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Some notes on the shelf and slope cephalopod fauna of Vietnam, and a new species of *Sepia* (Cephalopoda, Sepiidae) from this region

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On the basis of data from Russian expeditions in the Vietnamese waters (1964-65 and 1984), the faunistic complex of cephalopods, vertical stratification of main taxonomic groups, and biomass distribution are described. The fauna of shallow waters is mainly represented by Sepiidae and Loliginidae. The ommastrephid squids dominated at the depths 250-500 m, Cycloteuthidae and Histioteuthidae — deeper, down to 1100 m.

A new species of the genus *Sepia*, ***S. vossi* sp. nov.** is described on the basis of known and previously described material [Voss, Williamson, 1971; Khromov, 1988 a, b] from Hong Kong and Vietnam. The new species combines the characters of *S. omani* in the structure of soft body and, especially, tentacular club, and *S. rex* in the structure of sepion. So the specimens of this species were erroneously identified as *S. omani* or *S. rex*. The history of these errors is established, and the validity of the new species is proved.

Deeper than 350 m sepiids and loliginids were not recorded. Down to 500 m the faunistic complex was almost completely represented by the ommastrephids *Nototodarus*. It is interesting that *Moroteuthis loennbergi*, known from Japanese waters and Indian Ocean [Nesis, 1982] but never recorded in Vietnam, was a subdominant form. *Argonauta* shells were also found in a small number.

Deeper than 500 and down to 700 m the cephalopod fauna was slightly more different. The ommastrephids *Ornitoteuthis volatilis* and *Sthenoteuthis oualaniensis* were also added.

Deep-water slope complex was represented mainly by *Histioteuthis miranda* and *Cycloteuthis sirventi*. The first squid dominated by biomass to the depth about 1000 m, the second one — deeper. Both species were noted for the first time in Vietnamese waters. Octopodidae and Bolitaenidae were also found at these depths.

The total number of species (17) was the highest at the depth 40-90 m, the least number was noted at 250-300 and 500-700 m. The total biomass of cephalopods was most significant at depths 50-100 m, which was caused mainly by the presence of Sepiidae and secondarily by Loliginidae. The second peak of biomass was observed at the depths about 700-800 m and caused by the abundance of histioteuthids and cycloteuthids.

One can assert that a strong depth stratification of different cephalopod taxa is observed at the shelf and slope of Vietnam. Not only the above analyzed materials, but also the analysis of the "Pelamida" expedition material proves this hypothesis. At the depths down to 50 m *Sepiella* and *S. (Acanthosepion)* species were more frequent in 1964-1965 than species of *Sepia* s.str.

Such a stratification promotes the diminishing of intergroup competition and shows an example of an optimal filling of the ecological niches in the region of high specific diversity.

I suggest that this diversity is even higher, than it was considered before. At least three species of Sepiidae *(S. mestus, S. carinata, S. weberi)* which were not found in the Vietnamese waters before, were recorded in this region during last years [Khromov, 1988 a]. Two more species, *S. lorigera* and *S. cottoni*, probably live here.

Below I describe a new species, ***S. vossi* sp. nov.**

Sepia (Rhombosepion) vossi Khromov, sp. nov.

SYNONYMY: *Sepia omani* — Voss, Williamson, 1971: 37-38, Pl. 9, Figs. 5, 13, non Adam, Rees, 1966: 56. *Sepia rex* — Khromov, 1988: 188-189, Fig. 1, non Iredale, 1926: 193, non Adam, 1979: 177, non Lu, in press.

TYPE LOCALITY: East coast of Vietnam.

MATERIAL: Holotype: Zoological Museum of Moscow State University, No. Y321, male, 55 mm ML (sepion not dissected out), "Odissey" cruise 16, September 1984, sample No.67, 14°33'N, 109°16'E, depth 100-105 m. Paratypes: Zoological Museum of Moscow State University, No. Y366, 2 males, 59 and 64 mm (sepions not dissected out), No. Y367, 1 male, slightly macerated, sepion dissected out, "Odissey", cruise 16, September 1984, the same catch as holotype. Zoological Institution of Russian Academy of Sciences, Saint-Petersburg, "Pelamida", 22.07.1961, Station 5, depth 110 m, 17°05'N, 109°03'E, No 1, 2 females, 54 and 42 mm ML; the same vessel, 23.06.1961, Station 9, depth 113 m, 17°20'N, 109°37'E, No 2, 3 females, 63, 58 and 56 mm ML.

Figures: Voss, Williamson, 1971, fig. 13 (*S. omani*, male, male's cuttlebone, tentacular club, hectocotylized arm); Khromov, 1988, fig.1 (*S. rex*, female sepion and posterior part of sepion).

