FULER DESCRIPTION OF A RECENTLY DESCRIBED SPECIES OF THE MARINE BORER *BANKIA (NEOBANKIA) ROONWALI* RAJAGOPALAIENGAR FROM WEST BENGAL, INDIA

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(With 2 Plates and 1 Table)

CONTENTS

I—INTRODUCTION

During the years 1958 and 1961 a detailed survey of the marine molluscan borers in the Port Canning and the adjacent areas of the Sundarbans (West Bengal) was carried out. Ten species of the family Teredinidae were thus collected. A preliminary description of a new species found, namely, *Bankia (Neobankia) roonwali*, has been published recently (Rajagopaliengar, 1961), and a fuller description, with illustrations and ecological notes, is given here. About 40 entire specimens and several shells were collected around Sajnakhali, Sundarbans, West Bengal. The specimens were extracted from the following kinds of mangrove trees, of which all but the last mentioned were living :—

Bengali name	Botanical name	Family
1. " Baen "	*Avicennia officinalis* Linnaeus *Avicennia alba* Blume *Avicennia marina* Vierhapper	Verbenaceae
2. " Gengwa "	*Excoecaria agallocha* Linnaeus	Euphorbiaceae
3. " Goran "	*Ceriops decandra* Ding Hau (=*C. roxburghiana* Arn.)	Rhizophoraceae
	Ceriops tagal (Perry) Robinson (=*C. candolleana* Arn.)	Rhizophoraceae

4. " Khalsi "	*Aegiceras corniculatus* (Linnaeus)	Myrsinaceae
5. " Pussur "	*Xylocarpus molluccensis* Roemer (=*Carapa molluccensis* Lamarck)	Meliaceae

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II—Systematic Account

Genus **Bankia** Gray

1840. *Bankia* Gray, *Gen. Synops. Brit. Mus.*, London, 42nd ed., p. 154 (*nomen nudum*).

1842. *Bankia* Gray, *Gen. Synops. Brit. Mus.*, London, 44th ed., p. 76 (diagnosed, but no species named).

1847. *Bankia* Gray, *Proc. zool. Soc. Lond.*, London, **15**, p. 188 (type-species designated).

Type-species :—*Teredo bipalmulata* Lamarck.

Subgenus **Neobankia** Bartsch

1921 *Neobankia* Bartsch, *Proc. biol. Soc. Wash.*, Washington, **34**, p. 25.

Type-species :—*Bankia* (*Neobankia*) *zeteki* Bartsch.

Bankia (**Neobankia**) **roonwali** Rajagopalaiengar, 1961

(Pls. 35 and 36 ; Table 1)

(*a*) *Material*

Lot A.—Coll. H. C. Ray, Sajnakhali, Lat. 28° 7'N., Long. 88° 50'E., 24-Parganas, West Bengal, 21—28 March, 1958, as follows :—(i) 1 example, Sajnakhali Forest Office jetty, 21.iii.1958, ex. a log of wood. (ii) 6 examples, south bank of Sajnakhali Khal, east of the Forest Office 23 and 28.iii.1958, ex. pieces of living mangrove trees. (iii) 12 examples., Tetulbaria camp about 17 Km. south west of the Forest Office, 25—26. iii. 1958, ex. pieces of living mangrove trees.

Lot B.—Coll. A. S. Rajagopalaiengar, Sajnakhali, Lat. 28° 7' N., Long. 88° 50' E., 24-Parganas, West Bengal, 26th April—3rd May, 1961 as follows :—(iv) 1 example, south bank of Sajnakhali Khal about 200 metres west of the Forest Office, 26. iv.1961, ex. a piece of living " Gengwa " tree. (v) 2 examples, Baentolla-Bharani, a creek about a Km. west of the Forest Office, 26—27.iv.1961, ex. a piece of living " Gengva " tree. (vi) 3 examples, south bank of Sajnakhali Khal

about 3 Km. east of the Forest Office, 29.iv.1961, ex. trunk of a living " Goran " tree. (vii) 4 examples, bank of Gomdi river about 5 Km. west of the Forest Office, 30.iv.1961, ex. pieces of living " Goran " tree. (viii) 3 examples, bank of Gomdi river about 5 Km. west of the Forest Office, 30th April—1st May, 1961, ex. pieces of living " Khalsi " tree. (ix) 3 examples, Sajnakhali Forest Office jetty, 2.v.1961, ex. a piece of " Pussur " wood. (x) 2 examples, Sudhanyakhali about 13 Km. south of the Forest Office, 3.v.1961, ex. pieces of living " Goran " tree. (xi) 3 examples, Sudhanyakhali about 13 Km. south of the Forest Office, 3.v.1961, ex. a piece of " Baen " tree.

