



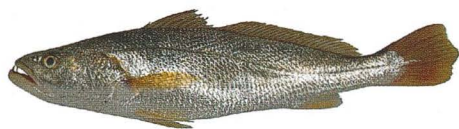
Wild examples of the endangered estuarine crocodile (*Crocodylus porosus*) can be observed at SBWR.

arms to extend and retract. Crinoids are more commonly found on reefs in deeper waters. Many of them hide in crevices during the day and emerge at night to feed on plankton by extending their feathery arms. They are often found on sea fans to gain better access to nutrients carried by the currents. They can also swim by waving their arms. At least 18 species of crinoids have been recorded in Singapore waters, and bigger species can grow to more than 20 cm wide. *Himerometra robustipinna* is a dark red crinoid found in the open near coral reef crests, both in the day and night. *Stephanometra indica*, on the other hand, is nocturnal and climbs onto corals and GORGONIANS to feed. In the day, it hides among the branches of corals. ■ WLK/RV

Crinum lily See AMARYLLIDACEAE.

Croakers Family Sciaenidae

Slender FISH with a dorsal fin that is deeply notched, and a lateral line that extends to the tip of the caudal fin. Many species have a rounded snout and rhomboid-shaped tail fin. The largest species grows up to 1.6 m. They occur along the coast and in estuaries, over sandy and muddy bottoms, swimming largely near the substrate and feeding on benthic animals. Croakers, also known as drums, are named after their ability to produce sounds underwater. At least 14 species are native to Singapore, members of the genera *Boesemania*, *Dendrophysa*, *Johnius*, *Pterolithus*, *Otolithes*, *Otolithoides*, *Panna*, *Pennabia* and *Protonibea*. Some are commercially important food fish whose dried swim bladders are in high demand. The American red drum (*Sciaenops ocellatus*), often imported for aquaculture, is sometimes encountered locally in the wild. ■ WLK/KL



The tiger-toothed croaker (*Otolithes ruber*) is one of the many species of the family Sciaenidae that inhabit the seas around Singapore.

Crocodiles Family Crocodylidae

Large, semi-aquatic REPTILES with elongated jaws, short legs, webbed feet and a long, laterally flattened tail. The eyes and nostrils are located on top of the head to allow the animal to breathe and see above water while the rest of the body remains submerged. Crocodiles lay eggs on land, often in a nest that is guarded by the female. The estuarine or saltwater crocodile (*Crocodylus porosus*) occurs in Singapore and is the largest living reptile in the world, growing exceptionally to 9 m (but usually much smaller) in total length. Small individuals feed largely on FISH and CRUSTACEANS, but large specimens have been known to attack humans. Estuarine crocodiles are farmed commercially for their quality leather and meat. Although locally rare, this species has been seen in canals, reservoirs and mangroves, mostly in the Johor Straits. ■ MC/KL

Crow-pheasants See COUCALS.

Crows Family Corvidae

Large BIRDS with big, powerful bills and strong legs. Crows are amongst the world's most intelligent birds. Their diet is very varied and includes fruits, eggs, small birds, AMPHIBIANS, REPTILES, MAMMALS and even human food. Two species of crows are found in Singapore. A feral population of house crows (*Corvus*



House crows (*Corvus splendens*) (pictured) can be differentiated from large-billed crows (*C. macrorhynchos*) by their greyish neck collar.

splendens, 40–43 cm) was established in the 1940s and numbers have increased steadily, making crows one of the most abundant species in the city. They roost gregariously on roadside trees, especially ANGSA trees. Its larger relative, the large-billed crow (*C. macrorhynchos*, 48–59 cm), is found mainly in open wooded areas, forests, mangroves, cultivation plantations, parks and gardens. It is native to Singapore. ■ WLK

Cruciferae See BRASSICACEAE.

Crustaceans Subphylum Crustacea

Animals belonging to the large phylum Arthropoda. Crustaceans include groups such as AMPHIPODS, CRABS, lobsters, PRAWNS AND SHRIMPS and BARNACLES, and can be found in most aquatic and sometimes even terrestrial habitats. There are about 40,000 species of crustaceans in the world, of which well over a thousand have been recorded from Singapore.



Examples of crustaceans include (1) penaeid prawn (*Penaeus monodon*); (2) smasher shrimp (*Gonodactylus chiragra*); (3) hermit crab (*Dardanus lagopodes*); (4) flower crab (*Portunus pelagicus*).

the 1970s. A small breeding population was established on Pulau Ubin around 1985 and has since increased in number. It is possible that the population at Pulau Ubin was from birds that naturally settled on the island, although escapees from captive stock cannot be ruled out. Some birds were intentionally released into the parks and nature reserves, and breed freely within these areas. It haunts secondary jungle, as well as orchards, plantations and mangroves. The wild population consists of very shy birds, and they are rather difficult to see, although their calls are often heard. It sounds like a truncated version of the domestic rooster's crow. Males and females differ in plumage and size. The male is larger (65–78 cm) and more colourful than the female (41–46 cm). The male sports a glossy dark green tail, with long and strongly arched central tail feathers. The female, on the other hand, is drab brown and lacks the long tail feathers of the male. ■ WLK

Redshanks See SANDPIPERS.

