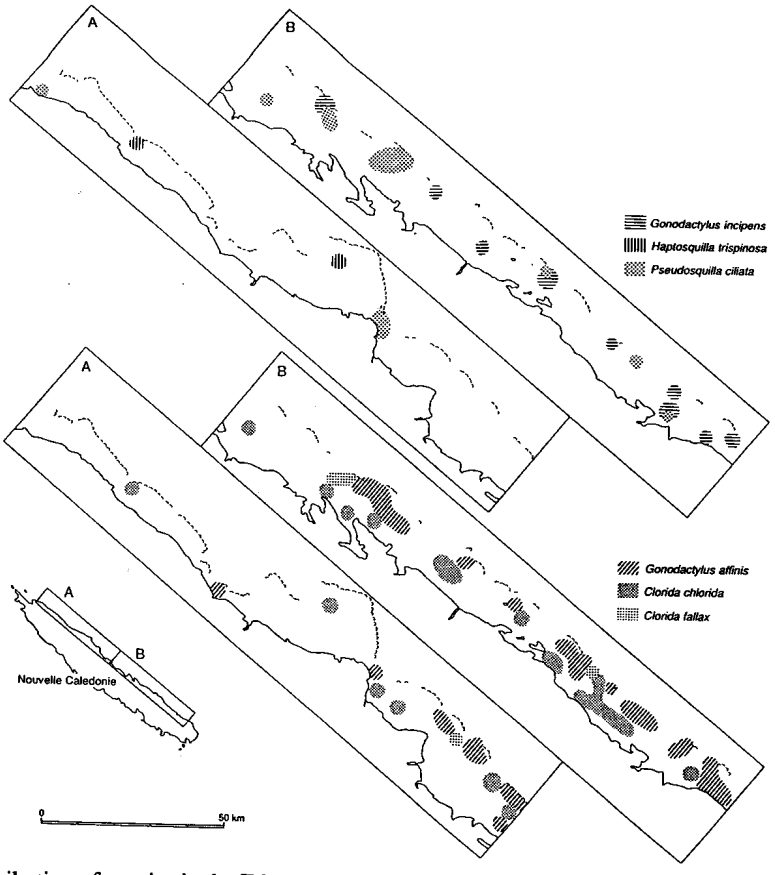

Fig. 3. Distribution of species in the E lagoon of New Caledonia.

Relation between the frequency of species, depths and content of mud in sediments

In his study of the sediments of the N lagoon of New Caledonia, Chevillon (1990) has shown that there was a very weak correlation between the depth and the content of mud in sediments, which allows us to consider these two parameters separately.

Table 3. Percentage of occurrence of species in relation with mud contents in the sediment.

% Mud	*G. affinis*	*G. incipiens*	*H. trispinosa*	*P. ciliata*	*C. chlorida*	*C. fallax*
<5	67.27	56.41	53.66	47.06	15.22	10.87
5 - 25	25.45	41.02	34.15	34.12	4.35	34.78
25 - 50	5.45	2.56	9.76	15.29	30.43	41.3
50 - 75	1.82	0	2.44	2.35	36.96	10.87
>75	0	0	0	1.18	13.04	2.17

Mud (Table 3) : If the frequency of each species in the 1155 stations of dredging in the lagoons of New Caledonia is calculated according to the content of mud in the sediment (particles <0.063 mm), the preferences of each species in relation to this parameter can be clearly seen (Tab. 3). The percentage of mud in one dredging is known with a good accuracy, but its only a mean of sediments collected during one trawl on a quite large area.

