

Subfamily Saccostreinae (Part 3)

Saccostrea cucullata (Born, 1778)

Saccostrea echinata (Quoy & Gaimard, 1835)

Saccostrea scyphophila (Peron & Lesueur, 1807)

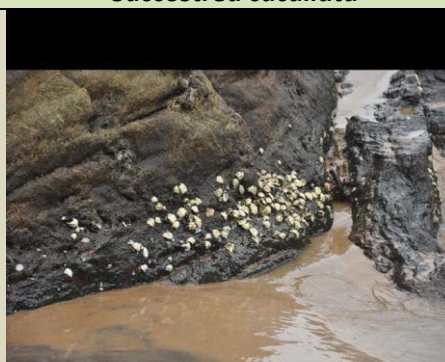
Part 3 - Subfamily Saccostreinae

Shells thick or thin growing in brackish water of estuaries or lagoons attached to mangrove vegetation or gastropod snails or pebbles; or intertidal rocky shores on exposed rock faces or intertidal rocks in sheltered marine waters. Valves plicate, muscle scars pigmented, chomata present.

Saccostrea cucullata



Saccostrea cucullata



Saccostrea cucullata
Maggona, Thudawa Bay. On sheltered aspect of rocky shore.



Saccostrea cucullata
Maggona, Thudawa Bay. Detail showing grooved upper valves and crowding of animals in one layer.

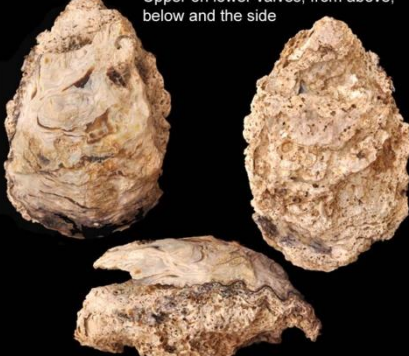
MF560: Maggona, Thudawa Bay. Inter-tidal rocky shore. Left - Two adult shells, at left, from the exposed, seaward, side of the rock, four juveniles with grooved upper valves, at right, from the sheltered side. Centre - The sheltered side of the rock. Right - Detail of the colony on the sheltered side. Uneroded grooved u/vs were seen only here.

Upper on lower valves, from above, below and the side



Saccostrea cucullata
Actual size 63 x 73 x 26 mm

Upper on lower valves, from above, below and the side



Saccostrea cucullata
Actual size 45 x 72 x 35 mm

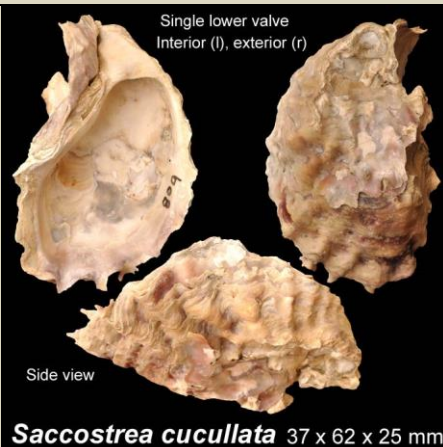
Interior views of lower (l) and upper (r) valves



Saccostrea cucullata
MF346

Left - MF344 & centre/right - MF346: Mount Lavinia, intertidal, epilithic on Bellangala rocky islet. Shape variable due to crowding and substrate irregularities. Upper valves eroded with plicate margins, the lower valves show characteristic strong radial ridges, attached by the entire underside. Chomata present around the circumference, clear on upper valves, indistinct on lower. Umbonal cavity deep. Muscle scars mostly rounded, flat on one side, pigmented lightly or not.

continued next page



MF809: Negombo lagoon, lower valves only, buried in soil bank on shore. It is likely that these were attached to mangrove vegetation, as the attaching area does not show residues of a hard substrate. The shells in the collection were all thin and light, unlike the thick and heavy shells found along marine rocky shores.

The strong radial ridges and deep umbonal cavities with extensive cardinal areas distinguish these from *Saccostrea scyphophilla*, also found in the brackish waters of estuaries and mangroves. The latter have strong radial ridges as well but with shallow umbonal cavities and short cardinal areas.

