Catalog of Type Specimens of Recent Fishes in the National Museum of Natural History, Smithsonian Institution, 5: Sharks (Chondrichthyes: Selachii)

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and
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Robert McC. Adams
Secretary
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Catalog of Type Specimens of Recent Fishes in the National Museum of Natural History, Smithsonian Institution, 5: Sharks (Chondrichthyes: Selachii)

Jeffrey C. Howe and Victor G. Springer
ABSTRACT

Howe, Jeffrey C., and Victor G. Springer. Catalog of Type Specimens of Recent Fishes in the National Museum of Natural History, Smithsonian Institution, 5: Sharks (Chondrichthyes: Selachii). Smithsonian Contributions to Zoology, number 540, 19 pages, 1993.—Primary and/or secondary type specimens for 82 nominal species and 2 nominal subspecies of sharks were present in the USNM collection as of September 1992. The primary types for 3 more nominal species that should be present in the collection were not found, as were some syntypes and paratypes for other species. The extant types comprise 66 holotypes, 6 lectotypes, 9 syntypes, 25 paralectotypes, and 218 paratypes. All types are listed, and data for specimens from each type lot provided and compared with information in the original descriptions. Errors or discrepancies are discussed. Lectotypes are designated for Carcharias aethalorus Jordan and Gilbert, 1882a, and Carcharias longurio Jordan and Gilbert, 1882a.
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Introduction

The collection of fishes in the Division of Fishes, National Museum of Natural History (USNM), is one of the largest, if not the largest, in the world. By the end of 1990, there were approximately 15,500 type lots in the collection (Van and Howe, 1991). Although a single, complete, annotated type catalog is the goal of the divisional staff, such a large undertaking is not feasible within a reasonable period of time. As an alternative, a series of type catalogs covering different taxa is being prepared by different authors. The shark type catalog is the fifth in this series.

Format

The following template has been used to structure each entry in the "Annotated List of Types:"

Genus species subspecies Author(s), year: first page on which the description appeared, figure(s), table(s), plate(s).

Type Status USNM catalog number (number of specimens, sex, range of total length(s) for each sex), Accession (Ace.) number.

Locality: body of water (only if specified in original description), country, specific locality, research vessel, station or field number, depth, collectors, date collected.

Remarks: reference to lectotype or paralectotype designation, previous depository and museum number, condition of specimen, missing specimens, other information bearing on type status or conflicting records, and sundry comments we deem noteworthy.

Family Name

This catalog includes all known types of sharks deposited in the National Museum of Natural History, Smithsonian Institution, through September 1992. The types are listed alphabetically by subspecies, species, and genus, and as they appeared in the original description. The information presented on each type is taken from the original description or from elsewhere in the article in which the description appeared. Frequently, information such as locality and collector is contained only in the title or introduction to a paper containing a new species description. Correct or current spellings of scientific names and localities if different from the original, are enclosed in parentheses and preceded by an equal (=) sign. All units of measurement are as stated in the original description. Any information enclosed in brackets [ ] is information obtained from sources other than the publication containing the original description: e.g., catalog ledgers, accession number files, labels located in the specimen jar. Accession numbers refer to files in the USNM Registrar's office that often contain pertinent information on types that is unavailable elsewhere. Figures, plates, and tables cited after the author(s) refer to illustrations, etc., of a whole or partial specimen based on a primary or secondary type specimen. If the sex and standard length of a specimen could not be determined, the problem is discussed in the remarks section. All specimens are whole and in good condition unless otherwise noted in "Remarks."

The type status of each specimen is based on the original
description and/or subsequent lectotype designation. Type categories used in this catalog for both primary and secondary types include holotype, syntype(s), lectotype, paratype(s), allotype (equivalent to paratype), and paralectotype(s) as defined by the International Code of Zoological Nomenclature (1985) (= ICZN). A question mark following the type status indicates uncertainty and is discussed in the remarks section. Family designations follow Compagno (1984a, 1984b). Abbreviated museum and institution codes follow Leviton et al. (1985) and Leviton and Gibbs (1988).

In several of the older descriptions, especially those by S. Springer (and coauthors), the author(s) did not clearly designate the type status of specimens other than the holotype on which the description was based, or such specimens were listed as: “other specimens,” “additional material,” or “study material.” ICZN Article 72(b)(vi) states: “If an author in establishing a nominal species-group taxon nominates synotypes...or a holotype and paratypes..., and also lists other specimens, the separate mention of the latter expressly excludes them from the type series. We therefore, consider the type status of “other” or “additional” specimens, as mentioned above, as follows:

a. If an author(s) specifically designated both a holotype (or type) and paratype(s), all other specimens listed in the original description are considered non-paratypic.

b. If an author(s) designated only a holotype, all other listed specimens are considered to be paratypes.

Another problem we encountered was in determining the type status, if any, appropriate for the offspring of type specimens. A case in point: Eridacnis radcliffei (Smith, 1913a) was described based primarily on a 23 cm, female specimen. Smith (1913a) went on to state that the female specimen (= holotype), information is provided about them in the original description, and the embryos are genetically different from the holotype, we believe the logical type designation in this case is that of paratype. A similar case is that of Mustelus norrisi (Springer, 1939), where a designated allotype (= paratype) contained six embryos. Again, we treated these embryos as paratypes.

There are a total of 71 cases in which our measurements of the lengths of types differed from those given in the original descriptions. Of these, 63 (89%) were shorter and 8 (11%) were longer than the original published lengths. Some of the discrepancies can be attributed to differences in technique used in measuring the specimens, and the lack of clarity as to what measurement was recorded (i.e., standard, fork, or precaudal length) in a few cases. Based on past studies (Lai, 1963; Engel, 1974; Fowler and Smith, 1983; Glenn and Mathias, 1987; Kruse and Dalley, 1990), we suspect, however, that methods of preservation and time in preservative have had the greatest effects on the condition (i.e., shrinkage) of the specimens. It is interesting to note that most of the larger discrepancies observed, as high as 112 mm, involve specimens originally described using English units.

ACKNOWLEDGMENTS.—We are indebted to J.I. Castro, G. Dingerkus, J.D. McEachran, K. Nakaya, R.P. Vari, and J.T. Williams for their critical reviews of drafts of this manuscript and T. Orrell for computer catalog searches. We thank J.A.F. Garrick for his comments and suggestions on the type status of Eulamia ahenea and K.E. Hartel for sharing information concerning the elasmobranch specimens in the MCZ collection.

Annotated List of Types

Arranged Alphabetically by Subspecies, Species, and Genus

Mustelus abbotti Evermann and Radcliffe, 1917:6, pl. 1: fig. 2.
Type [Holotype] USNM 77696 (9, 55 cm [525 mm]).
Peru, La Ventanilla, between Ancon and Callao; field no. 09115, [R.E. Coker], 1907 or 1908.
Paratype [USNM 77543] (9[tf], 32 cm [300 mm]), [Acc. 59892].
Peru, Lobos de Tierra; field no. 09532, R.E. Coker, [4 Apr 1907].

Triakis acutipinna Kato, 1968:320, figs. 1, 2.
Holotype USNM 201409 (9, 1018 mm), [Acc. 273947].
Ecuador, Isla de la Plata; fishermen, 10 Oct 1961.
Remarks: The specimen was captured by fishermen and acquired by staff of the Argosy (specimen no. 84).