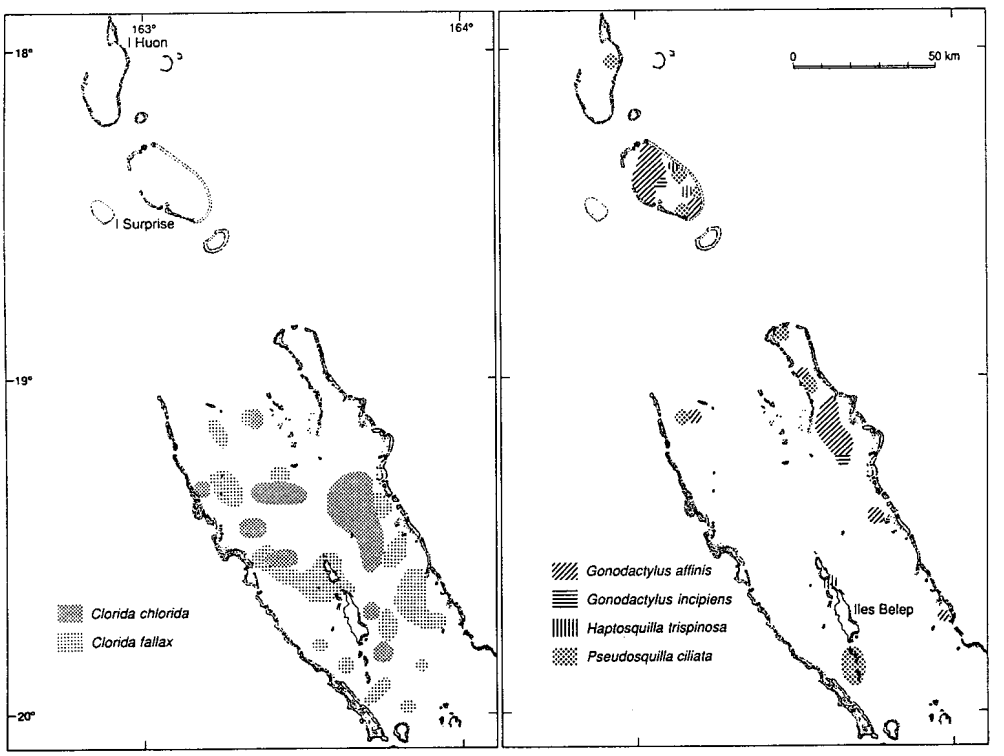

Fig. 4. Distribution of species in the N lagoon of New Caledonia.

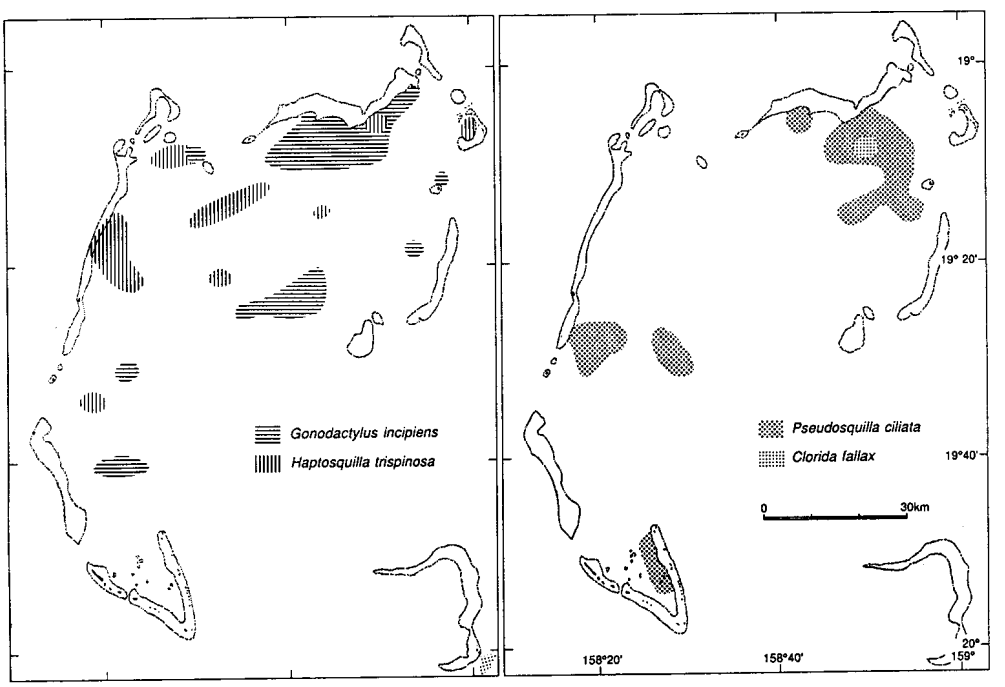

Fig. 5. Distribution of species in the atoll of Chesterfield.

G. affinis is frequent in clean sediments with less than 5% of mud (62.27% of stations) and 87.72% of stations containing this species are found in sediments with less than 25% of mud. *G. incipiens* presents an even clearer characteristic in relation to the cleanliness of the sediment since 97.43% of the stations are found in depths having less than 25% of mud.

H. trispinosa and *P. ciliata* prefer to live in sediments which are not very muddy but this affinity is less distinct than with *Gonodactylus* : 87.81% of the stations with less than 25% of mud for *H. trispinosa* and 81.18% for *P. ciliata*.