***Saccostrea cucullata* Rock, Hooded or Bombay Oyster**

Checklist 2012 as *Saccostrea cucullata*; Kirtisinghe, 1978 as *Saxostreaa forskalli* (Gmelin), a synonymised name.

Gregarious, epilithic on wave exposed intertidal and supratidal rocks or epiphytic on mangroves of brackish estuaries and lagoons. Solid, thick-shelled (marine) or light, thin-shelled (mangrove), small to medium sized, firmly cemented to substrate by entire left (lower) valve. Generally triangular-spathulate or linear and slipper-shaped, sometimes curved to one side. Ligament area of lower valve much prolonged beyond hinge, umbonal cavity deep extending well beyond hinge line, l/v deeply cupped, margins raised and plicate. Upper valve flat or slightly convex, margins sinuate, fitting like a lid. Upper valve sculpture usually obliterated by erosion but shows lamellae; l/v has radial ridges corresponding to marginal plications, also seen in u/vs of shells growing in sheltered locations that are conspicuously grooved. Chalky white with dark blackish-brown margin externally. Interior white with dark margin to u/v, muscle scar eccentric, the one on the upper valve coloured. Chomata present along the edge of the u/v, strongest closer to the hinge, with corresponding pits on the l/v.

Abundant at Mount Lavinia on the intertidal rocky shore and on the rocky islet Bellangala.

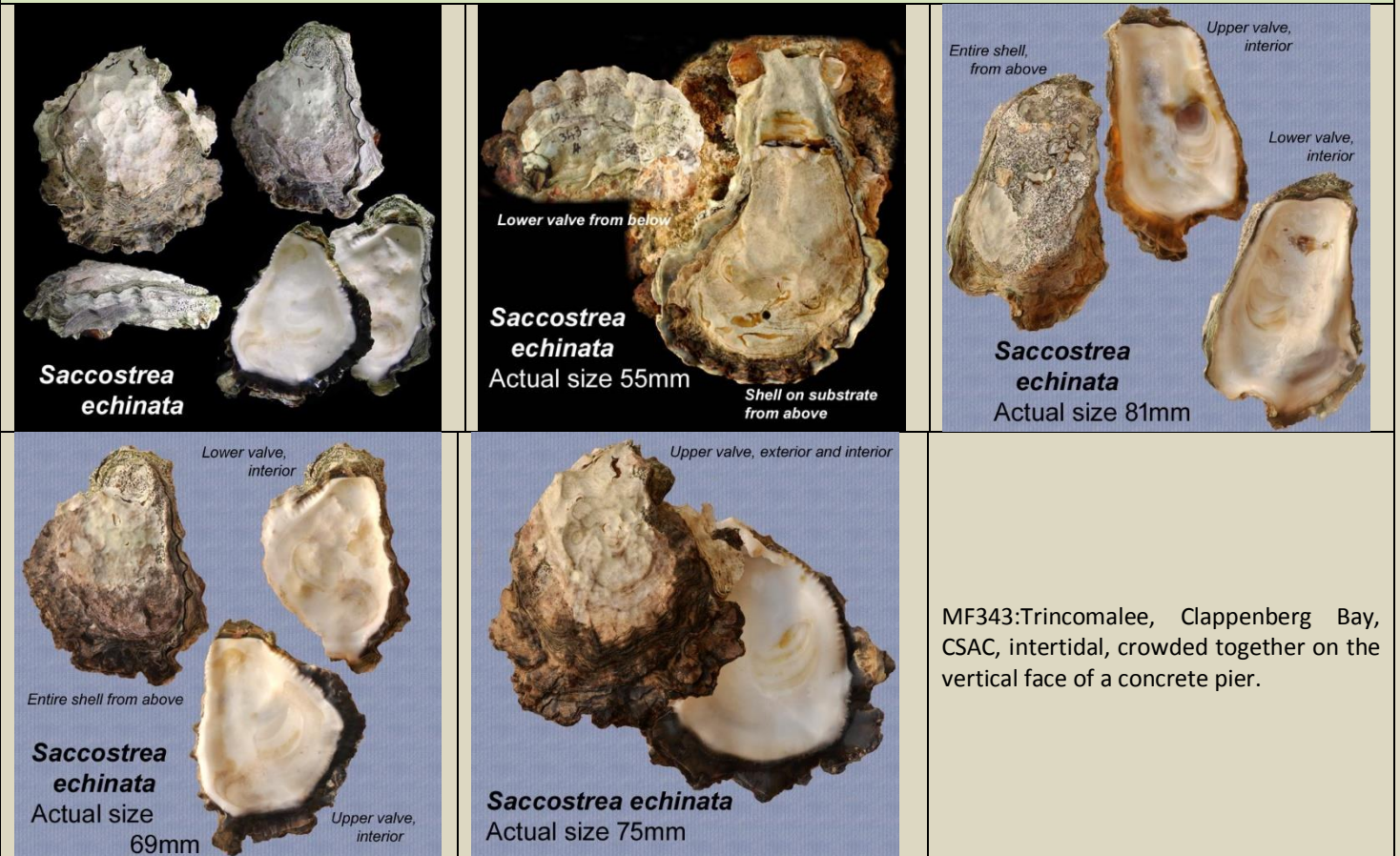
- Kirtisinghe, 1978 p. 26; Pinto, 1986 p. 36; Allen & Steene, 1994 p. 170; Abbott & Dance, 1982 p. 318; Lam & Morton, 2006; Fernando, 1977 p. 41; Fernando, 2009 p. 143; Siddiqui & Ahmed, 2002; Harry, 1985.