Carcharias aethalorus Jordan and Gilbert, 1882a:104.
[Syntype, Lectotype] USNM 29549 (♂, 30" [783 mm]).
Mexico, Mazatlan; [C.H. Gilbert].
Remarks: Jordan and Gilbert (1882a) based their description of Carcharias aethalorus on two syntypes. Garrick (1982), who last revised Carcharhinus Blainville, treated aethalorus as a junior synonym of Carcharhinus limbatus (Valenciennes in Müller and Henle, 1839). Garrick noted, however, that one syntype was missing and that there was a major discrepancy between the dental formula given by Jordan and Gilbert for aethalorus and that of the existing syntype (and limbatus). There is, thus, a possibility that the missing syntype is not conspecific with the existing syntype. Garrick did not designate the existing syntype as

thin membranous sacs. One of the sacs was opened, ... The length of the embryo was 11.3 cm, ... Are the embryos considered part of the holotype, paratypes, non-types, or are all three specimens syntypes? Because the embryos were collected with the female specimen (= holotype), information is provided about them in the original description, and the embryos are genetically different from the holotype, we believe the logical type designation in this case is that of paratype. A similar case is that of Mustelus norrisi (Springer, 1939), where a designated allotype (= paratype) contained six embryos. Again, we treated these embryos as paratypes.
Eulamia ahenea Stead, 1938:102.

**Remarks:** Stead’s description was based on three adult males, 98, 100.5, and 105 inches “length overall.” The 98-inch specimen was collected by Z. Grey, off Sydney Heads, 9 Apr 1936; the 100.5-inch specimen was collected by E.E. Bullen, in 23 fathoms off South Head of Port Jackson, 20 Nov 1937, and the 105-inch specimen was collected by R. Wild, 4 miles east of North Head, Port Jackson, 1935. Although Stead gave a short, detailed description of the 100.5-inch specimen in the text, all three specimens were described in varying detail in an accompanying table. Stead did not specify a type or holotype, and all three specimens, at the time of his description, must, therefore, be considered syntypes, a fact that subsequent authors have failed to appreciate. For the following discussion it is also important to note that Stead did not mention the deposition of type specimens, or portions thereof, in any museum.

Whitley (1940:99-100) was first to discuss, briefly, but substantively, Stead’s **ahenea.** Whitley (1940:99) reproduced a photograph of a large specimen of **ahenea**, captioned as having been “caught off Sydney by Mr. E.E. Bullen,” and probably represents Stead’s 100.5-inch syntype. Whitley (1940:100) also illustrated two teeth from the “holotype of Eulamia ahenea, from off Sydney Heads.” Whitley’s action appears to have effectively designated the 98-inch specimen the lectotype according to ICZN Rule 74(b), as that specimen is the only one from Sydney Heads.

Garrick (1982:171-178), in his treatment of **Carcharhinus brachyurus**, under which he synonymized **Eulamia ahenea**, made no reference to Whitley (1940). In the synonymy of **brachyurus**, Garrick (1982:171) noted that Stead gave measurements of three male specimens from “off Sydney, N.S.W., Australia,” but then stated that the description of **ahenea** was based on the 100.5-inch specimen, which Garrick seemingly accepted as the holotype: “holotype (heart and teeth in half of jaws) in Australian Museum presumably from one of” [the three specimens Stead described]. In his discussion of the synonymy, Garrick (1982:174) made no mention of a holotype of **ahenea**, but stated that the species was based on three adult males, with no indication which of the three specimens was the source of the type material. In his list of material examined, Garrick (1982:178), listed “AMS IB.501, partial jaws and heart... (holotype of Eulamia ahenea), Australia, off Sydney.” It seems clear that Garrick believed Stead had implied that the 100.5-inch specimen was the holotype but that Garrick was unsure that the parts labeled as the holotype in the Australian Museum actually came from that specimen.

Along with a letter, dated 27 Dec 1956, to L.P. Schultz, USNM curator of fishes, D.W. Strasburg, then with U.S. Fish and Wildlife Service, Pacific Oceanic Fishery Investigations, Honolulu, who was studying longline-caught sharks, sent “a small piece of shagreen from the lower jaw of the holotype of Eulamia ahenea. This piece of shagreen was apparently obtained from Whitley by Bill [W.F.] Royce [a fisheries biologist, who also had an interest in sharks] some time ago.” Garrick (1982) did not mention this piece of skin in his monographic revision of **Carcharhinus**, and we have no other information on the validity of the assertion attributed to Royce that it was taken from the lectotype of **Eulamia ahenea**.
**Galeus aroa antilensis** Springer, 1979:55, figs. 28c, 31, 32.

*Holotype* USNM 214178 (♀, 347 mm), [Acc. 273342].

West Indies, Leeward Islands, near St. Kitts, [off Virgin Islands] (17°41′N, 62°50′30″W); *Oregon*, sta 6695, 550–585 m [300/320 fms], 18 May 1967.

*Remarks:* This specimen was originally part of USNM 214177.

*Paratypes* USNM 214177 (♂, 345–425 mm [338–420 mm]), [Ace. 273342], collected with holotype.

Remarks: A portion of the caudal fin (♂, 420 mm) is missing.

**SCYLIORHINIDAE**

**Triaenurus barbouri** Bigelow and Schroeder, 1944:27, pi. 8.

*Paratype* USNM 123006 (♀, 253 mm), [Ace. 168905].

Off the north coast of Cuba (23°02′N, 79°29′W); *Atlantis*, [sta 3431, 245 fms], Mar 1938 and May 1939 (1 Jan 1939).

*Remarks:* This specimen was originally one of 38 male and female specimens (225–338 mm TL), including the holotype, cataloged as MCZ 36099.

*Paratypes* USNM 123007 (2 ♀♂, 263/274 mm), [Ace. 168905].

Off the north coast of Cuba (23°10′N, 81°29′W); *Atlantis*, [sta 3431, 421–265 m, 17 Mar] 1938.

*Remarks:* These specimens were originally two of 38 male and female specimens (225–338 mm TL), which included the holotype, cataloged as MCZ 36099.

**Triakidæ**

**Scyliorhinus retifer besnardi** Springer and Sadowsky, 1970:95, fig. 2.

*Holotype* USNM 204376 (♀, 385 mm), [Ace. 278057].

Near the continental shelf edge off northern Uruguay (33°26′S, 51°21′S[W]); Prof. W. Besnard, sta 419, 190 m, 2 Nov 1968.

*Paratype* USNM 304377 (204377) (♂, 366 mm), [Acc. 278057].

Collected with the holotype.

**SCYLIORHINIDAE**

**Sphyrna bigelowi** Springer, 1944:274, [fig. 1, table 1].

*Holotype* USNM 87682 (♂, 385 [389] mm), [Acc. 88925].

On the coast of Uruguay; [Santa Maria], W.L. Schmitt, [fall of 1925].

*Remarks:* USNM 87682 originally included two specimens; one specimen was recataloged as USNM 120751. The lot consists of 7 egg cases (one is empty), 2 embryos (48, 52 mm), and a caudal fin, all of which we assume were the "identifiable parts of a female with 4 egg-capsules in each oviduct," referred to by Springer and D'Aubrey.

**HEXANCHIDÆ**

**Etmopterus brachyurus** Smith and Radcliffe in Smith, 1912a:679, pi. 52, [fig. 2].

*Type [Holotype]* USNM 70257 (♂, 22.7 cm [202+ mm]), [Acc. 58447].

