JOURNAL
OF THE EAST AFRICA NATURAL HISTORY
SOCIETY AND NATIONAL MUSEUM

7th May, 1975 No. 148

PRELIMINARY CHECKLIST OF THE FISHES OF THE SOUTH BANK, KILIFI CREEK, KENYA

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The area surveyed lies at the eastern (Indian Ocean) end of Kilifi Creek; only species occurring on the southern bank were recorded. Observations were made between the Mnarani Club jetty and Ras Kitoka (fig. 1) and were confined to the area between high water mark and a depth of approximately 3 metres down the steeply sloping shelf which marks the edge of the Kilifi Creek channel (30 metres depth). The width of this shallow strip varies from 2 to 10 metres.

Within the area are 6 distinct ecological habitats:

(1) Around fish traps, where the closely-set stakes and rocks afford good protective cover for many species.

(2) Shallow areas of the creek between high water mark and the deep water channel with a *sandy* bottom, in places supporting sparse stands of *Cymodocea* and other marine grasses.

(3) Shallow areas with a rocky bed, in places with rocky debris or supporting small formations of corals, mainly *Porites*, *Acropora* or *Favia*.

(4) A zone at the mouth of the creek, parallel to the shore line, characterised by massive heads of *Porites* up to 3 metres diameter which support colonies of *Acropora*, gorgonians and algae (*Sargassum*). The deep water channel is to the immediate seaward side of this zone.

(5) Dense *Cymodocea* meadows to the leeward side of the *Porites* zone, in depths of water varying from a few centimetres to approximately 2 metres at low water.

(6) Rocky, shore-line pools on old, raised eroded coral platform. These habitats are indicated diagrammatically in fig. 2. In addition, there are areas between the *Porites* heads with a profusion of giant sea anemones (*Radianthus*) which form specialised habitats for species of *Amphiprion*.

The most marked feature of the waters of the creek banks is the amount of fine sediment and particulate matter which forms a thick covering over much of the bed and coats corals and other static animals and objects. It is easily stirred into suspension and, although always present, is more noticeable during the south-east monsoon; the waters are often very clear on incoming tides in the north-east monsoon. Nonetheless, any

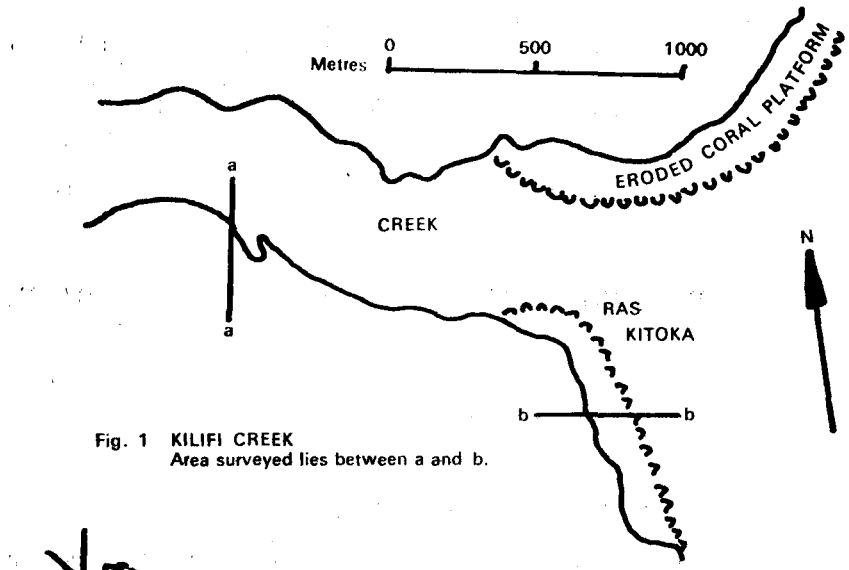

Fig. 1 KILIFI CREEK
Area surveyed lies between a and b.