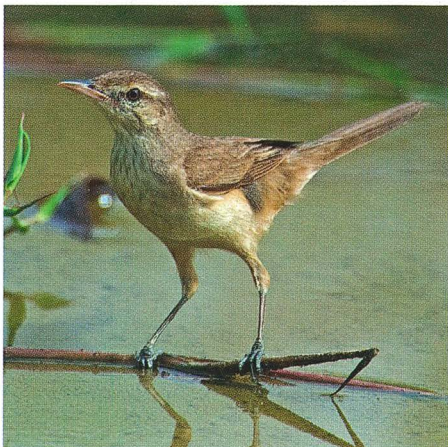
Reed snakes See COLUBRID SNAKES.

Reed-warblers Family Acrocephalidae
Small (12–20 cm) insectivorous BIRDS formerly placed in the big warbler family Sylviidae. These birds are especially hard to see, as they skulk in reed beds, swamps and tall grass areas. Only their constant chattering and harsh notes betray their presence. Unlike the leaf-warblers, reed-warblers have larger feet and bills. The oriental reed-warbler (*Acrocephalus orientalis*) is the most commonly encountered, while the black-browed reed-warbler (*A. bistrigiceps*) occurs in smaller numbers. See also GRASS-WARBLERS; LEAF-WARBLERS. ■ WLK

Reef sharks See REQUIEM SHARKS.

Reef shrimps

CRUSTACEANS that abound in tropical reefs. Over a hundred species (including SNAPPING SHRIMPS, family Alpheidae) are known. They grow to 2–5 cm in length. Many are free-living but there are several dozen species living commensally or parasitically with SPONGES, corals and ECHINODERMS. One species, the black urchin shrimp (*Periclimenes cristimanus*,



Warblers, such as this oriental reed-warbler (*Acrocephalus orientalis*), skulk in thick vegetation and are usually hard to see.

subfamily Pontoninae, family Palaemonidae), was described from Singapore and has not been reported elsewhere. It lives only on the spines of SEA URCHINS like *Diadema* spp. which may help protect the shrimp from predators. There are many species of these pontonine shrimps that live symbiotically with other organisms, sometimes even inside the shells of GIANT CLAMS (*Tridacna* spp.). The blade shrimp (*Tozeuma armata*, family Hippolytidae) is another strange shrimp that lives only on the whip coral and was only recently found in Singapore waters. The spotted marbled shrimp (*Saron neglectus*, family Hippolytidae) is free-living but nocturnal, hides under rocks and in caves in the day and is extremely secretive. ■ WLK/PN

Remora Family Echeneidae

Slender marine FISH with their anterior dorsal fin on top of their heads modified into a lamellae-lined sucking disc. This disc enables the fish to latch onto the surfaces of large marine animals like SHARKS and SEA TURTLES.



The sharksucker (*Echeneis naucrates*) is a type of remora and often attaches itself onto sharks, turtles and even the underside of boats.

This feature offers them free rides, and scraps of food, as well as protection from other large predators. Two species are recorded from Singapore waters: the remora (*Remora remora*), and the larger sharksucker (*Echeneis naucrates*) which can grow to 90 cm. ■ WLK/KL

Rengas *Gluta*, *Melanochyla*, *Swintonia* spp.

Tall, evergreen forest trees in the mango family ANACARDIACEAE. Contain poisonous, resinous sap that blackens when air-dried, becoming



(1) A member of the mango family, rengas (*Gluta wallichii*) is very common in our nature reserves, especially in the BTNR; (2) The sap turns black and looks like paint marks on the branches; (3) Rengas fruits look like five-petaled flowers.

lacquer-like. In overall plant form, and leaf, they resemble mango trees. Wild Singapore species are *Gluta wallichii*, *Melanochyla auriculata*, *M. bracteata*, *M. caesia*, and *Swintonia schwenkii*, all of which are nationally vulnerable except *G. wallichii* which is common in the forests. Cultivated species are *G. malayana*, and *S. floribunda*. *Gluta wallichii* is a tree (<36 m) which has simple, spirally arranged leaves. The white flowers are found in branched clusters. The one-seeded fruit has large, bright red wings and is dispersed by wind. This common species is frequently encountered in the BTNR. Contact with its fresh or dried sap causes rashes in most people and a potentially fatal reaction in a sensitive few, but the long-tailed macaques (see MACAQUES) eat the young leaves with impunity. ■ HTWT

Reptiles Class Reptilia

Group of animals, usually ectothermic vertebrates mostly covered with scales or scutes. The scales offer protection from dehydration and predators. In some groups (e.g., TURTLES), the scales are fused to form hard plates or shells. Many reptiles lay eggs covered with a leathery shell, while others retain the eggs in their bodies until they hatch, giving birth to live young. Reptiles are found in various habitats, both on land and in the sea. They are divided into four orders: Crocodylia (CROCODILES), Sphenodontia (tuataras), Squamata (LIZARDS and SNAKES) and Testudines (turtles). Except for the lizard-like tuataras which are endemic to New Zealand, the other groups are represented in Singapore by over 140 species. ■ MC/KL

Requiem sharks Family Carcharhinidae

SHARKS with round eyes and blade-like teeth in both jaws. They usually have pelagic habits and are generally found close to shore or near the surface of the sea, singly or in groups. They give birth to live young and are predators of

