

= Roughtail stingray =

The roughtail stingray ( *Dasyatis centroura* ) is a species of stingray in the family Dasyatidae , with separate populations in coastal waters of the northwestern , eastern , and southwestern Atlantic Ocean . This bottom @-@ dwelling species typically inhabits sandy or muddy areas with patches of invertebrate cover , at a depth of 15 ? 50 m ( 49 ? 164 ft ) . It is seasonally migratory , overwintering in offshore waters and moving into coastal habitats for summer . The largest whip @-@ tail stingray in the Atlantic , the roughtail stingray grows up to 2 @. @ 6 m ( 8 @. @ 5 ft ) across and 360 kg ( 800 lb ) in weight . It is plain in color , with an angular , diamond @-@ shaped pectoral fin disc and a long , whip @-@ tail bearing a subtle fin fold underneath . The many thorns on its back and tail serve to distinguish it from other stingrays that share its range .

Often found lying on the bottom buried in sediment , the roughtail stingray is a generalist predator that feeds on a variety of benthic invertebrates and bony fishes . It is aplacental viviparous , with the embryos receiving nourishment initially from yolk , and later from histotroph ( " uterine milk " ) produced by the mother . In the northwestern Atlantic , females bear an annual litter of 4 ? 6 young in fall and early winter , after a gestation period of 9 ? 11 months . By contrast , in the Mediterranean there is evidence that females bear two litters of 2 ? 6 young per year after a gestation period of only four months . Rays in the northwestern Atlantic are also larger at birth and at sexual maturity than those from the Mediterranean . The venomous tail spine of the roughtail stingray is potentially dangerous to humans . The International Union for Conservation of Nature ( IUCN ) has listed this species under Least Concern overall and in the northwestern Atlantic , where it is not commercially utilized . However , in the Mediterranean and southwestern Atlantic it is subject to heavy fishing pressure and has been assessed as Near Threatened .

= = Taxonomy and phylogeny = =

The first description of the roughtail stingray was published by American naturalist Samuel Mitchell in one of the earliest North American works on ichthyology , a short treatise on the fishes of New York in the 1815 first volume of Transactions of the Literary and Philosophical Society of New York . Mitchell based his account on specimens caught off Long Island , though did not designate any types , and named the new species *Raja centroura* , from the Greek centoro ( " pricker " ) in reference to its thorns . Subsequent authors moved this species to the genus *Dasyatis* . This ray may also be referred to as rough @-@ tailed stingray , rough @-@ tailed northern stingray , or thorny stingray .

The taxonomy of the roughtail stingray is not fully resolved , with the disjunct northwestern Atlantic , southwestern Atlantic , and eastern Atlantic populations differing in life history and perhaps representing a complex of different species . Lisa Rosenberger 's 2001 phylogenetic analysis of 14 *Dasyatis* species , based on morphology , found that the roughtail stingray is the sister species to the broad stingray ( *D. lata* ) , and that they form a clade with the southern stingray ( *D. americana* ) and the longtail stingray ( *D. longa* ) . The close relationship between the roughtail and southern stingrays was upheld by a genetic analysis published by Leticia de Almeida Leao Vaz and colleagues in 2006 . The roughtail and broad stingrays are found in the Atlantic and Pacific Oceans respectively , and therefore likely diverged before or with the formation of the Isthmus of Panama ( c . 3 Ma ) .

= = Distribution and habitat = =

The roughtail stingray is broadly but discontinuously distributed in the coastal waters of the Atlantic Ocean . In the western Atlantic , it occurs from the Georges Bank off New England southward to Florida , the Bahamas , and the northeastern Gulf of Mexico ; there are also scattered reports from Venezuela to Argentina and on the Barrier reef in Belize . In the eastern Atlantic , it occurs from the southern Bay of Biscay to Angola , including the Mediterranean Sea , Madeira , and the Canary Islands . A single record from Quilon , India was likely a misidentification .

One of the deepest @-@ diving stingrays , the roughtail stingray has been recorded to a depth of 274 m ( 899 ft ) in the Bahamas and regularly occurs down to 200 m ( 660 ft ) in the Mediterranean . However , it is most common at a depth of 15 ? 50 m ( 49 ? 164 ft ) . This bottom @-@ dwelling species favors live @-@ bottom habitat ( patches of rough terrain that are densely encrusted by sessile invertebrates ) , and also frequents adjacent open areas of sand or mud . Rays in the northwestern Atlantic do not usually enter brackish water , whereas those off West Africa have been recorded from the lower reaches of large rivers .

The favored temperature range of the roughtail stingray is 15 ? 22 ° C ( 59 ? 72 ° F ) , which is the most important factor determining its distribution . It conducts seasonal migrations off the eastern United States : from December to May , this ray is found over the middle and outer parts of the continental shelf from Cape Hatteras in North Carolina to Florida , with larger rays occurring further south than smaller ones . In the spring , the population moves north of the Cape and towards the coast into bays , inlets , and saltier estuaries , though preserving the north @-@ south gradient of body sizes . A similar migration , from shallow coastal waters in summer to deeper offshore waters in winter , apparently occurs in the Mediterranean . Pregnant females tend to be found apart from other individuals .

= = Description = =

The roughtail stingray has a diamond @-@ shaped pectoral fin disk 1 @.@ 2 ? 1 @.@ 3 times as wide as long , with straight to gently sinuous margins , rather angular outer corners , and a moderately long , obtuse snout . The eyes are proportionally smaller than other stingrays in its range and immediately followed by larger spiracles . There is a curtain of skin between the nostrils with a finely fringed posterior margin . The mouth is bow @-@ shaped with a row of six papillae ( nipple @-@ like structures ) across the floor . The seven upper and 12 ? 14 lower tooth rows at the center are functional , though the total number of tooth rows is much greater . The teeth are arranged with a quincunx pattern into flattened surfaces ; each has a tetragonal base with a blunt crown in juveniles and females , and a pointed cusp in adult males .

