

= Blotchy swellshark =

The blotchy swellshark , or Japanese swellshark , (*Cephaloscyllium umbratile*) is a common species of catshark , belonging to the family Scyliorhinidae . The Blotchy swellshark is found at depths of 90 ? 200 m (300 ? 660 ft) in the northwestern Pacific Ocean , from Japan to Taiwan . It is benthic in nature and favors rocky reefs . Reaching 1 @.@ 4 m (4 @.@ 6 ft) in length , this thick @-@ bodied shark has a broad head , large mouth , and two unequally @-@ sized dorsal fins positioned far back past the pelvic fins . It can be identified by its dorsal coloration , consisting of seven brown " saddles " and extensive darker mottling on a light tan background . This species has often been confounded with the draughtsboard shark (*C. isabellum*) and the Sarawak pygmy swellshark (*C. sarawakensis*) in scientific literature .

Voracious and opportunistic in feeding habits , the blotchy swellshark is known to consume numerous types of fishes and invertebrates , including an unusually high diversity of cartilaginous fishes . Like other *Cephaloscyllium* species , it is capable of rapidly inflating its body as a defense against predators . This species is oviparous , with females laying encapsulated eggs two at a time . There is no well @-@ defined breeding season and reproduction occurs year @-@ round . The eggs hatch after approximately one year . The blotchy swellshark is harmless and fares well in captivity . It is caught as bycatch in commercial bottom trawls , though its population does not seem to have suffered from fishing activity . The International Union for Conservation of Nature (IUCN) presently lacks sufficient information to assess its conservation status .

= = Taxonomy = =

American ichthyologists David Starr Jordan and Henry Weed Fowler described the blotchy swellshark in a 1903 volume of Proceedings of the United States National Museum , based on a 98 cm (39 in) long stuffed dry skin originally obtained from Nagasaki , Japan . They gave it the specific epithet *umbratile* (from the Latin *umbratilis* , meaning " shaded ") and assigned it to the genus *Cephaloscyllium* .

The taxonomy of the blotchy swellshark has a history of confusion . The holotype dried skin could not be located when shark expert Stewart Springer prepared his 1979 review of the catsharks , and in its absence he synonymized *C. umbratile* with *C. isabellum* on the basis of " inconclusive morphometric differences " . Some authors followed Springer 's judgment while others , particularly in Japan , preferred to keep referring to *C. umbratile* . The taxonomy of this species was further muddled by the application of the name *C. umbratile* to a similar but smaller species sharing part of its range . This second species , once referred to as " pseudo @-@ *umbratile* " by Leonard Compagno , has since been identified as *C. sarawakensis* . Recently , the holotype was found again , and in 2008 *Cephaloscyllium umbratile* was re @-@ described as distinct from *C. isabellum* by Jayna Schaaf @-@ Da Silva and David Ebert .

= = Distribution and habitat = =

The blotchy swellshark is known to inhabit the northwestern Pacific Ocean from Hokkaido , Japan southward to Taiwan , including the Yellow Sea . Its range may extend as far as New Guinea . This abundant species is a bottom @-@ dweller that inhabits rocky reefs on the continental shelf , at depths of 90 ? 200 m (300 ? 660 ft) .

= = Description = =

The maximum reported length of the blotchy swellshark is 1 @.@ 4 m (4 @.@ 6 ft) . It has a firm , stout body with a soft , distensible abdomen , and a short , broad , flattened head . The snout is proportionately long and rounded , with large nostrils divided by short , triangular flaps of skin in front . The small , horizontally oval eyes are placed high on the head and equipped with rudimentary nictitating membranes (protective third eyelids) . A tiny spiracle lies closely behind each eye .

Behind the spiracle are five pairs of gill slits , which are short and become progressively smaller posteriorly . The capacious mouth forms a broad arch , and lacks furrows at the corners . The small teeth have a central cusp flanked by a smaller cusplet on both sides . There are around 59 tooth rows in the upper jaw and 62 tooth rows in the lower jaw .