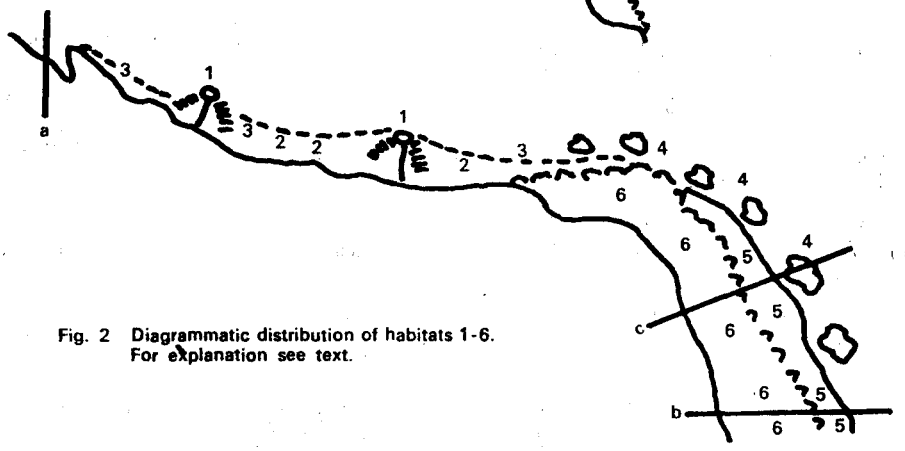

Fig. 2 Diagrammatic distribution of habitats 1-6.
For explanation see text.

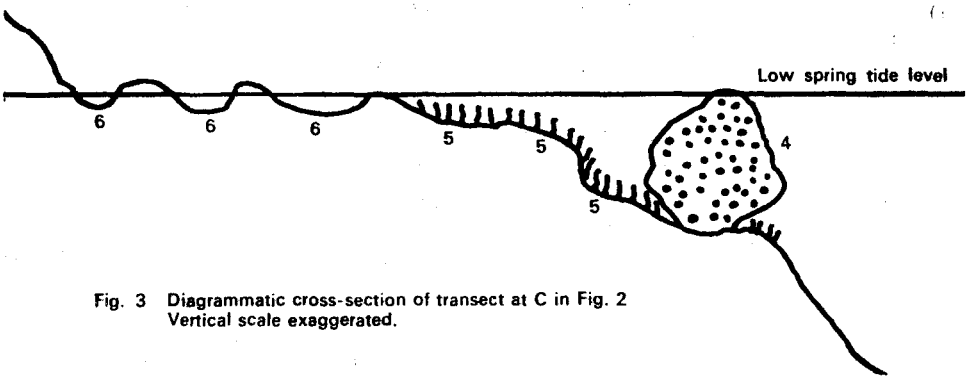

Fig. 3 Diagrammatic cross-section of transect at C in Fig. 2
Vertical scale exaggerated.

species living and breeding in the creek must be tolerant of fine sediments. Although this factor obviously plays a part in determining the coral species present (principally *Porites*, a genus noted for its capacity to withstand sediment), the number of species of fish more normally associated with clear lagoon or reef waters is surprising.

Recordings were made during August, 1971, July/August, 1972, December, 1972 and April, 1973. With few exceptions, identification was by underwater observation only, and this occasionally presented obvious problems in identity.

While the checklist can only be described as preliminary, several differences in species distribution and densities are apparent between lagoons of the shallow type such as Diani (Bock, 1972) and the Kenya creeks. The most noticeable of these is the number of different species and comparatively high frequency of occurrence of the Tetraodontidae. The quiet, turbid waters of the creek seem particularly favourable to the genus *Arothron*. This seems to contrast with the Balistidae, at least one species of which (*Rhinacanthus aculeatus*) is common in the shallow lagoons: it is either very rare or absent in the creek habitats.

The genus *Coris* is well-represented in the shallow lagoons, juveniles and adults of at least four species being common. A single record of *C. formosa* was made in Kilifi Creek.

Abudefduf dicki is common among the *Porites* heads at Kilifi, but was never observed at Diani, suggesting perhaps a discontinuous distribution of this species of the Pomacentridae. While there is no apparent reason why this species should not occur at Diani, the probable absence of species such as *A. xanthozonus* and a general lack of members of the Serranidae, Gobiidae, Blennidae and Salariidae is attributable simply to the lack of favourable habitats in the creek.

The closely-set stakes of the fish traps form an ideal habitat for *Siderea grisea:* the population density of this moray eel is high and groups of them (often as many as 5 or 6) are common around the traps. Over one-third of the total of 121 species were observed among the stakes, an indication of the vital role any form of protective cover plays in an area lacking extensive coral formations.

Most species occurred commonly in that they were observed on all or nearly all occasions, and on each successive visit to the area. Only those encountered either abundantly or frequently are noted in the list.

This paper is the second in a series of preliminary checklists which will compare differences in habitats and associated fish fauna of the shallow lagoons (Bock, 1972), deep water lagoons, creeks and mangrove forests of the Kenya coast.