The pelvic fins have nearly straight margins and angular tips . The tail is long and whip @-@ like , measuring some 2 @.@ 5 times the length of the disc . A long , saw @-@ toothed spine is placed atop the tail at around half a disc length back from the tail base ; sometimes one or two replacement spines are also present in front of the existing one . Behind the spine , there is a long ventral fin fold that is much lower than that of the southern stingray . Individuals under 46 ? 48 cm ( 18 ? 19 in ) across have completely smooth skin . Larger rays develop increasing numbers of distinctive tubercles or bucklers ( flat @-@ based thorns ) over the middle of the back from the snout to the tail base , as well as dorsal and lateral rows of thorns on the tail . The bucklers vary in size , with the largest of equal diameter to the eye , and may bear up to three thorns each . This species is a uniform dark brown or olive above , and off @-@ white below without dark fin margins . Among the largest members of its family , the roughtail stingray can reach 2 @.@ 6 m ( 8 @.@ 5 ft ) across , 4 @.@ 3 m ( 14 ft ) long , and 360 kg ( 800 lb ) in weight . Females grow larger than males .

= = Biology and ecology = =

The roughtail stingray is reportedly not highly active , spending much time buried in the sediment . It is a generalist predator whose diet generally reflects the most available prey in its environment . It mainly captures prey off the bottom , but also opportunistically takes free @-@ swimming prey . A variety of invertebrates , as well as bony fishes such as sand lance and scup , are known to be consumed . Off Massachusetts , the main prey are crabs ( Cancer ) , bivalves ( Mya ) , gastropods ( Polinices ) , squid ( Loligo ) and annelid worms . In Delaware Bay , most of its diet consists of the shrimp Cragon septemspinosa and the blood worm Glycera dibranchiata ; the overall dietary composition there is nearly identical to that of bluntnose stingrays ( D. say ) that share the bay . The shrimp Upogebia affinis is a major food source off Virginia . Off Florida , crustaceans ( Rananoides , Ovalipes , Sicyonia brevirostris , and Portunus ) and polychaete worms are the most important prey .

Sharks and other large fishes , in particular the great hammerhead ( *Sphyrna mokarran* ) , prey upon the roughtail stingray . The live sharksucker ( *Echeneis naucrates* ) is sometimes found attached to its body . Known parasites of this species include the tapeworms *Acanthobothrium woodsholei* , *Anthocephalum centrurum* , *Lecanicephalum* sp . , *Oncomegas wagneri* , *Polypocephalus* sp . , *Pterobothrium senegalense* , and *Rhinebothrium maccallumi* , the monogenean *Dendromonocotyle centrourae* , and the leech *Branchellion torpedinis* .

Like other stingrays , the roughtail stingray is aplacental viviparous : the developing embryo is initially sustained by yolk and later by histotroph ( " uterine milk " , containing proteins , lipids , and mucus ) delivered by the mother through finger @-@ like projections of the uterine epithelium called " trophonemata " . Only the left ovary and uterus are functional in adult females . Off the eastern United States , reproduction occurs on an annual cycle with mating in winter and early spring . After a gestation period of 9 ? 11 months , females give birth to 4 ? 6 ( typically five ) young in fall or early winter . The newborns measure 34 ? 37 cm ( 13 ? 15 in ) across . Off North Africa , birthing occurs in June and December , indicating either that females bear two litters per year with a four @-@ month gestation period , or that there are two cohorts of females bearing one litter per year with a ten @-@ month gestation period . The newborns are much smaller than those in the northwestern Atlantic at 8 ? 13 cm ( 3 @.@ 1 ? 5 @.@ 1 in ) across , which would be consistent with a shorter gestation period . The size at maturity also differs between the two regions : off the eastern United States males and females mature at 130 ? 150 cm ( 51 ? 59 in ) and 140 ? 160 cm ( 55 ? 63 in ) across respectively , while off North Africa males and females mature at 80 cm ( 31 in ) and 66 ? 100 cm ( 26 ? 39 in ) across respectively .

= = Human interactions = =

With its large size and long , venomous spine , the roughtail stingray can inflict a severe wound and can be very dangerous for fishers to handle . However , it is not aggressive and usually occurs too deep to be encountered by beachgoers . It has been reported to damage farmed shellfish beds . The pectoral fins or " wings " are sold for human consumption fresh , smoked , or dried and salted ; the rest of the ray may also be processed to obtain fishmeal and liver oil . The International Union for Conservation of Nature ( IUCN ) has assessed the roughtail stingray as of Least Concern worldwide , while noting that as a large , slow @-@ reproducing species it is susceptible to population depletion .

In the northwestern Atlantic , the roughtail stingray is listed under Least Concern ; it is not targeted or utilized by commercial fisheries , though inconsequential numbers are captured incidentally in trawls and on demersal longlines . Historically , it was sometimes ground up for fertilizer . In the Mediterranean , intensive fishing occurs in the habitat of the roughtail stingray , and it is caught incidentally by artisanal and commercial fishers using trawls , longlines , gillnets , and handlines . Though no specific data is available on this species , declines of other species and its intrinsic susceptibility to depletion have led it to be assessed as Near Threatened in the region . In the southwestern Atlantic , the roughtail stingray and other large rays are heavily fished using demersal trawls , gillnets , longlines , and hook @-@ and @-@ line ; this fishing pressure is liable to increase due to growing commercial interest in using large stingrays for minced fish products . Anecdotal reports suggest that landings of this species are decreasing , leading to a regional assessment of Near Threatened .