

Guide to Queensland's intertidal oysters



Version 1, September 2020

Authors

Dr. Carmel McDougall, Australian Rivers Institute, Griffith University
Nikolina Nenadic, Australian Rivers Institute, Griffith University
Dr. John Healy, Queensland Museum

For enquiries please contact Carmel McDougall,
c.mcdougall@griffith.edu.au

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Introduction

The biodiversity of rock oysters in Australia is generally poorly understood and is of interest for both ecological and commercial applications. This lack of understanding is compounded by the difficulty in distinguishing oyster species using morphology alone. This guide highlights the predominant oyster species found within the Queensland intertidal, distinguished using genetic evidence. Images have been chosen to represent the general morphology of each species however it should be noted that extensive variation exists. All of these species except one are known to have wide-ranging distributions in the Indo-Pacific, and are not unique to Australia.

With the difficulty in morphological identification comes difficulty in confidently assigning species names. As many species are described based on shell morphology, confident identifications will only be possible by combining morphology with genetic studies on oysters from the location of the originally described individual. For this guide we have followed current convention and have referred to several species as previously defined 'lineages'*. Species names will be assigned once further genetic and taxonomic evidence is available.

The distributions indicated for each species are based upon sampling research trips conducted between 2017 and 2019, and are not exhaustive. Sizes indicated are based upon collected specimens and may not represent the maximum size for the species.

*Lineage names follow the scheme previously established in the following publications:

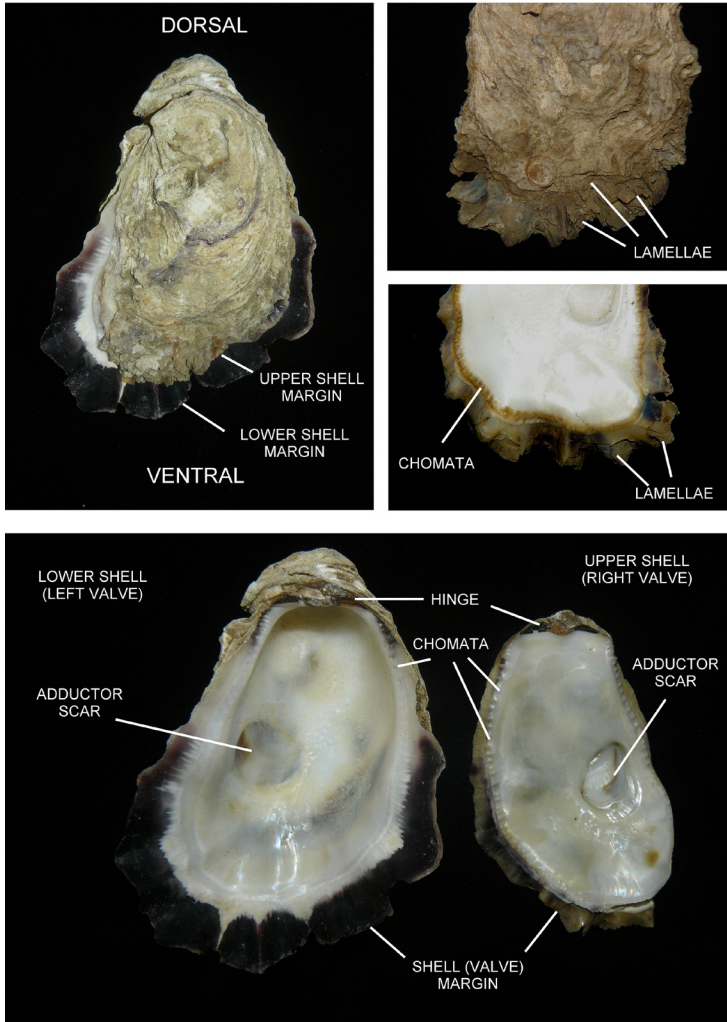
- Lam, K., Morton, B., 2006. Morphological and mitochondrial-DNA analysis of the Indo-West Pacific rock oysters (Ostreidae: *Saccostrea* species). *J. Mollus. Stud.* 72, 235-245.
- Sekino, M., Yamashita, H., 2016. Mitochondrial and nuclear DNA analyses of *Saccostrea* oysters in Japan highlight the confused taxonomy of the genus. *J. Mollus. Stud.* 82, 492-506.

