Table 1: Measurements in mm for *Tetragnatha viridorufa* Gravely (♂)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	9.00	1.10	9.30	10.10	1.50	31.00
II	6.05	1.00	5.35	5.75	1.15	19.30
III	3.90	0.72	2.51	2.95	0.89	10.97
IV	7.15	0.71	4.95	5.25	0.91	18.97
Palp	2.1	0.51	1.10	—	1.40	5.11

Table 2: Measurements in mm for *Tetragnatha viridorufa* Gravely (♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	9.11	1.21	9.20	10.0	2.40	31.92
II	6.52	1.00	6.10	6.81	1.52	21.95
III	4.30	0.72	2.52	3.13	1.12	11.79
IV	7.10	0.68	6.00	6.11	1.50	21.39
Palp	1.51	0.51	1.21	—	1.20	4.43

beyond spinnerets. Lateral margins smooth except three posterotransverse striations near spinnerets. Venter yellowish, book lungs brown, longer than broad. A transverse black patch in front of spinnerets ventrally.

Female: Elongate, dorsum reddish and lateral sides bright greenish. Abdominal tip blackish, slightly projecting beyond spinnerets. Venter yellowish-brown. Epigynal fold short, distal fold wider than long, with a conical tip. (Figs 1-3)

Distribution: India: Villivakulam, Chingleput district; Barkuda island, Ganjam district; Balugaon and Balighai, Puri district, Orissa; Ernakulam, Thattakkad Bird Sanctuary, Bhoothathankettu; Kerala.

Natural History: Nocturnal, collected from coconut leaves hiding under the leaves; colouration of the abdomen helps in concealing its presence.

Material examined: India: 2 ♀♀, ♂, Moolampilly Is., Ernakulam, 26.ii.2001, Habitat: coastal ecosystem, Coll. K. Sunil Jose.

2 ♀♀, 2 ♀♀, Bhoothathankettu, Kothamangalam, 5.xii.2000. Habitat: Evergreen forest, Coll. K. Sunil Jose.

1 ♂, 2 ♀♀, Thattakkad Bird Sanctuary, 10.iv.2001. Habitat: Evergreen forest, Coll. Samson Davis.

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32. ON TWO INTERESTING MARINE CRABS (DECAPODA: BRACHYURA) FROM MANDVI, KUTCH

In connection with studies on animal-sediment relationship, involving burrows made by polychaetes, crustaceans and molluscs, crabs were collected by one of us (BGD) from the intertidal zone around Mandvi region (22° 55' N, 69° 20' E) in the Gulf of Kutch. A total of seven species were collected and identified as follows:

1. *Matuta lunaris* (Forskal), 2. *Matuta planipes* Fabricius, 3. *Portunus tenuipes* (De Haan), 4. *Ocypoda ceratophthalma* (Pallas), 5. *Ocypoda platytarsis* Milne-Edwards, 6. *Ocypoda rotundata* Miers, and 7. *Plagusia depressa* var. *squamosa* (Herbst).

Chhapgar (1957a, b, 1958, 1961, 1968, 1979),

Chhapgar and Borgaonkar (1985) and Chhapgar and Mundkur (1995), in studies on marine crabs of the erstwhile Bombay State, had recorded species 1, 2, 4, 6 and 7 from the above list. The other two, namely *Portunus tenuipes* (De Haan) and *Ocypoda platytarsis* Milne-Edwards appear to be new records for the region.

***Portunus tenuipes* (De Haan)**

This is the only Indian species of *Portunus* in which the front is cut into three teeth (all the others have four teeth). The length of the carapace is about two-thirds its breadth. The antero-lateral borders are cut into nine teeth, of which the last is a long spine thrice as long as the other teeth.

The arm of the chelipeds has three spines on its anterior border and one at the far end of the posterior border. There is a strong spine on the inner angle of the wrist, and a much weaker one on the outer angle. The hand has a spine near the wrist-joint and another just behind its joint with the finger.

Alcock's (1899) key states "posterior angles of carapace square" for *P. tenuipes*. His description is: "Posterior border slightly curved and meets the postero-lateral border at a well-marked angle which is sometimes slightly turned up." In the specimen examined by us, the postero-lateral borders appear to continue as a smooth curve with the posterior border. Below this level, however, the front edge of the abdomen does show an acute spiny angle.

In view of the smooth curving of the postero-lateral borders into the posterior border and the distribution of *P. tenuipes* from the Andamans, as given by Alcock, it was first thought unlikely that the crab was *P. tenuipes*. However, the presence of only three teeth on the front is so characteristic of this species that this character, together with the morphological features tallying with Alcock's description as *P. tenuipes*, leads us to identify this crab.

Breadth of carapace (with spines)	59 mm
Breadth of carapace (without spines)	40 mm
Length of carapace	30 mm

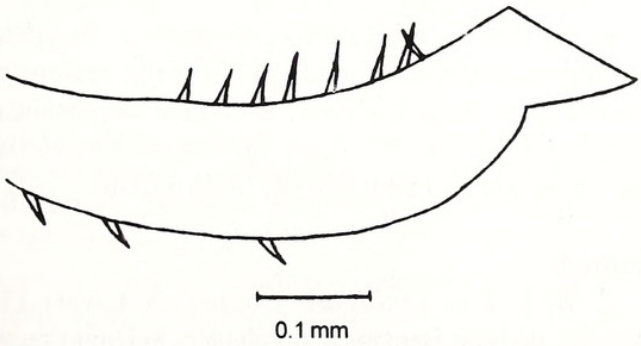

Fig. 1: Tip of first male abdominal appendage of *Ilyoplax gangeticus*

Alcock has not described the colouration of *P. tenuipes*. Our specimen (after prolonged preservation) shows extensive irregular white spots characteristic of *P. pelagicus*, but on a light buff orange background, on the carapace and the arm of the chelipeds. The finger and thumb of both the claws are crimson red along their distal half.