Philippines, island of Jolo (Sulu), off Jolo Light (6°02′00″N, 120°44′40″E); *Albatross*, sta 5550, 263 [258] fms, 17 Sep 1909.

*Remarks:* The caudal fin is missing.

**SQUALIDÆ**

**Catulus brunneus** Gilbert, 1892:542.

*Holotype* USNM 51708 (♀, 50 cm [470 mm]), [Acc. 43364].

[South of San Clemente Island (32°49′00″N, 117°27′30″W)]; *Albatross*, [sta 2936, 359 fms, 4 Feb] 1889.

**SCYLIORHINIDÆ**

**Etmopterus bullisi** Bigelow and Schroeder, 1957:50, figs. 5a–d, pl. 2.
Type [Holotype] USNM 158186 (♀, 196 [185] mm), [Acc. 213825].
Off northeast coast of Florida (30°02'N, 80°05'W); Pelican, sta 42, 205 fms, [1 May 1956].
Remarks: Bigelow and Schroeder based the description of *E. bullisi* on the holotype and three other specimens (which they called "additional material"); 205 mm female and a 230 mm, immature male, both from the same locality as the holotype, and a 212 mm immature male from "Pelican" sta 51, off eastern Florida. These specimens must be treated as paratypes. Bigelow and Schroeder failed to state the location of these specimens and their location is unknown.

SQUALIDAE

Holotype USNM 202672 (♂, 575 [569] mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.

*Galeus cadenati* Springer, 1966:609, figs. 20, 21, 27[5], tables 1, 5, 6.
Holotype USNM 231724 (♀, 303 [297] mm).
Off the Caribbean coast of Panama (09°13'N, 80°44'[43]'W); Oregon, sta 3592, 439 m [240 fms], 30 May 1962.
Remarks: This lot was formerly USNM 260468-F1, which is listed as the holotype in the original description.

Holotype USNM 206184 (♀, 157 mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.
[Lesser Antilles], Leeward Islands near Anguilla (18°18'N, 63°23'W); Oregon II, sta 10834, 687 m, [6 Dec 1969].
[Lesser Antilles], Leeward Islands near Antigua (16°53'N, 61°53'W); Oregon I, sta 6703, 750–840 m [410/460 fms, 21 May 1967].
Remarks: Springer and Heemstra (in Springer, 1979:16–18) gave conflicting information about the paratypes of *Apristurus canutus*. They designated (p. 17) only four specimens as paratypes under their heading "Paratypes": USNM 206180, two adult males, 428 and 395 mm, an immature male, 388 mm, and an adult female, 395 mm. On p. 18, they stated that the type series comprised the holotype and five paratypes, 319–455 mm, and there are five specimens in USNM 206180. Inasmuch as they stated that the holotype was 455 mm, the 319 mm specimen must refer to the fifth specimen, which is an immature male.

SCYLIORHINIDAE

*Parmaturus campechensis* Springer, 1979:100, fig. 59.
Holotype USNM 206184 (♀, 157 mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.
[Lesser Antilles], Leeward Islands near Anguilla (18°18'N, 63°23'W); Oregon II, sta 10834, 687 m, [6 Dec 1969].
[Lesser Antilles], Leeward Islands near Antigua (16°53'N, 61°53'W); Oregon I, sta 6703, 750–840 m [410/460 fms, 21 May 1967].
Remarks: Springer and Heemstra (in Springer, 1979:16–18) gave conflicting information about the paratypes of *Apristurus canutus*. They designated (p. 17) only four specimens as paratypes under their heading "Paratypes": USNM 206180, two adult males, 428 and 395 mm, an immature male, 388 mm, and an adult female, 395 mm. On p. 18, they stated that the type series comprised the holotype and five paratypes, 319–455 mm, and there are five specimens in USNM 206180. Inasmuch as they stated that the holotype was 455 mm, the 319 mm specimen must refer to the fifth specimen, which is an immature male.

*Etmopterus carteri* Springer and Burgess, 1985:585, figs. 1–2.
Holotype USNM 206090 (♀, 190 mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.
Caribbean coast of Colombia, [off Barranquilla] (11°09'N, 74°26'W); Oregon, sta 10596, 1067 m [600 fms], 3 Jun 1970.
Paratypes USNM 206091 (♀, 190 mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.
[Lesser Antilles], Leeward Islands near Anguilla (18°18'N, 63°23'W); Oregon II, sta 10834, 687 m, [6 Dec 1969].
Paratypes USNM 206092 (♀, 190 mm), [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.
Taken with the holotype.
Remarks: This lot originally included nine specimens, of which five were exchanged to FSM and cataloged as UF [now FSM] 40691.

**Catulus cephalus** Gilbert, 1892:541.

[Lectotype USNM 125094 (♂, 24 cm), [Acc. 163614].

[The Revillagigedo Islands, near Clarion Island (18°17'30"N, 114°43'15"W); Albatross, sta 2992, 460 fms, [6 Mar] 1889.

Remarks: Springer (1979) referred to USNM 125094 as the "holotype"; however, C.H. Gilbert (1892) based his description on "several small specimens from Albatross station 3007 and a longer specimen" from station 2992, and all were syntypes at the time of Gilbert's description. S. Springer's designation of one of the syntypes as a "holotype," constitutes lectotype designation according to Article 74(b) of the International Code of Zoological Nomenclature. Three small specimens (originally included in this lot) were reassigned to USNM 206019.

[Paratypes USNM 206019 (3♂♂, 82–86 mm), [Acc. 163614].


Remarks: These three small specimens were removed from USNM 125094 and cataloged as USNM 206019 in 1971, presumably because someone referred to C.H. Gilbert's original description and assumed that the smaller specimens were collected at station 3007.

**Chiloscyllium confusum** Dingerkus and DeFino, 1983:9, figs.

USNM 125094 (cf, 24 cm), [Ace. 163614].

[Paratypes USNM 148105 (♂♂, 546 [583] mm), [Acc. 178732].

Persian Gulf, Saudi Arabia, Tarut Bay, Ras Tanura, 1.5 miles north of west pier; D.S. Erdman, 11 May 1948.

Paratype USNM 148106 (♀, 534 [526] mm), [Acc. 178732].

Persian Gulf, Saudi Arabia, Tarut Bay, Ras Tanura, Nejma, 3 miles north of west pier; D.S. Erdman, 17 Apr 1948.

Paratype USNM 148107 (♂♂, 546 mm), [Acc. 178732].

Persian Gulf, Saudi Arabia, Tarut Bay, channel south of Zaal Island; D.S. Erdman, 2 Jan 1948.

Paratype USNM 148108 (♂, 446 mm), [Acc. 178732].

Persian Gulf, Saudi Arabia, Fasht Al Jarim, 10 miles north of Bahrain Island; D.S. Erdman, 13 Jan 1948.

Paratype USNM 202654 (♀, 290 mm), [Acc. 272254].


Remarks: The specimen was purchased at a fish market.

Paratypes USNM 202671 (2♂♂, 9, 541–547 [526, 539] mm).
**Mustelus dorsalis** Gill, 1864:149.  
[Syntypes USNM 8068] several [3]. Panama; [Capt. J.M. Dow].  
Remarks: According to USNM records, these specimens were sent out on loan during July 1967 and were never returned. The loan recipient was queried as recently as June 1991 and responded that he had no knowledge of the whereabouts of the specimens. All three specimens are considered lost.