Other relevant references:

- Huber, M. 2010. Compendium of Bivalves. Volume 1. Conchbooks, Hackenheim.
- Stenzel, H.B. 1971. Oysters. In: R.C. Moore (Ed.) *Treatise on Invertebrate Paleontology, Mollusca 6, Part N.* Geological Society of America and The University of Kansas, Boulder.
- World Register of Marine Species <http://www.marinespecies.org/>

Anatomical features

The following descriptions will aid in interpreting the text within this guide.



Adductor scar: kidney or oval-shaped scar marking the attachment site of the large adductor muscle

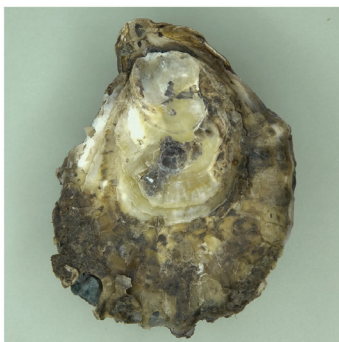
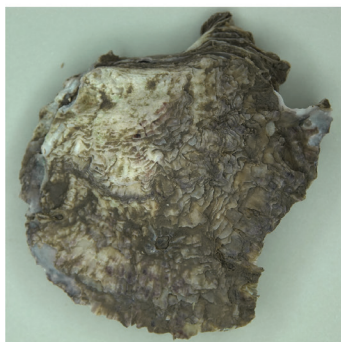
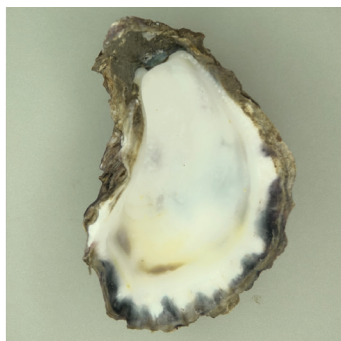
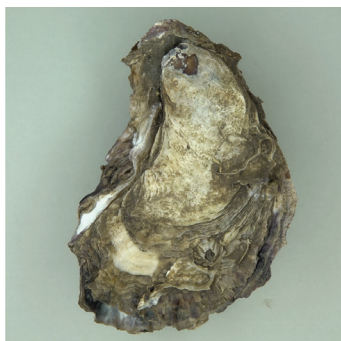
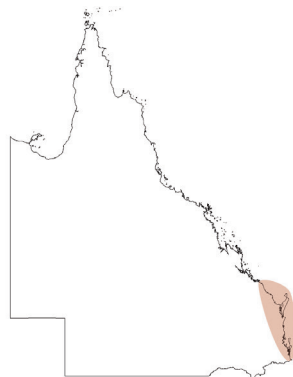
Chomata: series of small ridges and grooves near the shell margin; sometimes restricted to the hinge area

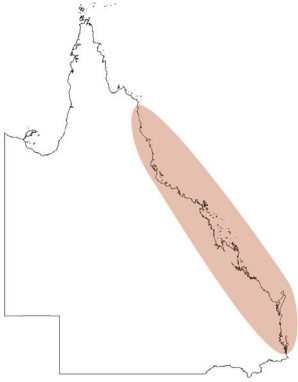
Lamellae: 'frilly' extensions of shells on the exterior surface, easily dislodged

Saccostrea glomerata

Sydney rock oyster

From southern Queensland, north to Town of 1770. In sheltered bays and estuaries. High to low intertidal. Shell colour: externally pale, sometimes with dark pigmentation around the margin; internally white, black or grey, often with black/grey or yellow margin; pale adductor scar. Lower shell moderately to well cupped. Shells often with fine lamellae externally; lower shell with broad folds. Chomata usually present but often not visible on the ventral margin. To 10 cm in length. This species is often found in clumps and is capable of forming shellfish reefs (remnant reefs in Pumicestone Passage). It is the predominant species occurring in southern Moreton Bay.

