

Jeff Guertin
9/11/07

Squaliformes Squalidae (the dogfish sharks)

Two genera

- ∞ Cirrhigaleus (2 species)
 - *Cirrhigaleus asper*
 - *Cirrhigaleus barbifer*
- ∞ Squalus (8 recognized species, but many others are currently undescribed)
 - Includes the most common dogfish, the spiny dogfish, *Squalus acanthias*

General Characteristics

- ∞ A group of small to medium sized sharks
- ∞ Most live in temperate waters
- ∞ Most are bathyal (1000-4000m) and benthopelagic.
- ∞ Teeth in upper and lower jaws similar in size
- ∞ Smooth dorsal fin spines
- ∞ No anal fin
- ∞ Ovoviviparous

Distinctive features

- ∞ *Cirrhigaleus asper* - Body is dark gray to brown, fading to a lighter color below. The fins are edged with white (no spots).
- ∞ *Cirrhigaleus barbifer* - Recognized by its large nasal barbells.
- ∞ *Squalus acanthias* - row of small white spots from above the pectoral fins to above the pelvic fins, some which disappear with age. The ventral surface ranges from pale gray to pure white.

Habitat

- ∞ Squalidae found globally, with more distinct habitats found at the species level.
- ∞ *Cirrhigaleus asper* typically found in western Atlantic/Indian oceans, central Pacific (Hawaii)
- ∞ *Cirrhigaleus barbifer* occurs in the western Pacific & Oceania
- ∞ Squalus found mostly in cold and temperate seas

Food Habits

- ∞ Most feed on schooling pelagic fishes (*Squalus acanthias*), small bony fishes, squid, octopus, sometimes smaller dogfish sharks.
- ∞ Diets differed among locations in Atlantic, Pacific, and Indian oceans even among same species.

Size, Age, Growth

- ∞ Most members of Squalidae do not exceed 1.5 meters, with a majority of species less than 1 meter.
- ∞ Grow fairly slowly, taking up to 12 years to reach reproductive maturity.
- ∞ Most species live ~25-30 yrs

Reproduction

- ∞ All species are ovoviviparous
- ∞ Gestation periods and number of young vary a great deal:
 - *Cirrhigaleus asper* have up to 22 young in a litter
 - *Cirrhigaleus barbifer* only 10 per litter
 - *Squalus acanthias* up to 15 young per litter (most ~6-7), however it has one of the longest gestation periods of any vertebrate (~22-24mos)

Predators

- ∞ Larger sharks
- ∞ Seals
- ∞ Killer whales
- ∞ Larger fish (Cod, goosefish)

Conservation

- ∞ Most species do not seem to be threatened at this time, although they are a very under-researched family
- ∞ The spiny dogfish is used in Fish and Chips in Europe, and may become threatened in the near future due to overfishing, coupled with their slow reproductive rates, relatively small number of offspring, etc.

Bibliography

- 1) Demirhan SA, Seyhan K. 2007. Life history of spiny dogfish, *Squalus acanthias* (L. 1758), in the southern Black Sea. *Fisheries Research* 85 (1-2): 210-216.
- 2) Wood CM, Kajimura M, Bucking C, et al. 2007. Osmoregulation, ionoregulation and acid-base regulation by the gastrointestinal tract after feeding in the elasmobranch (*Squalus acanthias*). *Journal of Experimental Biology* 210 (8): 1335-1349.
- 3) Fischer AF, Veras DP, Hazin FHV, et al. 2006. Maturation of *Squalus mitsukurii* and *Cirrhigaleus asper* (Squalidae, Squaliformes) in the southwestern equatorial Atlantic Ocean. *Journal of Applied Ichthyology* 22 (6): 495-501.
- 4) Braccini JM, Hamlett WC, Gillanders BM, et al. 2007. Embryo development and maternal-embryo nutritional relationships of piked spurdog (*Squalus megalops*). *Marine Biology* 50 (4): 727-737.
- 5) Huang FJ, Wu WT. 2005. Antidiabetic effect of a new peptide from *Squalus mitsukurii* liver (S-8300) in alloxan-diabetes. *Clinical and Experimental Pharmacology and Physiology* 32 (7): 521-525.
- 6) Haddad V, Gadig OBF. 2005. The spiny dogfish (*Squalus cubensis/megalops* group): The envenoming of a fisherman, with taxonomic and toxicological comments on the *Squalus* genus *Toxicon* 46 (7): 827-830.
- 7) Compagno, L.J.V., 1984. FAO species catalogue. Vol. 4. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Part 1 - Hexanchiformes to Lamniformes. FAO Fish. Synop. 125(4/1):1-249.
- 8) Carrier J, Musick J, Heithaus M. 2004. *Biology of Sharks and their Relatives*. CRC Press, Boca Raton, FL, pp. 56-63, 180, 228.