**Hemigaleops fosteri** Schultz and Welander in Schultz et al., 1953:9, figs. 5a–f, pl. 1.  
[Holotype USNM 152917 (♂, 662 [652] mm)], [Acc. 188107].  

**Carcharias fronto** Jordan and Gilbert, 1882a:102.  
[Holotype USNM 28167 (♂, 36" [825 mm])].  
Mexico, Mazatlan; [C.H. Gilbert].

**Centroscyllium excelsum** Shirai and Nakaya, 1990:392, figs. 1-3, table 1.  
[Paratype USNM 300576 (♂, 574 [569] mm)].  
Emperor Seamount Chain (38°37'-49°59'N, 171°06'-173°28'W); 800-1000 m, 13 Apr-17 May 1977.

**Cirrhoscyllium expolitum** Smith and Radcliffe in Smith, 1913b:568, pl. 45.  
[Type [Holotype] USNM 74603 (♂, 33.5 cm [325 mm])].  
China Sea, between northern Luzon and China (21°33'/N, 118°13'E); Albatross, sta 5310, 100 fms, 4 Nov 1908.

**Galeocerdo fasciatus** Kampen, 1907:9.  
[Holotype? USNM 231757] (330 cm [10 ft]).  
Meer bei Batavia [= sea at Djakarta, Indonesia]; Apr 1906.  
Remarks: This lot consists of a single tooth, which was originally cataloged as USNM bone ledger no. 27235. In the ledger, it is stated that the tooth is "out of type, shark 10' long." There is no information on how USNM acquired the tooth or where the remainder of the holotype, if it exists, is deposited. Kampen (1907) is uninformative on this matter. Although Bigelow and Schroeder (1948) indicate that *Galeocerdo fasciatus* is a junior synonym of *G. cuvier* (Lesueur), recent authors (Compagno, 1984b, 1988) have overlooked Kampen's description.

**Triakis fehlmanni** Springer, 1968:614, figs. 1–4, 5c.  
[Holotype USNM 202969 (♀, 46 cm [451 mm])], [Acc. 273342].  
Samoa, southwest of Cape Guardafui (11°24'N, 51°35'E); *Anton Bruun*, Cruise 9, sta 463, 70–170 m, 17 Dec 1964.

**Hemigaleops fosteri** Schultz and Welander in Schultz et al., 1953:9, figs. 5a–f, pl. 1.  
[Holotype USNM 152917 (♂, 662 [652] mm)], [Acc. 188107].  

**Carcharias fronto** Jordan and Gilbert, 1882a:102.  
[Holotype USNM 28167 (♂, 36" [825 mm])].  
Mexico, Mazatlan; [C.H. Gilbert].

**Halaelurus garmani** Fowler, 1934:235, fig. 1.  
[Type [Holotype] USNM 43749 (♂, 240 mm)].  
East Indies; *Albatross*, Philippine Expedition, 1907-10.

**Rhinothorac henneli** Gill, 1862:486.  
[Holotype USNM 4487 (♂, 9½' [228 mm])].  
California, [San Francisco]; S. Hubbard.

**Pentanchus herklotsi** Fowler, 1934:238, fig. 3.  
[Type [Holotype] USNM 93134 (♂, 312 [326] mm)].  
Jolo Sea (= Sulu Sea), [Philippine Islands, Cagayan Island (09°37'05"N, 121°12'37"E)]; *Albatross*, sta D.5424, [31 Mar 1909].  
Remarks: The head is badly damaged.

**Scyliorhinus hesperius** Springer, 1966:603, figs. 7, 9, 15, 27, tables 1, 3, 4.  
[Holotype USNM 187732 (♂, 415 [404] mm)], [Acc. 65731].  
On the Caribbean coast of western Panama (09°03'N, 81°22'W); *Oregon*, sta 3598, 360–400 m [200/220 fms], 31 May 1962.

**Muselus higmani** Springer and Lowe, 1963:245, fig. 1, [table 1].  
[Holotype USNM 156930 (♂, 48 cm [487 mm])].  
Surinam, northeast of Paramaribo (= Paramaribo) [06°23'–06°28' [20]°N, 54°47'–54°51'W]; *Coquette*, sta 155, 12 fms, J.B. Higman, [30 May 1957].  
[Paratypes]  
Remarks: Springer and Lowe (1963) only designated a holotype in their description of *M. higmani*; however, they stated in the abstract that "the study sample included 281 adults, 79 young, and 449 embryos." In addition, it is stated in the introduction that "comprehensive notes were made on all dogsharks collected from the *Coquette*" (June–August 1957), *Cape St. Mary*, (March 1958, 1959), and the *Oregon* (summer,
Carcharias insularum  
Snyder 1904:513, fig. 1, pl. 1.

Type [Holotype] USNM 50859 (♂, 213 cm [1650+ mm]).

Hawaiian Islands, Oahu, off Diamond Head; Albatross, sta 2281, 22-25 fms, 7 Sep 1958.

Remarks: The specimen appears to be lost; V.G. Springer was unable to locate it in 1961.

[Triakidae]

Carcharias lamiella  
Jordan and Gilbert, 1882a:106.

[Syntype, Lectotype] USNM 29541 (♂, 32° [792 mm]).

Mexico, Mazatlan, in the harbor of Mazatlan; [C.H. Gilbert].

Remarks: The specimen appears to be lost; V.G. Springer was unable to locate it in 1961.

[Squalidae]

Carcharias longurio  
Jordan and Gilbert, 1882b:684, pis. 50, 54, [fig. 4].

[Paratype] USNM 187938 (♀, 215 mm; 2♂♂, both 215 mm), Acc. 241344.

Off Surinam [6°24'00"N, 54°55'00"W to 6°20'30"N, 54°54'W]; Coquette, [sta 155, 12 fms, 30 May 1957].

[Paratypes USNM 187938 (♂♂, 368-375 mm; ♀, 437 mm), Acc. 236241].

Off Surinam, northeast of Paramaribo (= Paramaribo) [6°23'N, 54°47'W to 6°20' N, 54°51'W]; Coquette, [sta 155, 12 fms, 30 May 1957].

[Paratype USNM 221724 (♀, 380 mm), Acc. 273342].

Off Surinam [6°37'N, 55°13'W]; Oregon, [sta 10, 17, 32, 15-28 fms, 11-12 May 1957].

[CARCHARHINIDAE]

Squaliolus laticaudus  
Smith and Radcliffe in Smith, 1912a:684, pls. 50, 54, [fig. 4].

Type [Holotype] USNM 70259 (♂♂, 215 cm [141 mm]), [Acc. 58447].

China Sea, southern Luzon, in Batangas Bay, Matocot Point, [Lat 13°42'41"20"N, 120°57'58"E]; Albatross, sta 5297, 170 fms, 24 Jul 1909.

[CARCHARHINIDAE]

Carcharias nigeri  
Jordan and Gilbert, 1882b:684, pis. 50, 54, [fig. 4].

[Paratype] USNM 187938 (♀, 215 mm; 2♂♂, both 215 mm), Acc. 241344.

Off Surinam [6°24'00"N, 55°1'30"W to 6°51'00"N, 54°33'W]; Coquette, [sta 10, 17, 32, 15-28 fms, 11-12 May 1957].

[CARCHARHINIDAE]

Squaliolus laticaudus  
Smith and Radcliffe in Smith, 1912a:684, pls. 50, 54, [fig. 4].