In the checklist, the numbers entered after the species refer to the numbers given to the habitats (fig. 2) in which the species were observed.

The abbreviated author citations for species were taken from Smith & Smith (1963).

CLUPEIDAE (Sardines)
Sardinella melanura (C & V) surface waters of creek, in shoals

PLOTOSIDAE (Barbel Eels)
Plotosus arab Blkr 2, 3, 5, juveniles only, in compact shoals

SYNODIDAE (Lizardfish)
Synodus variegatus (Lac) 2

HEMIRAMPHIDAE (Halfbeaks)
Hemiramphus sp surface waters of creek, in shoals
Hyphoramphus dussumieri (C & V) surface waters of creek, in shoals

BELONIDAE (Garfish)
Tylosurus crocodilus (Le Sueur) surface waters of creek, in small shoals, and at 4

BOTHIDAE (Flatfish)
Pardachirus marmoratus (Lac) 2, uncommon

SYNGNATHIDAE (Pipefish and Seahorses)
Corythoichthys fasciatus (Gray) 1, 3
Doryramphus melanopleura (Blkr) 1, uncommon
Hippocampus sp. uncommon

FISTULARIIDAE (Flutemouths)
Fistularia petimba (Lac) 1, 3

CENTRISCIDAE (Razorfish)
Aeoliscus strigatus Gnthr 1, 3

CIRRHITIDAE (Hawkfish)
Cirrhitichthys oxycephalus (Blkr) 1
Paracirrhites forsteri (Bl-Schn) 4, on coral

TERAPONIDAE (Thornheads or Jarbuas)
Terapon jarbua (Forsk) 6

SERRANIDAE (Rock Cod)
Grammistes sexlineatus (Thunb) 1
Epinephelus tauvina (Forsk) 1, 3

APOGONIDAE
Apogonichthyoides nigripinnis (C & V) 1
Cheilodipterus artus Smith 1
Ostorhinchus fleurieu Lac 1, 4
Ostorhinchus savayensis (Gnthr) 1, 3
Paramia quinquelineata (C & V) 1

CARANGIDAE (Kole kole)
Caranx malabaricus (Bl-Schn) creek waters, in shoals
Chorinemus tolooparah (Rupp) creek waters, in shoals
Selar crumenophthalmus (Bloch) creek waters, in shoals

MULLIDAE (Red Mullets)
Pseudupeneus macronema (Lac) 2, juveniles only
Upeneus tragula (Richdsn) 2

PLATACIDAE (Batfish)
Platax pinnatus (Linn) 1, 2, 3

POMACANTHIDAE (Angelfish)
Centropyge multispinis (Plfr) 4
Pomacanthodes striatus (Rupp) 3, 4
Pomacanthops semicirculatus (C & V) 4

CHAETODONIIDAE (Butterflyfish)
Chaetodon auriga Forsk 1, 3, 4
Chaetodon falcula Bloch 4
Chaetodon lineolatus C & V 4
Chaetodon lunula (Lac) 1, 3
Chaetodon trifasciatus Mungo Park 4
Chaetodon unimaculatus Bloch 4
Chaetodon zanzibarensis Plfr 4, uncommon
Heniochus acuminatus (Linn) 1, 3

ACANTHURIDAE (Surgeon or Lance fish)
Acanthurus leucosternon (Benn) 4
Acanthurus lineatus Linn 4
Acanthurus triostegus (Linn) 6
Acathurus sp. 1
Zebrasoma flavescens (Benn) 4
Zebrasoma veliferum (Bloch) 4

ZANCLIDAE (Moorish Idols)
Zanclus cornutus (Linn) 4

GERRIDAE
Gerres oyena (Forsk) 2, 3

KYPHOSIDAE (Rudderfish)
Kyphosus vaigiensis (Q & G) 2, 3

PEMPHERIDAE (Sweepers)
Pempheris oualensis (C & V) 1, in shoals

LUTJANIDAE (Snappers)
Lutjanus johni (Bloch) 1, 2, 3
Lutjanus kasmira (Forsk) 1, 2, 3
Lutjanus sebae (C & V) 2, juveniles among sea urchin spines, uncommon

CAESIODIDAE
Caesio caerulaureus Lac 1, 4, in small shoals

GATERINIDAE
Gaterin flavomaculatus (Ehren) 4
Gaterin gaterinus (Forsk) 4
Gaterin playfairi (Pell) 2, 4
Gaterin punctatissimus (Plfr) 4