The pectoral fins are moderately large and wide , with rounded tips . The dorsal fins have rounded apices and are placed well back on the body , the first originating behind the midpoints of the small pelvic fins . The first dorsal fin is about twice as high as the second . The anal fin is nearly as large as the first dorsal fin and placed slightly ahead of the second dorsal fin . The caudal fin is large and broad , with the upper lobe longer than the lower and bearing a prominent ventral notch near the tip . The skin is thick and sparsely covered by large , well @-@ calcified dermal denticles ; each denticle has a diamond @-@ shaped crown with three horizontal ridges . This shark is cream @-@ colored with dark brownish to grayish mottling on the back and sides , and seven dark brown dorsal " saddles " on the body and tail . The mottling intensifies with age , while the saddles fade and may become obscured . Older sharks may also have a dark blotch on either side between the pectoral and pelvic fins . The underside is pale , with scant darker marks .

= = Biology and ecology = =

Like other members of its genus , when threatened the blotchy swellshark is capable of rapidly inflating its stomach with water or air . This allows the shark to wedge itself inside a rocky crevice , becoming extremely difficult to remove . This species is an opportunistic , highly voracious predator ; one recorded female 1 m (3 @. @ 3 ft) long had 10 fish about 20 cm (7 @. @ 9 in) long and 15 squid about 15 cm (5 @. @ 9 in) long in her stomach . Predominantly piscivorous , this species is known to prey upon hagfish and at least 50 species of bony fishes , including fast @-@ swimming types that inhabit open water ; significant prey species include the mackerel *Scomber japonicus* , the sardine *Sardinops melanostictus* , the filefish *Thamnaconus modestus* , and the hakeling *Physiculus japonicus* . Unusually for such a small shark , it also feeds on at least 10 species of cartilaginous fishes , including lantern sharks , catsharks (particularly the cloudy catshark , *Scyliorhinus torazame* , and its eggs) , the electric ray *Narke japonica* , and skates (including their eggs) . It also cannibalizes smaller members of its own species . Cephalopods , mostly the squid *Doryteuthis bleekeri* and the cuttlefish *Sepia* spp . , are also frequently taken , while crabs , shrimp , and isopods are occasionally consumed . The dietary composition of juveniles varies notably from place to place .

The blotchy swellshark is oviparous , and reproduction proceeds throughout the year with no obvious seasonal cycling . Adult females have a single functional ovary , on the right , and two functional oviducts . The species is thought to be relatively prolific , as the ovary contains numerous ova at various stages of development . Pairs of eggs are laid at a time , one per oviduct . Females have been documented producing eggs even after years without male contact , suggesting that they may be able to store sperm . The purse @-@ shaped egg capsules are relatively large and thick , measuring around 12 cm (4 @. @ 7 in) long and 7 cm (2 @. @ 8 in) across . The capsule surface is smooth with lengthwise striations , and opaque cream in color with yellow margins . Long , coiled tendrils extend from the four corners of the capsule . When the embryo is 11 cm (4 @. @ 3 in) long , the external gills have been lost , the dermal denticles have begun to develop , and light brown saddles are present . The eggs take roughly one year to hatch ; newly emerged sharks measure 16 ? 22 cm (6 @. @ 3 ? 8 @. @ 7 in) long . From a series of captive rearing experiments , Sho Tanaka reported that hatchling sharks grew in length by up to 0 @. @ 77 mm (0 @. @ 03 in) per day . Males and females attain sexual maturity at the size of 86 ? 96 cm (34 ? 38 in) and 92 ? 104 cm (36 ? 41 in) respectively ; the growth rate after maturity is very low . Known parasites of this species include the nematode *Porrocaecum cephaloscyllii* , and the leech *Stibarobdella macrothela* .

= = Human interactions = =

Harmless to humans , the blotchy swellshark adapts readily to captivity and has reproduced in

public aquariums . This species is caught incidentally by Japanese and Taiwanese bottom trawlers and brought to market . Intensive commercial fishing within its range do not yet appear to have impacted its numbers , but until more data are available the International Union for Conservation of Nature (IUCN) has listed it under Data Deficient .