Type [Holotype] USNM 70259 (♂♂, 15 cm [141 mm]), [Acc. 58447].

Luzon, in Batangas Bay, [Matocot Point], [Lat 13°42'N, 120°57'15"E]; Albatross, sta 5268, 170 fms, 8 Jun 1908.

China Sea, southern Luzon, in Batangas Bay, Matocot Point, [Lat 13°42[41"20"N, 120°57 [58"]15"E]; Albatross, sta 5297, [198 fms], 24 Jul 1909.

[SQUALIDAE]
Etmopterus lucifer Jordan and Snyder, 1902:79, [fig. 1].
[Paralectotype USNM 50728 (♂, 282 mm)] [Acc. 40524].
Japan, Misaki, [Sagami]; Capt. A. Owston.
Remarks: This specimen was originally one of several cataloged as SU 6863. Jordan and Snyder (1902) stated that their description of *E. lucifer* was taken from "specimens [number unspecified] from Misaki...from the collection of Capt. Alan Owston, No. 6863, Stanford University Zoological Museum." At the time of Jordan and Snyder's description, the Owston specimens were syntypes. Jordan and Snyder also mentioned that 30 other specimens were obtained off Misaki by K. Aoki, but no descriptive data derived from these were presented, and they cannot be considered as type specimens according to ICZN 72(b)(vi). Three of Aoki's specimens are cataloged as USNM 50254. Bohlke (1953) incorrectly considered the one specimen, then contained in SU 6863, to be the holotype, but in so doing he effectively designated it lectotype, according to ICZN Article 74(b).

Mustelus lunulatus Jordan and Gilbert, 1882a: 108.
[Syntype] USNM 29211 (2♀, 1♂, about 20" [620 mm]).
Mexico, Mazatlan; [C.H. Gilbert].
Remarks: Jordan and Gilbert based the description of *M. lunulatus* on two specimens (syntypes), both of which they indicated were cataloged as USNM 29211. The catalog ledger indicates that USNM 29211 contained two specimens but, written in red ink in an old script by the catalog number, is the word "type." The second syntype has been missing for many years.

Halaelurus lutarius Springer and D'Aubrey, 1972:6, figs. 1a, 2, tables 1–3.
Holotype USNM 205135 (♂, 326 [321] mm), [Acc. 273221].
Mozambique, off Delagoa Bay (25°32'S, 33°24'E); Anton Bruun, 110E Cruise 8, sta 396B, 450–455 m, 28 Sep. 1964.
Remarks: The left clasper is present, but has been removed and dissected.
[Paratypes]
Remarks: In addition to the holotype listed under "Study Material," Springer and D'Aubrey provide information on 16 additional specimens, 310–367 mm. We treat these specimens as paratypes.

Sphyra media Springer, 1940b:162, [fig. 3].
Paratype USNM 28160 (♀, 777 [735] mm).
[Mexico], at Mazatlan; C.H. Gilbert.

Carcharhinus natator Meek and Hildebrand, 1923:40, fig. 1, pl. 1.
Type [Holotype] USNM 79310 (♀, 850 mm), [Acc. 59904].
Panama City; purchased in the Panama City fish market, [Meek and Hildebrand, 26 Jan 1911].
Remarks: Meek and Hildebrand's description mentioned a second specimen (female, 825 mm), also purchased in the Panama City market. They provided no information on the location of the specimen, which would have status as a paratype, and its present location is unknown. Garrick (1982:33) examined the holotype, but made no mention of the paratype.

Carcharias nesiotes Snyder, 1904:514, fig 2, pl. 1.
Type [Holotype] USNM 50860 (♀, 1.48 m [1415 mm]), [Acc. 42563].
Hawaiian Islands, French Frigate Shoals; Albatross, [sta 2631], spring and summer of 1902.

Remarks: USNM 50860 was recataloged in error as USNM 62474. Only a tag with USNM 50860 is now associated with the holotype. This specimen has been partially skinned with both the head and fins intact. The caudal fin is damaged.

CARCHARHINIDAE

**Eulamia nicaraguensis** Gill and Bransford, 1877:190.

*Holotype* USNM 16887 ([♂], 6'4"").

Lake Nicaragua; J.F. Bransford, spring, 1876.

Remarks: Only the skin, head, and jaws were preserved.

**Mustelus nigromaculatus** Evermann and Radcliffe, 1917:9, fig. 2, pl. 2.

*Type [Holotype] USNM 77699 ([♂], 50 cm [475 mm]), [Acc. 59892].

Peru, Lobos de Tierra; field no. 09527, R.E. Coker, 1907, or 1908.

Remarks: Hildebrand (1946:30) examined the holotype, which he measured as 480 mm long.

Paratype

Remarks: The original description mentions and describes one paratype, a male, 51 cm, field no. 09533, from Lobos de Tierra, Peru. The location of the paratype is not given and is unknown to us. Hildebrand (1946:36), who examined the holotype, made no mention of the paratype.

**Mustelus norrisi** Springer, 1939:462, [fig. 53, 55, table 1].

*Holotype* USNM 106639 ([♂], 723 [711] mm), [Acc. 241919].


**Paratype** USNM 57369 ([♀], 825 [787] mm), [Acc. 144867].

Florida, Sawyers Key Channel, a few miles northwest of Key West; *Orion*, 14 Dec 1906.

Remarks: Springer (1939:462) notes that six embryos (182–194 mm) were taken from one uterus and approximately the same number were present in the other uterus. The six embryos have been cataloged as USNM 317610.

**Paratype** USNM 104333 ([♂], 692 mm)), [Acc. 144867].

[Florida, off Englewood; S. Springer, 3 Nov 1936].

**Paratype** USNM 317610 (6 embryos, 182–194 mm), [Acc. 468222].

Collected with holotype.

**Cestracion oceanica** Garman, 1913:158.

*Syntype* USNM 153587 ([♀], 510 mm), [Acc. 190177].

Society Islands; A. Garrett.

Remarks: Originally cataloged as MCZ 460. Garman did not indicate the number of specimens on which he based his description of *Cestracion oceanica*. Gilbert (1967) reported that there were four syntypes, the other three contained in MCZ 460.

**CARCHARHINIDAE**

**Rhizoprionodon (Protozygaena) oligolinx** Springer, 1964:621, figs. 12, 13, tables 1–38, pl. 2c.

*Holotype* USNM 196799 (♂, 489 [481] mm), [Acc. 241919].

Gulf of Thailand (= Gulf of Siam), [Trat Province], about 2–3 miles offshore, [W and WSW of Goh Chang] (11°56'–12°03'N, –102°14'30″–102°17'45″E); 0–10 m, [Thai fishermen].

Remarks: The specimen was obtained from the Bangkok fish market.

**Paratype** USNM 175349 (♂, 272 [268] mm), [Acc. 203266].

India, Quilon, [Travancore (Kerala) State; K.C. Jayaram, Oct 1952].

**SCYLIORHINIDAE**

**Etomopterus perryi** Springer and Burgess, 1985:588, figs. 3, 4.

*Holotype* USNM 206093 ([♀], 182 mm), [Acc. 294076].

Caribbean coast of Colombia, [off Barranquilla] (11°09'N, 74°26'W); *Oregon*, sta 4860, 283–292 m [155–160 fms], 19 May 1964.

Remarks: The USNM catalog number was not in the original description, although the USNM prefix is indicated.