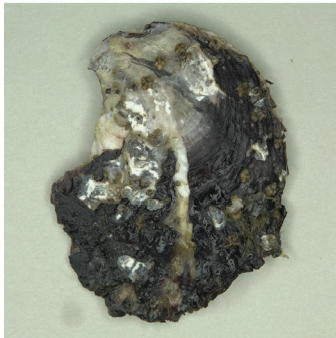




Saccostrea lineage B

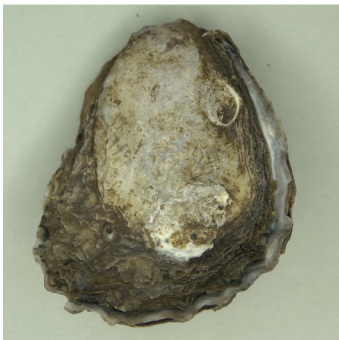
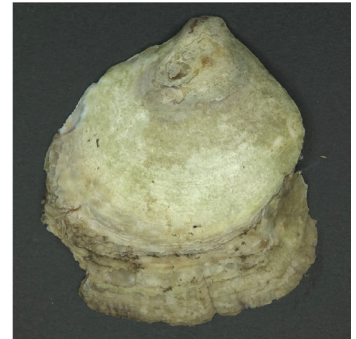
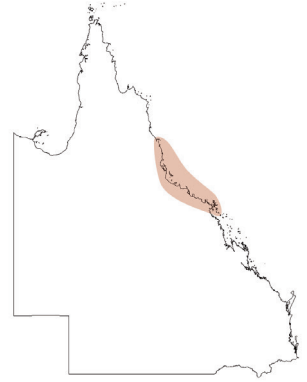
Spiny rock oyster

From the Gold Coast north to at least Cooktown. Found in sheltered bays on rocks and mangroves, and in crevices in high energy areas. Mid to low intertidal. Shell colour: externally usually black or dark purple; internally dark grey, black or brown; adductor scar pale or dark. Ventral margins often scalloped, sometimes sharply. Lower shell flat to cupped. Juveniles with prominent vertical spines on their upper shell (lost in adults); externally with lamellae (often eroded). Chomata present. Shell length to 6 cm. Sparsely distributed in the south of their range, but capable of forming shellfish reefs further north (for example, Turkey Beach). This species is almost certainly the previously described *Saccostrea echinata* (a name that has been mistakenly applied to the tropical blacklip, *Saccostrea lineage J.*)



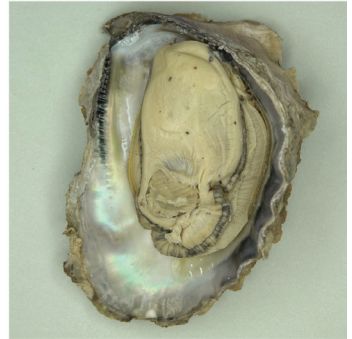
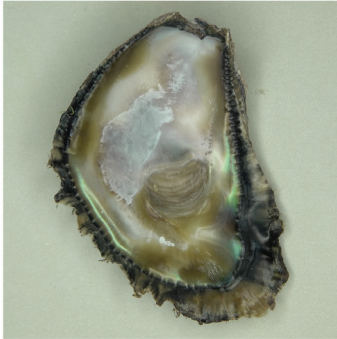
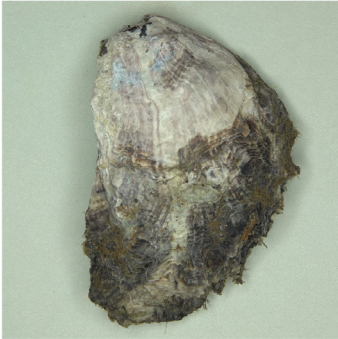
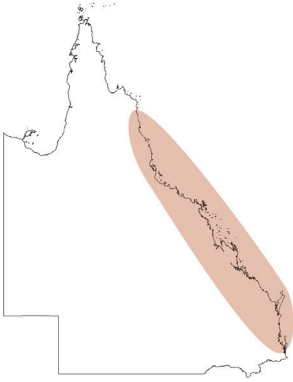
Saccostrea lineage F

Found from the Whitsunday Islands to Cairns in sheltered estuarine bays. Mid to low intertidal. Shell colour: externally white-yellow; internally white-cream, sometimes grey at margin; with white or pale grey adductor scar. Ventral margin often scalloped. Lower shell cupped or flat depending on substrate. Shells with lamellae (usually eroded in adults), lower shell ribbed in cupped specimens. Chomata present. Shell length to 6.5 cm. This species is superficially similar to *Magallana bilineata* and sometimes occurs with it, but can easily be distinguished by the presence of chomata and a pale adductor scar.