C. chlorida is a species which prefers to live in muddy bottoms since it is present in only 19.57% of stations having less than 25% of mud. On the other hand, it is present in 50% of stations having more than 50% of mud. *C. fallax* has a distribution less linked to the sediment mud content, since it is present in 45.65% of stations with less than 25% of mud. The two species of the genus *Clorida* are present in very muddy facies (>75% of mud), while the two species of *Gonodactylus* and *H. trispinosa* are totally absent from these environments.

Table. 4. Percentage of occurrence in relation with depth.

SPECIES	<10 m	10 - 20 m	20 - 30 m	30 - 40 m	>50 m
G. affinis	0	1.82	18.18	76.36	3.64
G. incipiens	0	5.13	5.13	48.72	41.02
H. trispinosa	7.32	48.78	34.15	7.32	2.44
P. ciliata	5.88	24.7	23.53	38.82	7.06
C. chlorida	2.17	0	0	47.83	50
C. fallax	0	2.17	8.69	58.69	30.43

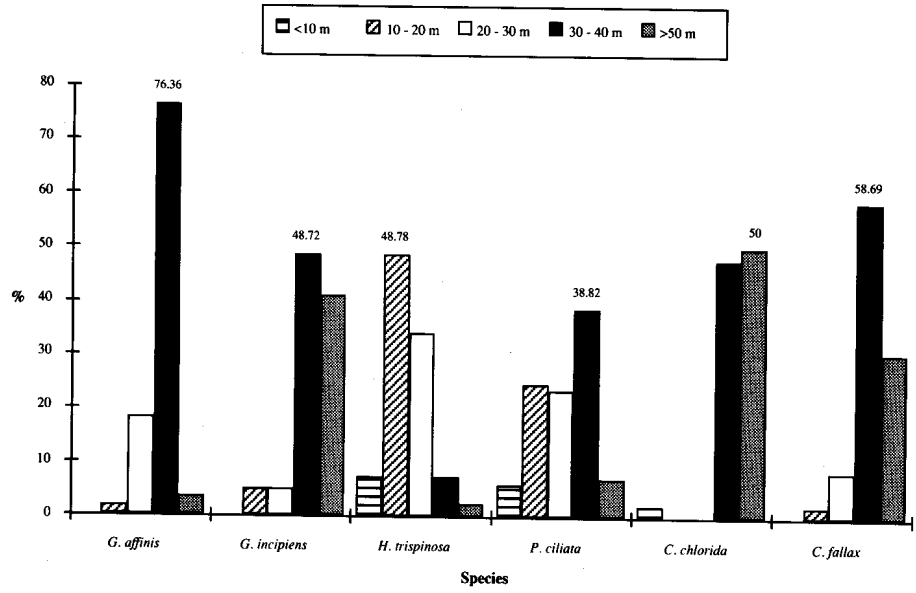

Fig. 6. Bathymetric range observed for stomatopods in New Caledonia.

Depth (Tab. 4; Fig. 6) : The range of depths observed for the six main species of stomatopods is indicated on Figure 6. We see that all the species have a bathymetric distribution much wider

than that which is usually reported. Thus *Pseudosquilla ciliata* was considered as typically intertidal (Reaka et al., 1989) and could be taken at low tide with a "pushnet" (Reaka & Manning, 1989). It has however been collected in New Caledonia up to 86 m deep and seems more frequent between 30 and 50 m than in shallow waters.

G. affinis was found more frequently on bottoms which are between 30 and 50 m deep (76.36% of stations) and has never been taken at less than 10 m. *G. incipiens* presents the same bathymetric distribution, it is more frequent at more than 30 m (89.74% of stations).

H. trispinosa has frequently been collected between 10 and 30 m depth (82.93%). *P. ciliata* has a wider distribution and is found between 10 and 50 m with a higher frequency between 30 and 50 m (38.82% of stations).

The two species of the genus *Clorida* live at a greater depth than the others, almost exclusively at more than 30 m, 97.83% of stations for *C. chlorida* and 89.12% for *C. fallax*.

DISCUSSION

Ecological characteristics

The six species of stomatopods which are the most frequent in the lagoons of New Caledonia and in Chesterfield atoll present the following ecological characteristics :

G. affinis was found mostly on bottoms of clean coral sediments between 30 and 50 m depth; *G. incipiens* also lives in coral bottoms but seems more tolerant of the mud sediment content and it is still frequent at more than 50 m depth; *C. chlorida* and *C. fallax* was found mostly at more than 30 m depth on muddy bottoms; the two other species, *H. trispinosa* and *P. ciliata*, were found on bottoms which are not very muddy but seems more tolerant than the others regarding depth. The two species of the genus *Clorida* are thus lutitophiles while the other four species are lutitophobes. For these burrowing species (Stephenson & McNeil, 1955), the nature of the sediment is the preponderant factor in the choice of their habitat. The distribution of these species seems to cohere with that of the sediments. However, it is probable that the presence on the bottoms of coral blocks able to serve as shelter, and the abundance of food available, are factors which are equally as determinant, as far as we can tell.