LETHRINIDAE (Barefaces)
Lethrinus harak (Forsk) 2

POMACENTRIDAE (Coral or Damsel fish)
Abudefduf biocellatus (Q & G) 6
Abudefduf dicki (Linn) 4
Abudefduf lachrymatus (Q & G) 4
Abudefduf saxatilis (Linn) 1, 4
Abudefduf septemfasciatus (C & V) 1, 4, 6
Abudefduf sexfasciatus (Lac) 1
Abudefduf sparoides (C & V) 1, 4
Amphiprion akallopisos Blkr 4
Amphiprion ephippium (Bloch) 3, 4
Chromis caeruleus (C & V) 4, juveniles in small shoals, always near coral
Chromis dimidiatus (Klunz) 4
Chromis nigrurus Smith 1, 4
Dascyllus aruanus (Linn) 3, 4
Dascyllus reticulatus (Richdsn) 4
Dascyllus trimaculatus (Rupp) 3, 4, juveniles among Sarcophyton, 2
Pomacentrus pulcherrimus Smith 3, 4
Pomacentrus sulfureus Klunz 4
Pomacentrus taeniurus Blkr 1, 4

LABRIDAE (Wrasses or Rainbowfish)
Anampses caerulopunctatus Rupp 4
Cheilinus trilobatus Lac 4
Coris formosa Benn 4, adult, one record only
Gomphosus varius Lac 4
Halichoeres marginatus Rupp 4
Labroides bicolor Fwlr 4
Labroides dimidiatus (C & V) 1, 3, 4, 6
Lepidoplois sp 4
Thalassoma amblycephalus Blkr 4
Thalassoma lunare (Linn) 1, 3

SCARIDAE (Parrotfish)
Scarus apridentatus (Smith) 3, 4
Scarus frenatus Lac 4
Xanothon venosus (C & V) 4

SCOMBEROMORIDAE (Kingfish)
Scomberomorus guttatus (Bl-Schn)

MUGILIDAE (Grey Mullet)
Mugil buchanani Blkr 2, 3 deeper water

SPHYRAENIDAE (Barracuda)
Sphyraena barracuda (Walb) 1, 2, 4, 5, juveniles only, in small shoals

SIGANIDAE (Rabbitfish)
Siganus oramin (Bl-Schn) 5

ELEOTRIDAE
Ptereleotris tricolor Smith 4, one record only

ECHENEIDAE
Echeneis naucrates (Linn) one record only; attached to green turtle

BLENNIDAE (Blennies)
Meiacanthus mossambicus Smith 1
Runula rhinorhynchos (Blkr) 4

SCORPAENIDAE (Scorpionfish)
Dendrochirus zebrae (C & V) 1, 3
Pterois volitans (Linn) 1, 3
Pteropterus antennata (Bloch) 1, 3
Scorpaenodes ?guamensis (Q & G) 1, 3

SYNANCEJIDAE (Stonefish)
Synaceichthys verrucosus (Bl-Schn) 3

CEPHALACANTHIDAE (Flying Gurnards)
Dactyloptena orientalis (C & V) 2

MURAENIDAE (Moray Eels)
Lycodontis undulatus (Lac) 1, 3
Siderea grisea (Lac) 1, 3, abundant

MONACANTHIDAE (Filefish)
Amanses sp 2
Oxymonacanthus longirostris 4

ALUTERIDAE
Osbeckia scripta (Osbeck) 2, uncommon

OSTRACIIDAE (Boxfish, Cowfish)
Lactoria cornuta (Linn) 2, 3
Ostracion tuberculatus (Linn) 1, 2

DIODONTIDAE (Porcupinefish)
Diodon hystrix Linn 1, 2, 3
TETRAODONTIDAE (Puffers)
Arothron aerostaticus (Jenyns) 2, uncommon
Arothron hispidus (Lac) 2, 3
Arothron immaculatus (Bl-Schn) 2, 3, 4
Arothron nigropunctatus (Bl-Schn) 2, 3
Arothron stellatus (Bl-Schn) 2, 3, 4

CANTHIGASTERIDAE (Sharpnosed Puffers)
Canthigaster bennettii (Blkr) 1, 3
Canthigaster janthinopterus (Blkr) 1, 3
Canthigaster valentini (Blkr) 1, 3

ANTENNARIIDAE
Antennarius sp 1, uncommon
DASYATIDAE (Stingrays)
Dasyatis sp 2

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(*Received 3rd January, 1974*)