"Because of shell plasticity, the taxonomy of *Saccostrea* has been problematic." - Lam and Morton, 2006.

The type specimen of *S. cucullata* was from India (Lam & Morton, 2006; Awati & Rai, 1931). The Indian authors had pointed out the difficulty in identifying the species because of the great variation in the shape, size, and colour markings.

WoRMS accepts *S. cucullata* (Born, 1778) as well as *S. glomerata* (Gould, 1850) (previously *S. cucullata glomerata*). The distribution of *S. cucullata* is wide, including mainly the Indian Ocean, Red Sea and Mediterranean, as well as Australia. *S. glomerata* is distributed along the eastern seaboard of Australia and the New Zealand Exclusive Economic Zone. Images of *cucullata* show a shell without prominent plications, small umbonal cavity and short l/v cardinal area. Images of *glomerata* on the other hand show shells with strong plications and deeper umbonal cavities and longer l/v cardinal area - resembling the local shells. Images of *cucullata* from Pakistan (Siddiqui & Ahmed, 2002), however, look similar to the Sri Lankan forms. Despite the failure to find matching contemporary images identified as *S. cucullata* this name is retained in this work. DNA studies are needed to establish the taxonomic position of the Sri Lanka shells in both marine and mangrove habitats.

Saccostrea echinata



MF343:Trincomalee, Clappenberg Bay, CSAC, intertidal, crowded together on the vertical face of a concrete pier.

Saccostrea echinata

Not listed in the Checklist 2012 as at that time was thought to be an ecomorph of *S. cucullata*.

Thin but strong shells growing gregariously on an intertidal vertical surface in a sheltered bay. Firmly cemented by the whole of the left valve and posterior margin, the anterior margin raised. More or less symmetrically triangular-spathulate or with longer rounded anterior margin and shorter posterior, narrow hinge margin, short cardinal area, the umbonal cavity shallow. Lower valve slightly cupped anteriorly with a raised margin that is weakly plicate, the posterior margin hardly raised. Upper valve fits like a lid, margin sinuate, thin. Externally u/v irregular, encrusted or eroded or laminated: white or grey with dark periphery; l/v with concentric lamellae, margin weakly plicate with corresponding radial ridges. Interior white, muscle scar eccentric, unpigmented, a wide blackish margin. Chomata short, linear, in a circumferential row on u/v with corresponding pits lower. Chomata strongest near the hinge anteriorly and posteriorly, weak to absent over most of the posterior and the ventral margins.

Two juveniles inside a dead shell have lamellated u/vs coloured reddish-brown.