DESCRIPTION: Body moderately broad, dorsal mantle margin long and projects forward beyond the midlevel of eyes. Ventral emargination very shallow. Fins extend from nearly anterior mantle margin to beyond posterior mantle end. Arms are rather short and subequal, compressed, with keels on lateral and especially ventral arms. Arm suckers quadriserial. Left ventral arm of male hectocotylised, with few normal suckers at arm base; more distally dorsal and ventral rows of suckers crowded together on either side of bare, ridged middle part; distal portion unmodified. Tentacular club short, broad, with narrow basally fused protective membranes and wide swimming membrane projected beyond the surface, covered with suckers; tentacular suckers in about 8 longitudinal rows, with 3-5 median suckers greatly enlarged. Sepion elongate, pointed at both ends, its width is about 1/3 of length; dorsal surface with distinct median rib and faint lateral ribs on either side; wide chitinous margins. Ventral surface of sepion (phragmocone) with narrow shallow median furrow and slightly expressed lateral furrows. Anteriormost furrows of striated zone semicircular with depressed tooth medially. Inner cone narrow but not flat posteriorly, with needle-like limbs. Outer cone moderately wide posteriorly and curved ventrally. Its posterior edge usually forms a bolster. The wings of outer cone form a cup. Spine present, straight or slightly curved dorsally, with dorsal and less expressed ventral keels.

Color: the back is usually light brown with dark brown transverse strips. The doral shield of sepion is pinkish colored, the ventral margins are brown.

[Диагноз: мантия широко-овальная, дорсальный выступ мантии длинный, достигает уровня середины

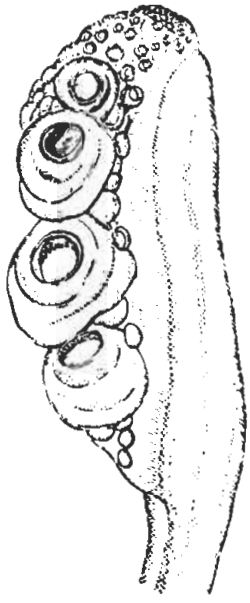

FIG. 3. Tentacular club of ***S. vossi* sp. nov.** [*"Sepia omani"* — after Voss, Williamson, 1971].

РИС. 3. Булава щупальца ***S. vossi* sp. nov.** [*"Sepia omani"* — по Voss, Williamson, 1971].

глазных яблок. Вентральная вырезка очень мелкая. Плавники чуть длиннее мантии. Руки относительно длинные, слегка сплющены, кили латеральных и особенно вентральных рук хорошо развиты. Левая вентральная рука самцов гектокотилизирована, с несколькими нормальными присосками в основании, дистальнее дорсальные и вентральные ряды присосок попарно сливаются, занимая разные стороны гребня, проходящего посередине руки. Дистальная часть гектокотиля не модифицирована. Булава щупальца короткая, широкая, с узкими защитными мембранами, слитыми в основании. Плавательная мембрана широкая, чуть длиннее поверхности, занятой присосками. Присоски булавы расположены примерно в 8 продольных рядов, 3-5 присосок в одном из центральных рядов сильно увеличены. Сепион удлиненно-овальный, заостренный на обоих концах, ширина его равна примерно 1/3 длины. Дорсальный щит с четким слегка утопленным медиальным гребнем и парой менее выраженных латеральных, с широкими хитиновыми краями. Вентральная сторона сепиона (фрагмокон) с узкой и мелкой, но четкой медиальной бороздой и слабо выраженными латеральными бороздами. Передние линии исчерченности полукруглые, часто с утопленным зубчиком на медиальной борозде. Внутренний конус узкий, но объемный, с игловидными ветвями. Наружный конус сзади довольно широкий, загнут вентрально, на заднем конце обычно образует полувалик. Крылья наружного конуса короткие, но четко выраженные, чашевидные. Шип средней длины с очень четким вентральным и менее выраженным дорсальным килями.]

DISTRIBUTION. Known from Hong Kong to South Vietnam at the depths 2-113 m.

DISCUSSION. The specimens of *Sepia*, caught near Hong Kong by G.L. Voss and G.R. Williamson were sent to W. Adam for identification and incorrectly identified by him as *S. omani* Adam, 1939. So Voss and Williamson [1971] described and illustrated these specimens as *S. omani*.

Analysing the report by Voss and Williamson [1971] I had considered their specimens to be not *S. omani*. Based on the W. Adam's report on the sepiid collection in the Western Australian Museum [1979], I had reidentified these specimens as *S. rex* (Iredale, 1926) and noted them in my report on the collection of Zoological Institute of the Russian Academy of Sciences, Saint-Petesrburg [Khromov, 1988a].

Moreover, I had caugh several specimens off the cast coast of Vietnam and found some more in the above mentioned collection from the Gulf of Tonkin. These specimens looked very alike to those described by Voss and Williamson. So I had considered all of them to be *S. rex* [Khromov, 1988a].