Lot C.—1 example, Sewri timber pond, Bombay, January, 1957. Coll. V C. Palekar, ex. wood.

(*b*) *Description*

1 *Shell* (Pl.36, Figs. 1, 2 ; and Table 1).—Globular, thin, white to deep pink depending upon nature of wood infested. Extreme anterior area marked by usual sinus, without much callus. From this region radiate dental ridges curving downwards over anterior lobe. Anterior lobe with 38—56 equidistant ridges having finely denticulated free margin. Space between ridges twice as wide as ridges but slightly narrow towards umbo ; ridges closer in younger shells. Length of anterior lobe almost equal to its height. Line marking junction of anterior and anterior median portion wavy. Anterior part of median lobe about half as wide as anterior lobe and separated from it by an impressed wavy line, with more closely set ridges than in anterior lobe, bearing 28—32 denticulated ridges. Dental ridges meeting those on anterior lobe at slightly greater than a right angle but not continuous with them. Middle portion of median lobe narrow, extending from unbonal region to ventral knob ; its surface crossed by wavy lines of growth irregularly. Posterior part of median lobe as wide as anterior part of median lobe, with feeble lines of growth. Posterior-median portion bending slightly inwards at its junction with posterior lobe but without clear demarcation. Posterior lobe forming the auricle, quite conspicuous and bearing translucent lines of growth.

Interior of shell smooth, middle part of median lobe appearing as a depressed groove. Umbone projecting as a knob. Apophysis (hypophysis or blade of some authors) springing from the umbone curves and passing downwards almost to ventral knob ; lying oblique to inner surface of shell. Auricle extending over median lobe as a shelf.

TABLE 1.—*Measurements* (*in mm.*) *of* Bankia (Neobankia) roonwali *Rajagopalaiengar*

Body-part	Range (15 exs.)	Holotype
1. Total length	56·0—180·0 (in spirit) 378·0 (living)	112·5
2. Length of shell	6·0—12·0	12·0
3. Height of shell	6·0—12·0	12·0
4. Length of pallet	13·0—36·0	36·0
5. Length of stalk	5·0—20·5	15·0
6. Length of blade	7·0—21·0	21·0
7. Diameter of blade	2·0—4·0	4·0

2. *Pallets* (Pl. 35, Fig. 3 ; Pl. 36, Figs. 3-6, and Table 1).—Long, fragile, well-formed cone-in-cone type, with a cylindrical stalk white or pink depending upon the wc' ' infested. Blade yellowish brown to chocolate consisting of a series of cones, somewhat semicircular in cross-section, *i.e.*, slightly bulged along outer surface and flat along inner surface. Individual cone-elements of blade arranged very compactly, leaving no space for the narrow tapering part of cones to be visible. Cones asymmetrical, *i.e.*, more developed on one side of the axis, the condition being reversed on the other blade. Number of cones 6-13 (13 in holotype). Membrane (periostracum of some authors) covering the cones thrown into pectinate processes (denticulation of some authors) at the free margins of cones on both sides. Lateral borders of cups (cones) not drawn out and with or without pectination—in the latter case pectination being eroded or lost. Number of pectinate processes variable, 23-46 along outer margin with average 36, and 19-35 (average 25) along inner margin. Range for holotype : 30-43 (average 37) along outer margin, 19-30 (average 26) along inner margin. Pectination appearing bifid in some cases. Outer and inner margins concave. Concavity either nearly equal in depth on both sides, or outer margin slightly deeper than inner. Outer margin circularly concave , inner margin with a distinct angulation in the mid-region resulting in almost a V-shaped condition.

A cylindrical rod (similar to the stalk), projecting axially from the distal extremity of blade (*i.e.*, from the centre of concavity of last cone indicating the continuation of the stalk through the whole length of pallet as its core), present in some but not clear in others, is present in the holotype.

3. *Siphons* (Pl. 35, Fig. 3).—Fairly long, conjointed, almost equal in length and mottled with reddish brown spots irregularly. Inhalent and exhalent siphons separate just subterminally. Tip of inhalent siphon wider than that of the exhalent and bearing a few tiny papillae-like structures along the rim.

4. *Collar*.—A well developed collar present at base of siphons and slightly rolled out on itself.