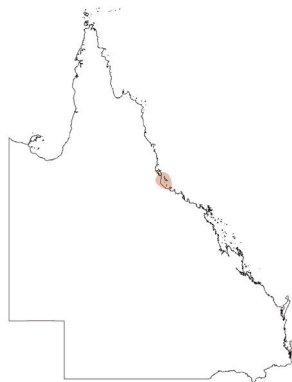
Saccostrea lineage G

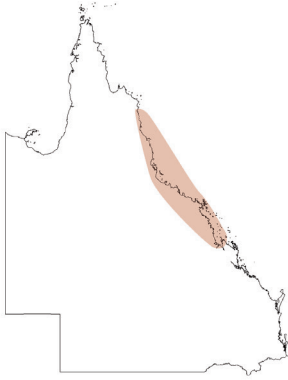
Found from southern Moreton Bay north to at least Cooktown, in sheltered estuarine waters. Mid to low intertidal. Shell colour: externally pale grey or purple to dark brown or purple; internally white, grey and/or tan and often iridescent, with margin often mottled black/tan or solid black; pale to dark grey adductor scar. Ventral margin with flaky/frilly lamellae. Lower shell usually slightly cupped. Shells with surface lamellae, often eroded. Chomata present. Shell length to 7.5 cm. This species often occurs with *Saccostrea lineage B* and *J*, and with *Saccostrea glomerata* for which it is often mistaken.



Saccostrea lineage I

One specimen collected to date, from a mangrove root in a sheltered bay, Orpheus Island. High intertidal. Shell colour: externally dark brown/purple at margins, worn grey centrally; internally iridescent silver with a dark brown margin; pale silver adductor scar. Sides of the lower shell showed distinct iridescence, noted on other uncollected specimens in the field. Ventral margin with flaky lamellae. Lower shell moderately cupped. Shells with surface lamellae, eroded centrally. Chomata present. Shell length 7.0 cm.

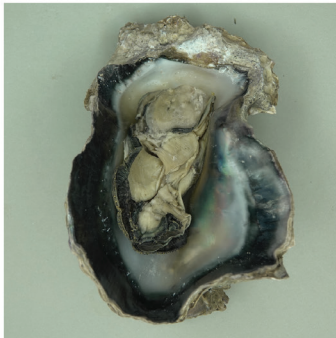
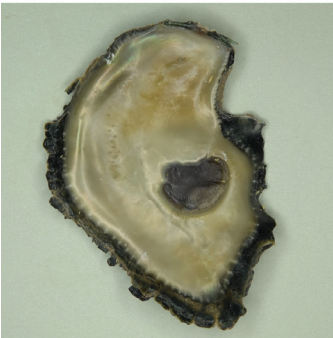
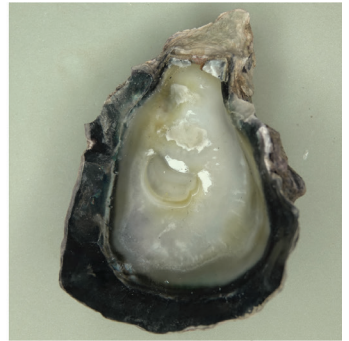
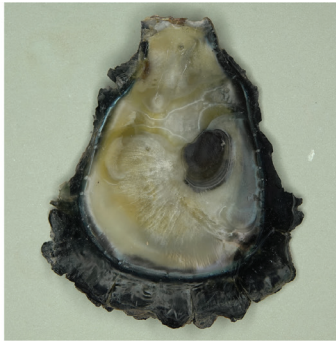
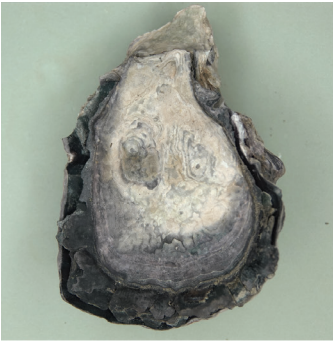




