

Mudskippers

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Mudskippers (Gobiidae: Oxudercinae) live in intertidal habitat of the mudflats and in mangrove ecosystem (Murdy, 1989) and these fishes are uniquely adapted to a completely amphibious lifestyle (Graham, 1997). Mudskippers are found only in tropical and subtropical regions, having a geographical distribution that includes all the Indo-Pacific and the Atlantic coast of Africa. They are quite active when out of water, feeding and interacting with one another, for example to defend their territories.

Compared to the fully aquatic gobies, these fishes have a range of peculiar behavioral and physiological adaptations to an amphibious lifestyle. These include: anatomical and behavioral adaptations that allow them to move effectively on land as well as in the water (Harris, 1961), the ability to breathe through their skin and the lining of their mouth (the mucosa) and throat (the pharynx) by means of cutaneous air breathing (Graham, 1997), digging of deep burrows in soft sediments that allow the fish to thermo regulate (Tytler and Vaughan, 1983), avoid marine predators during the high tide when the fish and burrow are submerged (Sasekumar *et al.*, 1984).

The mudskipper, *Boleophthalmus boddarti* (Pallas, 1770) is a residential fish inhabiting the mudflats of the Vellar estuary and the waterways of Pichavaram mangrove forests, Tamil Nadu Southeast coast of India. It is edible and fishermen consume it during the lean lean season. It is also used in traditional medicine and fishermen use it as a cure for frequent urination by children. The recent tsunami (December 26, 2004) made rapid changes in the morphology of the mudflats by shifting the dominant soil type-clay rich soil (clay 60%) into sandy soil (sand 70%). Most strikingly, the population of the mudskippers was totally eliminated in some areas and in other areas the population from become highly reduced (3 to 12 individuals/sq.m. to 1 to 3 individuals/sq.m. (Ravi, 2005).

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Systematics

Murdy (1989) described the classification and key characters of various mudskippers and they are presented here under:

Family : Gobiidae

Subfamily : Oxudercinae

Genus : *Boleophthalmus* Valenciennes, 1837

Boleophthalmus birdsongi n.sp

Boleophthalmus boddarti(Pallas,1770)

Boleophthalmus caeruleomaculatus McCullach& Waite,1918

Boleophthalmus dussumieri Valenciennes, 1837

Boleophthalmus pectinirostris(Linnaeus,1758)

Genus : *Periophthalmodon* Bleeker,1837

Periophthalmodon freycineti Valenciennes, 1837

Periophthalmodon schlosseri (Pallas,1770)

Periophthalmodon septemradiatus(Hamilton, 1822)

Genus : *Periophthalmus* Bloch&Schneider,1801

Periophthalmus argentilineatus Valenciennes, 1837

Periophthalmus barbarus(Linnaeus, 1766)

Periophthalmus chrysospilos Bleeker,1852

Periophthalmus gracilis Eggert,1935

Periophthalmus kalolo Lesson,1830

Periophthalmus malaccensis Eggert,1935

Periophthalmus minutus Eggert,1935

Periophthalmus modestus Cantor,1842

Periophthalmus novaeguineensis Eggert,1935

Periophthalmus novemradiatus (Hamilton,1822)

Periophthalmus waltoni Koumans, 1941

Periophthalmus weberi Eggert,1935

Key to the Genera of Mudskippers

1. No barbells on underside of head*Boleophthalmus*
2. A single row of teeth in upper jaw*Periophthalmus*
3. Two rows of teeth in upper jaw*Periophthalmodon*

Key to the Species of *Boleophthalmus*

1. Second dorsal fin modally with 27-28 total elements; anal fin modally with 26-27 total elements
Second dorsal fin modally with 24-26 total elements; anal fin modally with 24-25 total elements
2. First D2 element usually spinous; longitudinal scale count fewer than 80; 5-7 prominent, dusky bars inclined anteriorly; from dorsum, occasionally extending well below midline
.....*B. boddarti* (Pallas)
3. Caudal fin length usually greater than 22% SL; head length usually less than 26% SL; length of second dorsal fin base almost always less than 45% SL
.....*B. dussumieri* (Valenciennes)
Caudal fin length usually less than 22% SL; head length usually greater than or equal to 27% SL; length of second dorsal fin base often greater than 45% SL.
.....*B. caeruleomaculatus* McCulloch & Waite
4. Predorsal scales usually fewer than 40; lower jaw teeth notched.
.....*B. pectinirostris* (Linnaeus)
Predorsal scales usually more than 40; lower jaw teeth lacking notch.
.....*B. birdsongi* n.sp

Key to the Species of *Periophthalmus*

1. Frenum uniting pelvic spines either prominent or vestigial, visible without magnification.....
No pelvic frenum or, if present, visible only with magnification.....
2. Innermost pelvic fin rays of both fins joined by membrane for entire length to form a disk*Ps. chrysopilos* Bleeker
3. Pelvic frenum vestigial; D1 XI or more; longitudinal scale count typically more than 70; head width typically 17% SL or greater
.....*Ps. kalolo* Lesson

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4. Pelvic fin length 13% SL or less; length of anal fin base typically 20% SL or greater; total D2 elements 13-14; total anal fin elements 12-14; longitudinal scale count more than 60; D1 with black spots
.....*Ps. novemradiatus* (Hamilton)
5. Pelvic fin length 13% SL or greater; length of anal fin base usually 20% SL or less; length of D2 base 22% SL or greater; total D2 elements 13-14; total anal fin elements 11-12; longitudinal scale count usually fewer than 60; D1 with white spots
..... *Ps. malaccensis* Eggert
6. Longitudinal scale count fewer than 80; in freshly preserved adults, 2 solid black stripes on D2
.....*Ps. novaeguineensis* Eggert
7. Total D2 elements 13 or more; longitudinal scale count 90 or more; length of D2 base usually 24% SL or greater
.....*Ps. waltoni* Koumans
8. Total D2 elements usually 13 or fewer; longitudinal scale count usually fewer than 90; length of D2 base 24% SL or less
.....*Ps. modestus* Cantor
9. D1 and D2 contiguous in adult males, D1 greatly reduced in females, barely perceptible in some; D2 lacking stripes
.....*Ps. weberi* Eggert
10. D1 lacking spots or occasionally with a few white spots posteriorly; longitudinal scale count usually more than 90
.....*Ps. barbarus* (Linnaeus)
11. D1 rounded with prominent black spot posteriorly; D1 usually X or fewer
.....*Ps. gracilis* Eggert
12. D1 with prominent black stripe inframarginally; ventral peritoneum densely black; longitudinal scale count usually 75 or more
.....*Ps. argentilineatus* Valenciennes
13. D1 with light-brown stripe inframarginally; ventral peritoneum lightly pigmented medially; longitudinal scale count usually fewer than 75
..... *Ps. minutus* Eggert

Key to the Species of *Periophthalmodon*

1. Pectoral fin rays typically 13 or 14, rarely 12 or 15; isthmus completely scaled; pelvic fins separate
.....*Pn.septemradiatus*(Hamilton)
2. Spinous dorsal fin IV, rarely V; length of D1 base less than 10% SL
.....*Pn. freycineti*(Valenciennes)
3. Spinous dorsal fin modally VIII-IX, rarely VI or VII; length of D1 base greater than 10% SL
.....*Pn. schlosseri* (Pallas)

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Boleophthalmus boddarti



Boleophthalmus dussumieri



Boleophthalmus pectinirostris



Periophthalmus chrysospilos



Boleophthalmus birdsongi



Periophthalmodon schlosseri



Periophthalmus barbarus



Periophthalmus kalolo

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