**Paratypes** USNM 206094 ([♀], 191 mm, with 3 embryos), [Acc. 294076].

Colombia, off Guajira Peninsula (12°31'21"N, 71°58'W); *Oregon*, sta 5692, 375 m [205 fms], 10 Oct 1965.

Remarks: The embryos comprise 2 females and a male, 55–59 mm.

**Paratypes** USNM 206095 ([♀♀], [155–192 mm], 3 ♀♂ [152–170]; 154–191 mm), [Acc. 294076].

Collected with the holotype.

Remarks: Six of the original 14 specimens in this lot
were exchanged to FSM and cataloged as UF [now FSM] 40693.

Paratypes USNM 206221 (2 ♀♀, 184–194 mm), Caribbean coast of Colombia, [off Barranquilla] (11°09'N, 74°26'30"W); Oregon, sta 4859, 329–356 m, 19 May 1964.

**Squalidae**

**Gyropleurodus peruanus** Evermann and Radcliffe, 1917:2, fig. 1, pl. 1.

*Type [Holotype] USNM 77691 (♂, 56.5 cm [558 mm]), [Acc. 59892].
Peru, Lobos de Tierra; field no. 09509, R.E. Coker, 1907 or 1908.*

**Heterodontidae**

**Carcharias phoreys** Jordan and Evermann, 1903:163.

*Type [Holotype] USNM 50612 (♂, 27.5" [690 mm]).

Remarks: The holotype was illustrated by Jordan and Evermann (1905, pi. 2).

**Carcharhinidae**

**Galeus piperatus** Springer and Wagner, 1966:1, figs. 1, 2.

*Paratype USNM 200413 (9, 296 [291] mm), [Acc. 266474].
Gulf of California, midway between [southern tips of] Tiburon and Angel de la Guardia Islands (28°55'N, 112°50.5'W); Alaska, sta 64A2-16, 275 m, J.E. Fitch and R.J. Lavenberg, 6 Apr 1964.*

Remarks: This specimen was collected with the holotype.

**Scyliorhinidae**

**Squalus phillipinus** Smith and Radcliffe in Smith, 1912a:677, [fig. 1], pl. 51.

*Type [Holotype] USNM 70256 (♂, 32.5 cm [314 mm]), [Acc. 58447].
West coast of Luzon, off Sombrero Island (13°45'15"N, 120°46'30"E); Albatross, sta 5111, 236 fms, 16 Jan 1908.*

**Squalidae**

**Eumalia (Platyodon) platyrhynchos** Gilbert, 1892:543.

*Syntype, Lectotype USNM 46847 (♀, 908 mm).
Revillagigedo Islands, Socorro [Island]; Albatross, [field no. TT 500], [06 Mar 1889].
Remarks: Designated lectotype of *Carcharhinus platyrhynchos* by Rosenblatt and Baldwin (1958:150), who reported that the two other available syntypes represented different species. Garrick (1982:118) reported that one syntype (USNM 46850) is identifiable as *Carcharhinus obscurus* and another (SU 11556) as *C. galapagensis.*

*Syntype, Paralectotype USNM 46846 (♀).
Revillagigedo Islands, at Clarion and Socorro [Island]; Albatross, [field no. TT 300], [4 Mar 1889].
Remarks: Specimen could not be found in 1980, and was reported as missing by Garrick (1982), who examined USNM *Carcharhinus* types during the 1960s. Böhleke (1953:9) lists a specimen (SU 11556—now at CAS) from Clarion Island, Mexico, as a syntype. This syntype may have been assigned to USNM 46846 but was never received at USNM. This was the case with many type specimens deposited at Stanford instead of USNM (see Springer and Eschmeyer, 1974, particularly p. 568). There is, however, no *Albatross* tin tag associated with the specimen, as there is with the holotype and USNM 46846.

*Syntype, Parallectotype USNM 468464 (♀, 50.8 cm [495 mm]), [Acc. 58447].
Sea of Mindanao, between the islands of Mindanao and...
Leyte (10°02'N, 125°19'20"E); Albatross, sta 5486, 585 fms, 31 Jul 1909.

Remarks: The specimen is in poor condition with a fracture at the caudal peduncle.

SCYLIORHINIDAE

Nasisqualus profundorum Smith and Radcliffe in Smith, 1912a:681, pl. 53, [fig. 3].

Type [Holotype] USNM 70258 (♂, 44 cm [420 mm]), [Acc. 58447].

Between the islands of Leyte and Mindanao, [Diuata Point] (09°24'N, 125°12'E); Albatross, sta 5491, 736 fms, 1 Aug 1909.

[Paratypes] Remarks: Smith and Radcliffe (in Smith, 1912a:683) described six additional specimens in their description of Nasisqualus profundorum, but did not indicate where they were deposited. The specimen collected at station 5491 recorded by Smith and Radcliffe does not exist in the USNM collection. The following five specimens are treated as paratypes.

[Paratype USNM 99491] (♀, 59 cm), [Acc. 65731].

Between Siquijor and Bohol Islands [Balicasag Island, 9°22'30"N, 123°42'40"E]; Albatross, sta 5527, 392 fms, 11 Aug 1909.

[Paratype USNM 99492] (♀, 22.5 cm), [Acc. 65731].

Between Marinduque and Luzon [H^l'N, 122°18'45"E]; Albatross, sta 5219, 530 fms, 23 Apr 1908.

Remarks: This specimen is broken into three pieces, which are in very poor condition.

[Paratype USNM 99493] (♀, 44 cm [405 mm]), [Acc. 65731].


[Paratype USNM 99497] (♀, 21 cm [185 mm]), [Acc. 65731].

Northern Mindanao, off Camp Overton Light [8°15'20"N, 123°57'E]; Albatross, sta 5511, 410 fms, 7 Aug 1909.

Remarks: This specimen is in very poor condition.

SCYLIORHINIDAE

Scyliorhinus [Scyliorhinus] profundorum Goode and Bean, 1895:17, fig. 16.

[Holotype] USNM 35646 (♂♀, 20½" [350+ mm]).

[Atlantic Ocean] (39°09'=00"N, 72°03'15"W); Albatross, sta 2234, 816 fms, [13 Sep 1884].

Remarks: The specimen has partially disintegrated and is in very poor condition. The legend of the figure states incorrectly that the depth of capture was 810 fathoms.

SCYLIORHINIDAE

Micristodus punctatus Gill, 1865:177.

Type [Holotype] USNM 231756 (1).

Gulf of California, [Mexico]; 1858.

Remarks: In the original description, Gill states that “the Smithsonian Institution received, from Capt. Stone, the jaws and vertebrae of an enormous species…” Only the upper and lower jaws exist in the USNM collection. The location of the vertebral bone is unknown.

RHINCODONTIDAE

Eridacnis radcliffei Smith, 1913a:599, pl. 47, [figs. 1–3].

Type [Holotype] USNM 74604 (♂♀, 23.0 cm [223 mm]), [Acc. 65731].

Philippines, island of Jolo (Sulu), off Jolo Light (6°11'50"N, 121°08'20"E); Albatross, sta 5135, 161 fms, 7 Feb 1908.

Remarks: This specimen was collected alive containing two large embryos (one 113 mm [male] specimen and the other in a membranous sac). The embryos were cataloged as USNM 371570. [Paratypes] USNM 317570 (one embryo in sac; [♂♀], 11.3 cm), [Acc. 65731], collected with holotype.

Remarks: Because both embryos were mentioned in the original description, and the length of one was provided, we consider both to be paratypes.