- Harry, 1985 (as *Ostrea mytiloides* Lamarck, 1819); Siddiqui & Ahmed, 2002; Fernando, 2009 p. 144.

"... large, to 120 mm high, generally adhering to red mangrove roots, left valve not excessively thickened, attached by half the valve or less, the free part not plicate but occasionally vaguely undulate. Right valve covered with imbricated, dark purple lamellae which have no radial striations..." (Harry, 1985). Our specimens, from only one collection, differ from Harry's description of being attached by the whole of the lower valve. They are, however, on a different, flat, substrate. They agree on the "vaguely undulate" nature of the exterior of the left valve and the "dark purple" lamellae on the right valve. The distribution given by Harry is "Zanzibar, India, Australia, Philippines, Indonesia, Samoa."

Saccostrea scyphophilla



Saccostrea scyphophilla

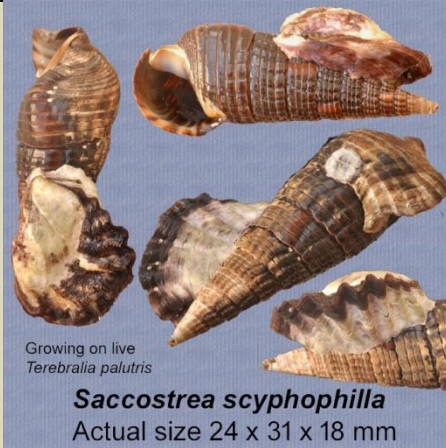
Actual size
26 x 42 x 20 mm



Saccostrea scyphophilla

Actual size
21 x 31 x 15 mm

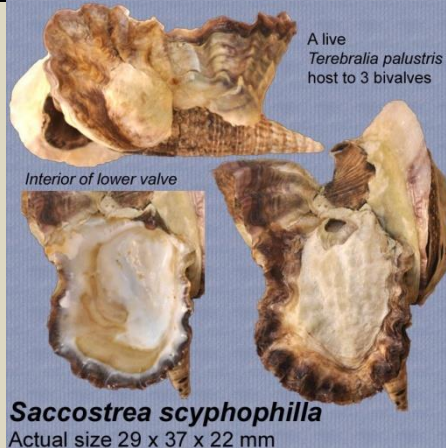
MF342: Trincomalee, Cod Bay, exposed at low tide on sandy shallows. Live shells growing on quartz pebbles. Reniform muscle scars and chomata extending all around the margin can be seen in the left-hand image.



Growing on live
Terebralia palustris

Saccostrea scyphophilla

Actual size 24 x 31 x 18 mm



A live
Terebralia palustris
host to 3 bivalves

Interior of lower valve

Saccostrea scyphophilla

Actual size 29 x 37 x 22 mm

MF520: Batticaloa, Palameenmadu. Live shells from the shallow (<1m) mangrove, attached on live *Terebralia palustris*. Note the radially ridged and grooved upper valves, and the strong radial ridges of the lower valves.



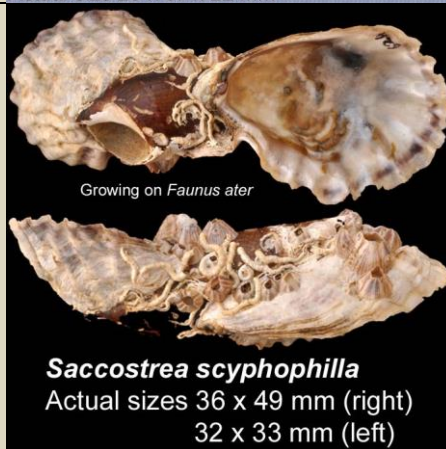
Lateral view, hinge to left

Upper valve on
lower valve

Interior of lower valve

Saccostrea scyphophilla

Actual size
42.67 x 43.06 x 11.45 mm



Growing on *Faunus ater*

Saccostrea scyphophilla

Actual sizes 36 x 49 mm (right)
32 x 33 mm (left)