Saccostrea lineage J

Blacklip rock oyster

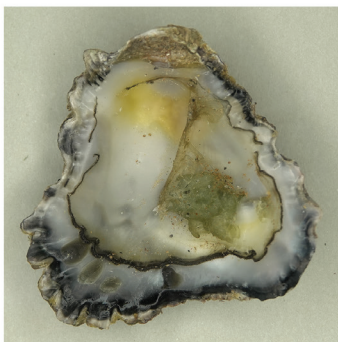
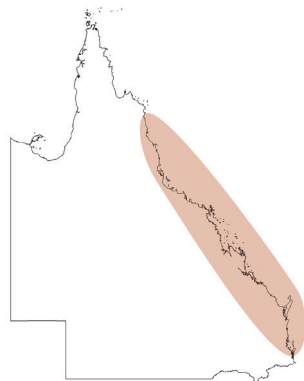
Found in sheltered bays from Stange to at least Cooktown, oceanic, on rocks and mangrove roots. Low intertidal. Shell colour: externally light grey with dark purple-grey shell margin, darker adductor muscle scar often visible exteriorly, young specimens entirely dark; internally usually white, occasionally with black, yellow or grey, and often with faint iridescence when wet, thick black margin; adductor scar light or dark grey. Lower shell usually deeply cupped in mature specimens. Upper shell with large lamellae externally, usually worn except for margin. Chomata usually conspicuous although sometimes lacking entirely. A large, heavy oyster, shell to 10 cm. The suggested species name is *Saccostrea spathulata*, however the validity of the name remains to be demonstrated.

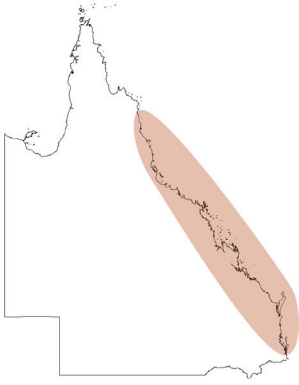


Saccostrea scyphophilla

Milky oyster

Found from the Gold Coast to at least Cooktown, in high energy oceanic zones. High to mid intertidal. Shell colour: externally often pink-purple; internally white and often with brown or black patches and a black margin; adductor scar white, grey or black. Lower shell often raised on one side, moderately cupped, well attached to the substrate. Upper shell with deep longitudinal ridges, shell margin deeply interdigitated. Chomata present. Shell length to 7.5 cm. There appears to be two closely related *S. scyphophilla* lineages. The less commonly encountered species is smaller and restricted to calmer embayments; often co-occurring with *S. lineage J*.

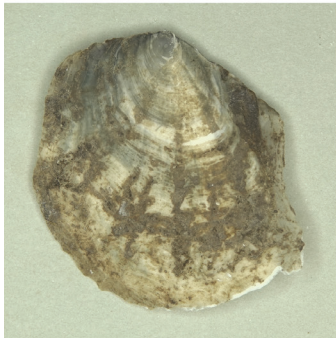




Talonostrea sp. nov.

Undescribed species

Found from Moreton Bay to Cairns in sheltered estuarine areas on rocks, mangroves and even driftwood. High to mid intertidal. Shell colour: externally variable, white to dark purple, brown or orange, internally chalky white, grey or silver, adductor scar white or pale grey. Lower shell slightly cupped. Upper shell either smooth or with small lamellae aligned in ridges. Chomata always absent. Shell to 3.5 cm in length. Small, nondescript oyster, often mistaken for spat of other species. To the best of knowledge this species is undescribed and has not been reported elsewhere.



Magallana bilineata

Black-scar oyster

A recently introduced exotic species, has been reported from Cairns to Cooktown in disturbed, estuarine environments (marinas and harbours), on rocks, pylons and boat hulls. Mid to low inter-tidal. Shell colour: white or light yellow or purple externally, internally chalky white, with a dark black adductor muscle scar. Lower shell deeply cupped (although occasionally found flat). Shell with flaky lamellae, often eroded. Parts of hinge distinctly green in fresh specimens. Chomata always absent. Large, heavy shell to 12 cm in length. Currently the subject of active monitoring by Biosecurity Queensland to whom all sightings should be reported.