PROSCYLLIDAE

Centroscyllium [Centroscyllium] ritteri Jordan and Fowler, 1903:635, [fig. 6].

[Paratype USNM 51388] ([♂♀, 332+ mm]).


Remarks: The caudal fin is missing and the specimen is in poor condition. Jordan and Fowler (1903) spelled Centroscyllium correctly four of the six times they mentioned the genus. They misspelled it at the beginning of the description and in the legend of figure 6. The type (= holotype) was originally cataloged as SU 7185 and is currently in the CAS collection.

SQUALIDAE

Centroscyllium ruscosum Gilbert, 1905:580, fig. 230.

Type [Holotype] USNM 51585 (♂♀, 222 mm), [Acc. 43076].


Remarks: The caudal fin is missing, but otherwise the specimen is in fair condition.

SQUALIDAE

Mustelus schmitti Springer, 1939:465, [table 1].

Holotype USNM 106640 (♂♀, 742 mm), [Acc. 88925].


Paratype USNM 55582 (♂♀, 450 [440] mm), [Acc. 45791].

Argentina, Buenos Aires; J.W. Titcomb.
Remarks: Four specimens were originally in this lot; three specimens (non-types of *M. schmitti*) were recataloged as USNM 164571.

**Paratypes** USNM 87680 (2♂♂♂, 600 [595] mm), [Acc. 88925].

On the coast of Uruguay; W.L. Schmitt, [fall of 1925].

Remarks: Three specimens were included originally in this lot; one specimen (the holotype) was recataloged as USNM 106640.

**Paratype** USNM 87782 (♂, 260 [255] mm), [Ace. 88925].

On the coast of Brazil; W.L. Schmitt, [7 fms], [17 Nov 1925].

**TRIAKIDAE**

**Pristiophorus schroederi** Springer and Bullis, 1960:246, figs. 1, 3, 5, table 1.

**Holotype** USNM 185946 (♂, 383 [370] mm), [Ace. 225026].

Bahamas, Cay Sal Bank, about 15 miles east of Dog Rocks (24°05' N, 79° 46' W); *Combat*, sta 449, 350 fms, 24 Jun 1957.

**[Paratypes]** USNM 185947 (♂♂, 805 mm; ♂, 645 mm).

North of Little Bahama Bank (28°03'N, 78°46'W); *Silver Bay*, sta 445, 500-520 fms, 9 Jun 1958.

Remarks: Although S. Springer and Bullis did not designate paratypes as such, their description (table 1) included information on two specimens (USNM 185947) in addition to the holotype, which we treat as paratypes.

**ETMOPTERIDAE**

**Etmopterus schulta** Bigelow et al., 1953:252, fig. 9.

**Type [Holotype]** USNM 113381 (♂, 270 mm).

Gulf of Mexico (29°11' TSf, 86°53'[52'30"]W); *Oregon*, sta 279, 305 fms, 24 Feb 1950 [1951].

**Paratypes**

Remarks: Bigelow et al. (1953:252) did not designate paratypes specifically, but merely noted that they "also" had 38 males and females from *Oregon* stations in the northern Gulf of Mexico. They listed the pertinent stations and associated data in a footnote, but not the catalog numbers or number of specimens from each station. Of the 38 specimens cataloged at USNM originally, six were later exchanged to MCZ according to USNM records. MCZ records account for only two of these specimens.

**[Paratype** USNM 160855] (♀, 240 mm; 6♂♂♂, 230-288 mm), [Acc. 190888].

(29°11'N, 86°53'[52'30"]W); *Oregon*, sta 279, 305 fms, 24 Feb 1950 [1951].

Remarks: This lot originally comprised 11 specimens of which four were exchanged to MCZ according to USNM records. MCZ has no record of these specimens. The location of the four specimens is unknown.

**[Paratypes** USNM 160856] (3♀♀, 206-269 mm; 2♂♂♂, 261, 263 mm), [Acc. 190888].

(29°20'N, 87°25'W); *Oregon*, sta 319, 315 fms, 28 Apr 1951.

**Paratypes** USNM 160857 (♀, 250 mm; 4♂♂♂, 252-279 mm), [Acc. 190888].

(29°20'N, 87°25'W); *Oregon*, sta 319, 315 fms, 28 Apr 1951.

**Remarks**: This lot originally comprised 7 specimens; 2 were exchanged to MCZ 38080.

**[Paratypes** USNM 160858] (3♀♀, 206-269 mm; 2♂♂♂, 261, 263 mm), [Acc. 190888].

(29°11'N, 86°53'[52'30"]W); *Oregon*, sta 279, 305 fms, 24 Feb 1950 [1951].

**SQUALIDAE**


**Holotype** USNM 122312 (♀, 297 mm), [Acc. 65731].

Philippines, Luzon, Balayan Bay; *Albatross*, sta 4693, 329 m, 20 Feb 1909.

**Paratype** USNM 122307 (♂, 254 mm).

China Sea, [Philippines], off southern Luzon, [Sombrero Island]; *Albatross*, sta 5111, 431 m [236 fms], 16 Jan 1908.

Remarks: The specimen is in fair condition, except for a broken caudal fin.

**[Paratypes** USNM 122311 (♀, 268 mm), [Acc. 65731].

[Philippines], Luzon, Balayan Bay; *Albatross*, sta 5365, 391 m [214 fms], 22 Feb 1909.

Remarks: Two specimens were listed under USNM 122311 in the USNM ledger; however, only the female specimen is recorded as a paratype. Presumably, the immature, male, a 220 mm specimen listed under "Other material examined" by Springer (1979), is the male specimen from this lot. It has been recataloged as USNM 316614.

**SCYLIORHINIDAE**

**Triakis semifasciatum** Girard, 1854:196.

**[Syntype USNM 988] (1).**

California, in the Bay of San Francisco, near Presidio; Lt. W.P. Trowbridge.

Remarks: This specimen has been missing since, at least, 1980.

**Catulus spongiceps** Gilbert, 1905:579.

**Type [Holotype]** USNM 51590 (♀, 50 cm [494 mm]), [Acc. 43076].

**SCYLIORHINIDAE**

**Eulamia springeri** Bigelow and Schroeder, 1944:30, [pl. 9, 10].

_Type [Holotype] USNM 37141 (♀, 805 mm), [Acc. 15759]. [Mexico], Yucatan, Cozumel; [Albatross, fl3 no. 1, T.H. Bean, 22 Jan 1885].

**Schroederichthys tenuis** Springer, 1966:606, figs. 16b, 18.

_Pentanchus verweyi_ Fowler, 1934:237, fig. 2.

_Type [Holotype] USNM 188052 (♂, 230 mm), [Acc. 241344].

_Holotype_ Borneo, vicinity Sibuko Bay, [Sipadan Island (0°10'35"N, 118°37'12"E)]; Albatross, sta D.5587, [415 fms], [28 Sep 1909].

_Remarks:_ The head is damaged, but otherwise the specimen is in fair condition.

**SCYLIORHINIDAE**

**Etmopterus villosus** Gilbert, 1905:580, pl. 66.

_Type [Holotype] USNM 93135 (♂, 297 mm), [Acc. 65731].


**SCYLIORHINIDAE**

**Etmopterus virens** Bigelow et al., 1953:257, figs. 6d, 10.

_Type [Holotype] USNM 160859 (♂, 203[188] mm), [Acc. 190888].