C.C. Lu, working with the Australian cephalopod fauna, reexamined the collection of the Western Australian Museum and established Adam's errors in identification and illustration of some specimens and in the redescription of *S. rex* [Lu, personal communications; Lu, in press]. According to Lu's opinion, the photographs in the Adam's [1979] report were missed and the real Australian *S. rex* was characterised by a club with subequal but not so greatly different suckers, as it was illustrated by Adam [1979]. So Voss and Williamson's specimens from Hong Kong, and my Vietnamese specimens with enlarged suckers on the club (Fig. 3) could not be *S. rex*. I consider them to be a new species, described above.

This species is named ***S. vossi*** in the memory of the late Gilbert L. Voss, a well known scientist and investigator of cephalopods.

***S. vossi* sp. nov.** closely resembles *S. rex* in sepion structure (Fig. 4), differing only by the pinkish color of its dorsal shield. Its soft body and especially tentacular club resemble that of *S. omani* [Khromov, 1988 a; Lu, in press]. This could explain the Adam's error in identification of Hong Kong specimens.

It is no matter to describe the specimens of ***S. vossi* sp. nov.** in more details once more, because all known specimens are already described and illustrated by Voss and Williamson [1971] as *S. omani* and by myself [Khromov, 1988 a] as *S. rex*.

The existence of two close species, *S. rex* from Australia and ***S. vossi* sp. nov.** from Southeastern Asia, proves an idea that the species of *S. (Rhombosepion)* are derived in the Recent time as it was established for *S. (Doratosepion)* [Khromov, 1987 b]. There is known another couple of very looking alike *S. (Rhombosepion)* species, South-African *S. acuminata* Smith and Japanese *S. madokai* Sasaki.

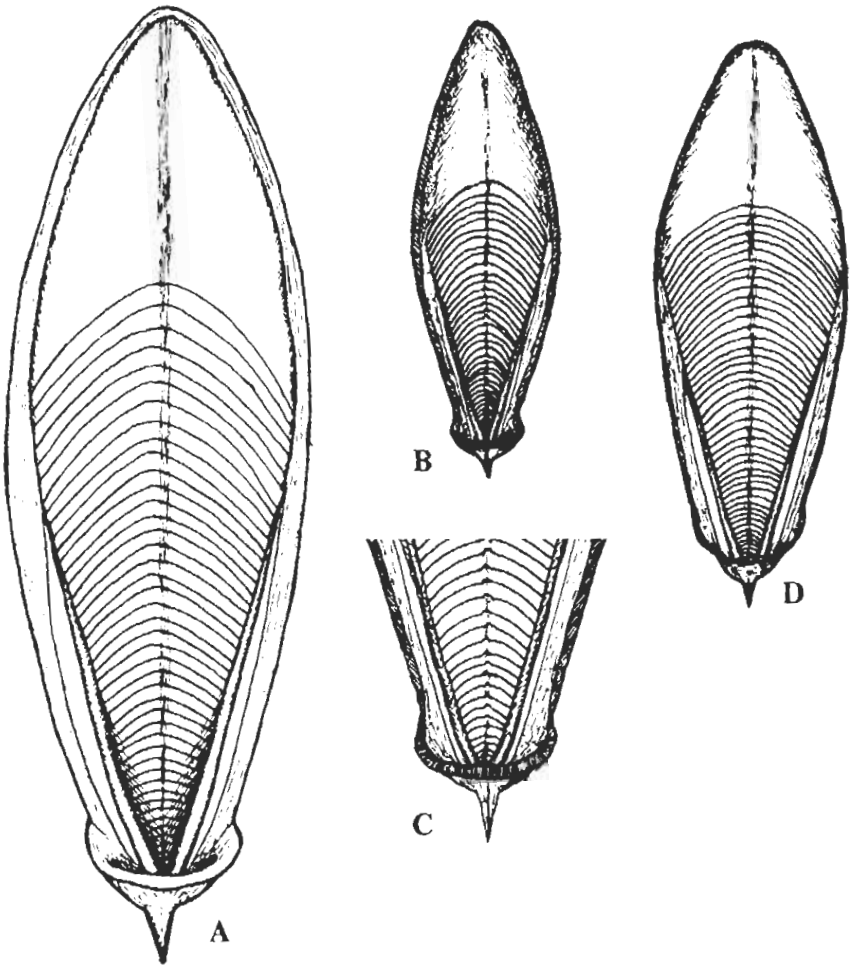

FIG. 4. A-C — Sepion of ***Sepia vossi* sp. nov.** (ventral view). A — male with the ML 127 mm [*"Sepia omani"* — after Voss, Williamson, 1971]; B — female with the ML 58 mm (original); C — enlarged posterior part of B. D — sepion of *Sepia rex* (ventral view) [after Adam, 1979].

РИС. 4. A-C — сепион ***Sepia vossi* sp. nov.** (вид с вентральной стороны). A — самец, ДМ 127 мм [*"Sepia omani"* — по Voss, Williamson, 1971]; B — самка, ДМ 58 мм (оригинал); C — увеличенная задняя часть B. D — сепион *Sepia rex* (вид с вентральной стороны) [по Adam, 1979].

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