5. *Burrow*.—It is lined by a calcareous tube non-adherent to the animal except at the collar region. Calcareous tube fairly thick, particularly at posterior end.

(*c*) *Type-specimens*

All type-specimens deposited in the National Zoological Collections, Zoological Survey of India, Calcutta.

Holotype.—One example from Material Lot B (viii), above, Z.S.I. Reg. No. M16751/2, Sajnakhali, coll. A. S. Rajagopalaiengar, 30.iv.1961, ex. a piece of living " Khalsi " tree. *Paratypes*. : Four, as follows :— Two from Material Lot B (vii), one from (ix) and one from (xi), above, Z.S.I. Reg. Nos. M 16752/2 to 16754/2.

(*d*) *Type-locality*

INDIA : West Bengal ; Sajnakhali (24-Parganas District), about 5 Km. west of the Sajnakhali Forest Office, Lat. 22° 7′ N., Long. 88° 50′ E.

(*e*) *Geographical Distribution*

INDIA : Bombay : Sewri timber pond, West Bengal : (24-Parganas District), Sajnakhali and its vicinity

(*f*) *Comparisons*

Bankia (*Neobankia*) *roonwali* has certain unique characters not met with in any of the species so far known of the subgenus *Neobankia.* In respect of compactness of cones on the blade, it resembles *B.* (*N.*) *tenuis* Sivickis, whereas in the pectination of the free margin of cones it approximates *B.* (*N.*) *lineata* Nair. In general shell characters it bears some resemblance to *B.* (*N.*) *zeteki* Bartsch, *johnsoni* Bartsch, *lineata* Nair and *denticuloserrata* Daniel.

Another peculiarity which distinguishes this species from all others is in the arrangement of denticulated ridges on the anterior lobe of the shell. According to Bartsch (1927) and Nair (1955) these ridges, which are apart in the early stage of the shell, become closer-spaced as the shell increases in age, whereas in the case of *B.* (*N.*) *roonwali* the reverse obtains.

Roonwal (1954) recorded *Bactronophorus thoracites* (Gould) for the first time in India from living mangrove trees of Sundarbans. Ganapati & Rao (1959) also reported the incidence of four species of Teredinid marine borers from mangroves of the Godavari estuary. My specimens of *Bankia* (*Neobankia*) *roonwali* also are collected from stems of different kinds of living mangrove trees of Sundarbans.

III—KEY TO KNOWN SPECIES OF SUBGENUS *Neobankia* (GENUS *Bankia*)

(A). Cone elements distantly placed—

1.	One of the margins denticulated	2
	Both margins denticulated	5
2.	Outer free margin of segments (cones) denticulated, while the inner free margin smooth	*barthelowi* Bartsch
	Inner free margin denticulated, outer free margin smooth	3
3.	Cones of the blade somewhat angularly cupped	*occasiuncula* Iredale *et. al.*
	Cones not angularly cupped but the outer margin more deeply concave than the inner	4
4.	New cups of pallet formed at the distal extremity of blade (lateral borders drawn out into slender processes, longer on one side than on the other), inner margin of cup straight, outer deeply concave	*rubra* Sivickis*
	New cups of pallet formed at the proximal extremity of blade (inner margin of cup with eight prominent teeth, lateral borders of cups drawn out into slender processes longer on one side than on the other)	*konaensis* Edmondson
5.	Inner free border being straight, while the outer is curved	*Zeteki* Bartsch
	Both margins curved (concave)	*Johnsoni* Bartsch

**hawaiiensis* Edmondson is possibly a synonym of *rubra* Sivickis.

(B). Cone elements large in number, lateral borders drawn out into slender processes—		
6. The joints (cones) tulip-shaped and covered with a radiant white membrane		7
The joints not tulip-shaped		8
7. Margin of outer surface has regular teeth	*rochi* Moll	
8. Denticles in the intermediate space of rim (margins) simple and non-serrated (denticles stronger and stouter along margin)	*lineata* Nair	
Each denticle in the intermediate space of rim (margins) bears on either side 5 to 8 serrated structures	*denticuloserrata* Daniel	
(C). Cone elements compact, lateral borders not drawn out		9
9. Stalk continuing through the whole length of pallet as its core (lateral borders not drawn out, inner margin of cones with a distinct angulation in the middle, both margins pectinate)	*roonwali* Rajagopalaiengar	
Stalk not continued through the whole pallet (free margins pectinate or comb-like)	*tenuis* Sivickis	

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