

First Record of the Ragged-tooth Shark, *Odontaspis ferox*, off the U.S. Atlantic Coast

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Introduction

On 11 September 1994, a large shark was captured and later identified as the ragged-tooth shark, *Odontaspis ferox* (Risso). The shark was captured during routine bottom trawl survey operations onboard the NOAA R/V *Albatross IV*, approximately 25 n.mi. south-southeast of Cape Hatteras, N.C. (lat. 34° 51' N, long. 75° 26' W) with a "36 Yankee" bottom trawl towed at 3.5 knots. Average water depth at the time of capture was 173 m, bottom temperature was 17.8°C, and salinity was 36.41‰. Total length (cm), fork length (cm), weight (kg), and sex were recorded, the specimen was tagged, photographed, and returned live to the sea.

The shark, a female measuring 340 cm total length (273 cm fork length) was estimated to weigh about 250 kg. Its coloration was a uniform dark gray, dorsally fading to light gray ventrally, and lacked distinguishing coloration on any of the fins. The upper mouth cavity was darker than the rest of the mouth. The large jaw, protruding teeth, large eyes, and bulbous snout were also prominent characteristics.

Identification

The specimen was tentatively identified as a ragged-tooth shark based on the presence of teeth mostly with two

or three cusplets on each side of cusp, unique to this species (Compagno, 1984). Odontaspids are also characterized by lanceolate teeth and the lack of nictitating lower eyelids, which differentiates them from similar families such as the scyliorhinids (cat sharks) and carcharhinids (requiem sharks) (Bass et al., 1975). The presence of the long, bulbous snout, a symphyseal tooth row, two rows of large upper anterior teeth on each side of the symphysis, the unequal size of first and second dorsal fins, and the first dorsal fin being located closer to the pectoral bases than the pelvic bases provided further confirmation that the shark belonged to the genus *Odontaspis*, as opposed to *Carcharias* (Compagno, 1984).

Three rows of small intermediate teeth between the upper anterior and lateral tooth rows also indicated that the shark was *O. ferox* (Bigelow and Schroeder, 1948). The origin of the second dorsal fin, slightly posterior to the insertion of the pelvic fins, separated this specimen from the bigeye sandtiger shark, *O. noronhai*.

Distinguishing features of this specimen agreed well with previous descriptions of *O. ferox*. Daugherty (1964) described the species as possessing a prominent belly; however, it was more closely akin to Whitley's (1950) description of "the paunch rotund, 'like a cow's belly.'" Daugherty (1964) also noted that the roof of her specimens' mouths were a dusky color, as was the case with this specimen. The presence of a deep precaudal pit (Desbrosses,

1930; Abe et al., 1968; D'Aubrey, 1969; Bass et al., 1975; Eschmeyer et al., 1983; Compagno, 1984) and short labial furrows (Whitley, 1950; Maul, 1955; Garrick, 1974) also agreed with previous descriptions.

The uniform dark gray coloration of the shark has confounded its identification in the past with *O. herbsti*, which was described as a separate species by Whitley (1950) and supported by Garrick (1974) and Bass et al. (1975) due largely to differences in coloration among previously described specimens. For example, Mediterranean specimens of *O. ferox* were described to be "dull ('obscure') red with scattered, irregular, large, black marks on the back and sides, and reddish gray on the throat and the underside" (Risso and others, cited by Garrick, 1974). According to Compagno (1984) and Robins et al. (1980) this discrepancy in coloration is attributed to individual variation and the two forms are presently regarded as one species, *O. ferox*. Compagno (1984) also notes that the presence or absence of spots is variable in the closely related sandtiger shark, *Carcharias taurus*.

The ragged-tooth shark has been described as a rare (Desbrosses, 1930; Eschmeyer et al., 1983) inhabitant of deepish water (Compagno, 1984) with a wide-ranging distribution throughout the northeast Atlantic (Maul, 1955), Gulf of Mexico (Bonfil, 1995), West Indian (D'Aubrey, 1969; Bass et al., 1975; Gubanov, 1985), western Pacific (Whitley, 1950; Abe et al., 1968; Garrick, 1974) and the eastern Pacific

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oceans (Daugherty, 1964; Seigel and Compagno, 1986). The capture of this specimen extends its range into the northwestern Atlantic and confirms *O. ferox* to be a tropical-cool temperate water species occurring worldwide.

This capture of *Odontaspis ferox* is the first record of its occurrence in Atlantic waters off the eastern U.S. coast. However, since this species lives out of the range of most commercial and scientific fishing operations, it is only when an occasional individual comes onto the continental shelf that there is an opportunity for its capture (Garrick, 1974; Branstetter and McEachran, 1986). Therefore, this shark is probably more common throughout the world's oceans than the few recorded catches would indicate (Daugherty, 1964; Branstetter and McEachran, 1986; Bonfil, 1995).

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