Lateral views

Upper valve on lower, growing on
a *Faunus ater*

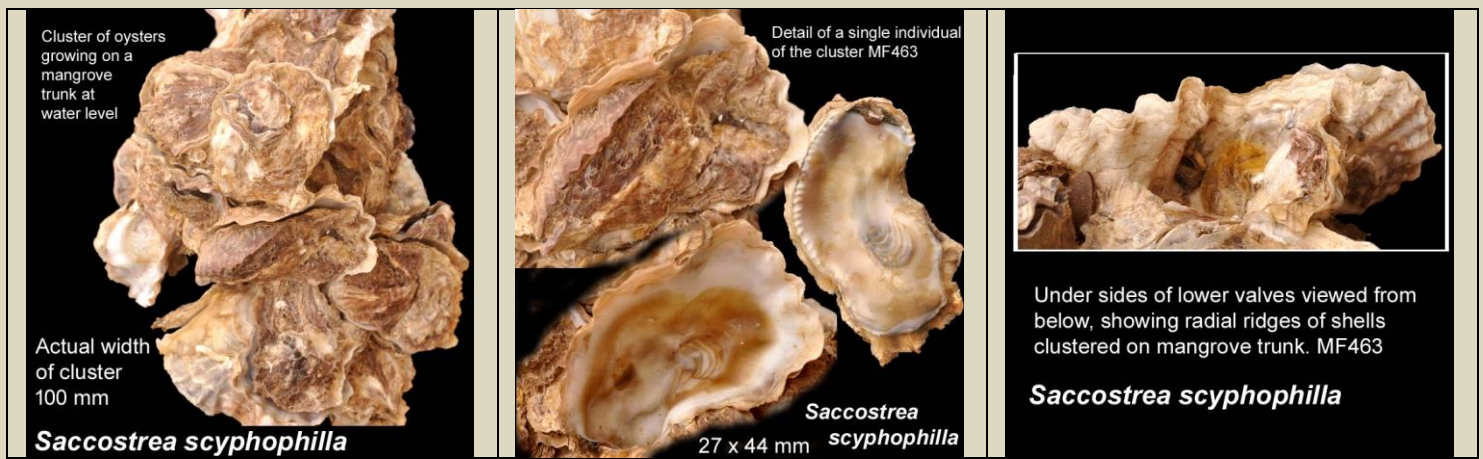
Saccostrea scyphophilla

Actual size 25 x 33 x 16 mm

MF590: Kayankerni, growing on beached *Pinna bicolor*. Attached by entire under surface of lower valve. Upper valve weathered.

MF624: Chilaw, sand spit, beached on lagoon bank, growing on *Faunus ater* shells.

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MF463: Koggala lake. Left - a cluster of valves growing on the trunk of a mangrove tree. Centre -detail of one showing upper valve exterior and interior and interior of lower valve. Right -detail of the exterior of the lower valves, showing radial ridges.

Saccostrea scyphophilla

Checklist 2012 as *Saccostrea mordax*; Kirtisinghe, 1978 as *Gryphaea mordax* (Gould)

Small shells, thin but strong, firmly cemented by the whole length and posterior of the left valve, the anterior and to a lesser extent the ventral margins raised. Generally elongate oval, some are triangular-spathulate. Lower valve hinge margin rounded, cardinal area small, an umbonal cavity absent or minimal. The anterior margin raised, plicate; the posterior margin hardly raised, plications less regular. Upper valve flat or slightly convex, margins sinuate, fitting like a lid on the l/v. Chomata present, stronger and more regular than on *S. cucullata*. Muscle scar eccentric, pigmented. External sculpture of u/v generally obliterated by erosion, radial ribs and grooves seen peripherally. Eroded parts chalky white, margins dark. Visible parts of the l/v with radial ribs corresponding to the marginal plications. Interior white with blackish margin showing externally as a black line.

Collections have been made from calm waters, both saline and brackish. Those attached to hard substrates tended to resemble each other while those clustered around a mangrove stem were different, the upper valves uneroded, covered by brown periostracum.

- Kirtisinghe, 1978 p. 26 as *Gryphaea mordax*; Fernando, 2009 p. 143 as *Saccostrea mordax*; Lam & Morton, 2006 p. 239 fig. 1 & text.

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13.8.2018, 20.8.2018; 15.5.2020.