The presence of this species from the Arabian Sea is of interest.

***Ocypoda platytarsis* Milne-Edwards**

This species resembles *O. ceratophthalma*, but differs from it in the absence of brushes of hairs on the anterior surface of the propodites of any of the legs. The dactyli are dorsoventrally compressed and broadened, and are also fluted (Alcock 1900).

The stridulating ridge on the inner surface of the palm is entirely granular. (In *O. ceratophthalma*, this ridge consists of tubercles gradually passing into granules.) The upper edge of the inner surface of the ischium of the large claw, against which the stridulating ridge is rubbed to produce sound, is only raised and rough, there being no specialised structure.

The orbits of the eyes are hardly oblique.

Breadth of carapace: 51 mm

This crab is common along both the coasts of the Indian Peninsula as well as in Sri Lanka.

In the note on *Ilyoplax gangeticus* (Kemp) by Chhapgar and Borgaonkar (1985), description of the first abdominal appendage was inadvertently left out. The tips of the appendages end in a straight edge, somewhat like a ploughshare. Behind this, on one side are about eight close set setae; the other side bears distally spaced setae (Fig. 1).

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33. LITTLE KNOWN BIODIVERSITY OF SUBTERRANEAN FRESHWATER HABITATS IN INDIA, WITH SPECIAL REFERENCE TO CRUSTACEAN FAUNA

The United Nations Convention on Biological Diversity (CBD), which came into force on December 29, 1993, has evoked a tremendous, determined response from the world's scientific community, as well as governments, to save the earth's fast-depleting biodiversity. Though the term biodiversity encompasses the total variability of life in the biosphere, it is often viewed in the restricted sense of epigean flora and fauna, both terrestrial and aquatic. Paradoxically, however, the vast and varied hypogean biodiversity has received little attention, especially in South Asia, including India. This is partly due to the widespread misconception that groundwater is azoic, except for some harmless bacteria.

Elsewhere in the world (see Botosaneanu 1986), however, the hypogean/subterranean biotope has been found to support rich faunal diversity, comprising almost all the free-living invertebrate groups and some vertebrates as well. For example, Pesce (1985), while reviewing the Italian groundwater fauna (stygofauna), met with the following significant stygobiont groups: cyclopid and harpacticoid copepods, ostracods, thermosbaenaceans, mysids, amphipods, isopods, syncarids, decapods, water mites, nematodes, gastropods, tricladid turbellarians, and amphipods. Other groups of organisms that are mostly stygoxenous or stygophilous, include Bacteria, Protozoa, Rotifera, Cladocera, Archiannelida, Oligochaeta, Gastrotricha, Bivalvia, and insect larvae. Further, the subterranean environment may reveal insights into biological adaptation and speciation (Barr 1968, Rouch 1986). Even the reconstruction of the earth's history is interpreted in terms of the occurrence of certain ancient stygofaunal elements (Schminke 1974, 1981).

In India, the faunal diversity of the subterranean freshwater biotope, i.e. Husmann's (1971) 'kernel zone' of groundwater, has received scant attention from taxonomists and systematists. Hence, this note is meant to update the poorly known Indian stygocrustacean fauna, and to underscore the need to start highly rewarding stygobiological research in the country.

Two methods were used to collect the animals from the subterranean freshwaters:

Direct filtration: Bore-well water was filtered for 3 to 4 hrs by tying a plankton net made of bolting silk (mesh size 70 µm) to the inlet delivery tube of overhead storage tanks in residential areas or by manually holding the net against water pumped from agricultural bore wells for *c.* 30 min. The filtrate was fixed in 10% formalin and preserved in 5% formalin solution.

Coring and filtration: Plastic tubes (open at both ends) 70 cm long and 4 cm wide, and/or metal corer, were employed in sandy or gravelly hyporheic zones of rivers. The cores taken from the sediment surface to a depth of 10-30 cm were pooled into a bucket and vigorously stirred with filtered habitat water. The supernatant was filtered through plankton net, and the filtrate fixed and preserved as mentioned above. Other details such as dissection, and drawing, are as given in Reddy (2001).

CHECKLIST OF THE KNOWN STYGOCRUSTACEANS IN INDIA

Amphipoda

Indoniphargus indicus (Chilton 1923) appears to be the first record of a true stygobiont, freshwater crustacean in India; it was found in wells, springs and mine pits in Bengal, Orissa, and Bihar (Botosaneanu 1986). No further amphipod species are known from the subterranean freshwater in India to date.

Isopoda

Nichollsia kashiense Chopra & Tiwari 1950 (Fig. 7): Wells at Benaras and Lahagara in Uttar Pradesh.

Nichollsia menoni Tiwari, 1955: Well at Monghyr in Bihar.