The bathymetric distribution of the species

The stomatopods are very active predators and have been the object of numerous behavioural studies concerning their alimentation and their reproduction (Reaka *et al.*, 1989). The totality of these studies concern creatures living in shallow waters on reef flats and of easy access for the experimenter. The results presented here come from dredgings, an infrequent method of capture for this group, and this sheds new light on the bathymetric distribution of common species. Leaving aside *H. trispinosa*, the other species seem to have their preferred milieu at 30 and 50 m depth. Consequently, the populations studied until now on flat reefs are not perhaps representative of these species and we should modulate certain observations.

The specific richness in New Caledonia appears greater than in Australia. Effectively, 69 species are recorded from New Caledonia by Moosa (1991) while the latest inventory by

Stephenson (1953) mentions only 34 for all Australia, including 21-26 on the Queensland coast.

In fact, the Australian coasts had been relatively poorly sampled, distorting the comparison (Stephenson, 1952, 1962). Rare studies on macrobenthos of the soft bottoms on Queensland coasts were carried out by trawling, often for an economic purpose, and had badly sampled the burrowing fauna. In this way, Cannon *et al.*, (1987) mentioned only 12 species of stomatopods in the lagoon of the Great Barrier Reef, five of these species were found also in New Caledonia: *Alima laevis, Gonodactylus falcatus, Kempina mikado, Lysiosquilla maculata* and *Odontodactylus cultrifer*. Jones & Derbyshire (1988), studying benthic fauna caught by prawn fisheries of Queensland noted 11 species of stomatopods of which none found in New Caledonia. The material of these authors is located in Queensland Museum in Brisbane and could be re-examined by a taxonomist. Other works sampled with a grab or a small corer, which are designed for quantitative studies but are too small to collect correctly the big macrofauna (Riddle, 1988; Jones *et al.*, 1990).

Only the sampling with a sledge realised between 1977 and 1981 in the median area of the Great Barrier Reef using shore-reef transects would be compared with our samples from New Caledonia. Unfortunately, the results of these dredgings are incompletely published. Arnold & Birtles (1985) and Birtles & Arnold (1988) gave only a preliminary description of communities in the lagoon in which the stomatopods are rare.

Biogeographical remarks

Stomatopods have several larval stages and stay a long time in the plankton, drifting with currents (Reaka & Manning, 1987). In the Coral Sea, the general circulation of surface waters goes from east to west, then north to south along the east Australian shore (Maxwell, 1968; Bunt, 1988). We could expect to find most species of New Caledonian stomatopods everywhere in the Coral Sea and in the Great Barrier Reef lagoon. However the faunistic component of these areas are different. Nevertheless, as it is often the case in biogeography, the sampling effort is very uneven from an area to another and taxonomic identifications are often questionable, so it is difficult to make conclusions.

Pseudosquilla ciliata, the best known of the six species here studied, was mentioned from the Red Sea and East Africa to south Japan, Hawaii and Polynesia, Enewetak, Thailand, the Great Barrier Reef (Murray Is., Palm Is., Townsville), from Lord Howe Is. (Stephenson, 1962) and from the West Indies and Florida coasts. It is also mentioned from Madagascar by Thomassin (1974), characteristic of sea grass beds.

Gonodactylus affinis was recorded from the Indian Ocean, from South East Asia and the Great Barrier Reef (Townsville). In New Caledonia it was caught frequently on the east coast and the atolls of Huon and Surprise but, strangely, not in the Chesterfield lagoon.

G. incipiens is known from Central Pacific Islands, American Samoa, Indonesia (Manning & Reaka-Kudla, 1990), where it lives in rubble and under *Porites* blocks. It is considered as a shallow water species at Enewetak, but in our collection in New Caledonia it prefers biotopes situated beyond 30 m deep in purely coralline areas.

There is very little information about the three other species: *Haptosquilla trispinosa* is

known from Fiji Is., Loyalty Is., Australia and Vietnam (Manning, 1969); *Clorida chlorida* is mentioned from Madagascar Is., Vietnam and Indonesia between 10 and 108 m deep (Moosa, 1991); and *Clorida fallax* was recorded from the Indian ocean (Mauritius Is. Comores Is.), the Red Sea, Indo-malaysia, Indonesia, Vietnam, Solomon Is. and the east Australian coast.

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