_Northern part of Gulf of Mexico (29°52'27°51'30"N, 91°33'[32'30"]W); Oregon, sta 501, 220 fms, [11 Dec Nov 1951].

_Remarks:_ Of the original four specimens (173–192 mm), one specimen was exchanged to MCZ, and two paratypes were recataloged as USNM 165560.

**Paratypes**

_Remarks:_ Bigelow et al. (1953:257) based the description of _Etmopterus virens_ on the "type" and "42 others, males and females, including an embryo ready for birth." The 42 other specimens not having been specifically excluded as types can thus be considered to be paratypes. All 42 were cataloged originally in the USNM collections, but 13 were exchanged later to MCZ according to USNM records. There are however, discrepancies between USNM and MCZ records concerning the number of specimens exchanged to MCZ and the actual number of specimens cataloged in MCZ's collection. These discrepancies are discussed.

_Type [Paratype] USNM 113380 (♂, 198 mm), [Acc. 192970].

_Northern part of Gulf of Mexico (29°27'N, 87°19'W); Oregon, sta 321, 220 fms, [28 Apr 1951].

**CARCHARHINIDAE**

**Hexanchus vitulus** Springer and Waller, 1969:160, [figs. 1–4].

_Holotype USNM 200674 (♂, 148 cm), [Acc. 252953].
Bahamas, near Bimini; -350 m [200 fms], P.W. Gilbert, Jul 1963.

Paratype USNM 200675 (9, 142 cm), [Acc. 252953].
Collected with the holotype.

**Catulus xaniurus** Gilbert, 1892:540.

[Syntype, Lectotype USNM 46719 (9, 543 mm) Ace. 27965].
Off the coast of southern California [33°55'30"N, 128°28'00" W]; Albatross, [field no. TT 57], 184-684 fms [687 m], [6 Jan] 1889.
Remarks: Springer (1979:108) designated USNM 46719 the lectotype of *Catulus xaniurus*.

[Syntypes, Paralectotypes USNM 46718] (3 [♀♀, 140-163 mm; 4 [♂♂, 141-184 mm]), [Acc. 27965].
Off the coast of southern California, Santa Barbara Island [34°11'30"N, 120°30'30"W]; Albatross, sta 2903, 184-684 fms, 322 fms, [7 Jan] 1889.
Remarks: Springer (1979:108) designated these paralectotypes of *Catulus xaniurus*.

[Syntypes, Paralectotypes USNM 125059] (7 [♀♀, 125-197 mm]; 6 [♂♂, 145-223 mm]).
Off the coast of southern California, Santa Barbara Island [34°11'30"N, 120°03'00"W]; Albatross, sta 2903, 184-684 fms, [7 Jan] 1889.
Remarks: These specimens were originally syntypes.
Although Springer (1979) neglected to designate them as paralectotypes, they became such automatically when he designated the lectotype. Springer (1979) incorrectly listed this lot as USNM 12059.

**Galeorhinus zyopterus** Jordan and Gilbert, 1883:871.

[Syntypes] USNM 26927 ((2])
[California, Santa Barbara; D.S. Jordan, 1880].
Remarks: These specimens have been missing since 1980, at least.

[Syntypes] USNM 26973 ((2 ♀♀, 474, 475 mm; 4♂♂, 324-524 mm)).
[California, Monterey; D.S. Jordan, 1880].
Remarks: Thirty-three specimens were originally listed in the USNM catalog ledger with a note stating that some had been exchanged to ZMUC. According to ZMUC records, they have one embryo or neonatal male (332 mm). In addition, one specimen was exchanged to MCZ 35949. The location of the remaining 25 specimens is unknown.

[Syntype] USNM 27190 ([♂♂, 364 mm]).
[California, San Francisco; D.S. Jordan, 1880].
Remarks: Seven specimens were originally listed in the ledger. The location of the six missing specimens is unknown.

[Syntype] USNM 27391.
[California, San Francisco; W.W. Fel Co.’s Expedition, 1880].
Remarks: This specimen has been missing since 1980, at least.

**Galeorhinus zyopterus** Jordan and Gilbert, 1883:871.

**Taxa Arranged Alphabetically by Family, Species, and Subspecies**

**CARCHARHINIDAE**

*Carcharhinus natator*
*Carcharias aethalorus*
*Carcharias fronto*
*Carcharias insularum*
*Carcharias lamiella*
*Carcharias longurio*
*Carcharias nesiotes*
*Carcharias phorcs*
*Eulamia ahenea*
*Eulamia alima*
*Eulamia nicaraguensis*
*Eulamia (Platyprion) platyrhynchus*
*Eulamia springeri*
*Galeocerdo fasciatus*
*Hemigaleops fosteri*
*Rhizoprionodon (Protozygaena) oligolinx*

**HEMISCYLLIIDAE**

*Chiloscyllium burmensis*
*Chiloscyllium confusum*

**HETERODONTIDAE**

*Gyropleurodus peruanus*

**HEXANCHIDAE**

*Hexanchus corinus*
*Hexanchus vitulus*
*Notorhynchus borealis*

**LAMNIDAE**

*Isurus alatus*
*Lamna ditropis*

**PARIASCYLLIIDAE**

*Cirrhoscyllium expolitum*

**PRISTIOPHORIDAE**

*Pristiophorus Schroederi*

**PROSCYLLIIDAE**

*Eridacnis Radcliffei*
RHINCODONTIDAE

-Micristodus punctatus-

SCYLIORHINIDAE

-Apristurus canutus-
-Apristurus parvipinnis-
-Catulus bruneus-
-Catulus cephalus-
-Catulus spongiceps-
-Catulus xanierus-
-Galeus araean antillensis-
-Galeus cadenati-
-Galeus piperatus-
-Galeus schultzi-
-Halaelurus boesemani-
-Halaelurus dawsoni-
-Halaelurus garmani-
-Halaelurus lutarius-
-Parmaturus campechiensis-
-Pentanchus herklotsi-
-Pentanchus profundicolus-
-Pentanchus verweyi-
-Schroederichthys maculatus-
-Schroederichthys tenais-
-Scyliorhinus hesperius-
-Scyliorhinus meadi-
-Scyliorhinus retifer besnardi-
-Scyliorhinus [Scyliorhinus] profundorum-

SPHYRNIDAE

-Cestracion oceanica-
-Sphyra brevirostris-
-Sphyra diplopleura-
-Sphyra media-

SQUALIDAE

-Centrocyllium (= Centroscyllium) ritteri-
-Centroscyllium excelsum-
-Centroscyllium ruscusum-
-Deania elegans-
-Etmopterus brachyurus-
-Etmopterus bullisi-
-Etmopterus carteri-
-Etmopterus lucifer-
-Etmopterus perryi-
-Etmopterus polli-
-Etmopterus schultzi-
-Etmopterus villoso-
-Etmopterus virens-
-Isistius pholidus-
-Nasisqualus profundorum-
-Squaliolus lati-caudus-
-Squalus philippinus-

TRIAKIDAE

-Galeorhinus zyopterus-
-Mustelus abotti-
-Mustelus dorsalis-
-Mustelus higmani-
-Mustelus lunatus-
-Mustelus nigromaculatus-
-Mustelus norrisi-
-Mustelus schmitti-
-Rhinotriacis henlei-
-Triakis acutipinna-
-Triakis barbouri-
-Triakis fehlmanni-
-Triakis semifasciatum-


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