

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

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

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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 (Vari 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 (Acc.) number.

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

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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 syntypes...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 was collected "alive, and containing 2 large embryos enclosed in

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.

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.

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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 (♀, 55 cm [525 mm]).
 Peru, La Ventanilla, between Ancon and Callao; field no. 09115, [R.E. Coker], 1907 or 1908.
Paratype [USNM 77543] (♀[♂], 32 cm [300 mm]), [Acc. 59892].
 Peru, Lobos de Tierra; field no. 09532, R.E. Coker, [4 Apr 1907].

TRIAKIDAE

- Triakis acutipinna*** Kato, 1968:320, figs. 1, 2.
Holotype USNM 201409 (♀, 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).

TRIAKIDAE

- 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

lectotype of *aethalorus*, which action would preclude any future question about the identity of Jordan and Gilbert's species. In order to stabilize the nomenclature, we designate the existing syntype as lectotype of *Carcharias aethalorus*. The missing syntype becomes, thus, a paralectotype.

[Syntype, Paralectotype] USNM 28202.

Mexico, Mazatlan; [C.H. Gilbert].

Remarks: This specimen has been missing since, or before, 1980.

CARCHARHINIDAE

Eulamia ahenea Stead, 1938:102.

Syntype? [*Lectotype?*] [USNM 114946] (σ , 98 inches [2490 mm]), [Acc. 213030].

Off Sydney Heads [New South Wales, Australia]; Z. Grey, 9 Apr 1936.

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*.

CARCHARHINIDAE

Isurus alatus Garrick, 1967:677, [figs. 7, 8, table 2, pls. 1, 3, 4].

Holotype USNM 197427 (σ , 1233 [1190] mm).

Tropical Indian or Pacific Oceans, [Japan]; 1962.

Remarks: This specimen was collected by a Japanese long liner and sent to the USNM by T. Abe.

Paratype USNM 197429 (σ , 1372 [1342] mm).

Same data as the holotype.

Paratype USNM 197435 (σ , 1720 mm).

Same data as the holotype.

Remarks: This specimen was received from T. Abe. The specimen is incomplete, lacking the caudal fin and the first dorsal fin, and measures 1720 mm from snout tip to just in front of the precaudal pit.

LAMNIDAE

Eulamia altima Springer, 1950:9.

Holotype USNM 133828 (σ , 52" [1225 mm]), [Acc. 175994].

Florida Keys, [Key West], off Cosgrove Reef; 95 [100] fms, [S. Springer], 2 Apr 1947.

Remarks: Springer (1950:10) included additional information on 11 adult males and 15 females from Bimini, Bahamas, and south Florida. Because S. Springer only designated a holotype, these additional specimens could be treated as paratypes. The deposition of these specimens is unknown; they may have been discarded after having been caught and measured.

CARCHARHINIDAE

Galeus arae antillensis 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*]

Remarks: Springer (1979) did not designate paratypes as such, but under "Other material examined," listed 33 specimens from various *Oregon* stations that were apparently deposited at USNM; however, no catalog numbers were assigned. Additionally, S. Springer provided data on vertebral numbers for a total of 50 specimens of this new subspecies, which would indicate that he had at least 16 more specimens for which he did not provide collection data or museum depository information. USNM records indicate a total of five specimens, the holotype and four additional specimens, which we treat as paratypes here. The location of the remaining 45 specimens is unknown.

[*Paratypes*] [USNM 214177] (3♀♀, 345–425 [338–420] mm; ♂, 335 mm), Acc. 273342, collected with holotype.

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

SCYLIORHINIDAE

Triakis barboursi Bigelow and Schroeder, 1944:27, pl. 8.

[*Paratype* USNM 123006] [♂, 253 mm, Acc. 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), [Acc. 168905].

Off the north coast of Cuba ([23°10'N, 81°29'W]); *Atlantis*, [sta 2999, 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.

TRIAKIDAE

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

Holotype USNM 204376 (♀, 385 mm), [Acc. 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. *Paratype* USNM 120751 (♂, 395 [392] mm).

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

SPHYRNIDAE

Halaelurus boesemani Springer and D'Aubrey, 1972:11, figs. 1d, 2, tables 1–3.

Holotype USNM 205136 (♂, 430 mm), [Acc. 273221].

Off Somalia (11°37'N, 51°27'E); *Anton Bruun*, 110E Cruise 9, sta 465, 67–72 m, 18 Dec 1964.

[*Paratypes*]

Remarks: In addition to the holotype listed under "Study material," Springer and D'Aubrey provided information on 9 other specimens (4 deposited in USNM), which we treat as paratypes.

[*Paratypes* USNM 201763] (♀, 432 mm; 2 ♂♂, 416–420 [426] mm), [Acc. 273342].

Collected with the holotype.

[*Paratype* USNM 221424] (♀), Acc. [2612175].

[Somalia (9°41'N; 51°03'E)]; *Anton Bruun*, [cruise 9], sta 445, 60–70 m, [16 Dec 1964].

Remarks: The lot consists of 7 egg cases (one is empty), 2 embryos (48, 52 mm), and a caudal fin, all which we assume were the "identifiable parts of a female with 4 egg-capsules in each oviduct," referred to by Springer and D'Aubrey.

SCYLIORHINIDAE

Notorhynchus borealis Gill, 1864:150.

[*Holotype* USNM 110920] (1).

Oregon, Nisqually; Wilkes Exploring Expedition, [field no. 6136].

Remarks: Only the dried jaws exist in the USNM collection, which formed the basis of Gill's description.

HEXANCHIDAE

Etmopterus brachyurus Smith and Radcliffe in Smith, 1912a:679, pl. 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.

SQUALIDAE

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.

SCYLIORHINIDAE

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

Chiloscyllium burmensis Dingerkus and DeFino, 1983:9, figs. 3, 7, 59, 60, tables 1-28.

Holotype USNM 202672 (♂, 575 [569] mm), [Acc. 272254].

Burma, off Rangoon (15°04'N, 95°51'E); *Anton Bruun*, [Cruise 1, sta 41A, 29-33 m], 31 Mar 1963.

HEMISCYLLIIDAE

Galeus cadenati Springer, 1966:609, figs. 20, 21, 27[g.], 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.

[Paratypes]

Remarks: Springer (1966) specified only a holotype in his description of *G. cadenati*; however, in table 1, he provides vertebral counts on 13 specimens, and in table 6, he provides measurements on 10 specimens. Furthermore, his illustration of the species (fig. 20b) is based on a 300 mm female specimen that is not the holotype (Springer, 1966:610, first sentence under "Description of the holotype."). Because S. Springer did not exclude these specimens from his type series, we treat them as paratypes. The total number of specimens in S. Springer's type series must have been at least 13, based on the number in table 1. We have been able to locate only 9 of these specimens (holotype and 8 paratypes).

[Paratype USNM 220416 (♀, 277 mm), Acc. 260468].

[Off Panama (9°16'N, 81°37'W); *Oregon*, sta 3583, 280 fms, 25 May 1962].

[Paratypes USNM 220417 (2 ♀♀, 282, 309 mm), Acc. 260468].

[Off Panama (9°00'N, 81°23'W); *Oregon*, sta 3599, 250 fms, 31 May 1962].

Remarks: Formerly 260468-F3.

[Paratype USNM 221382 (♀, 272 mm), Acc. 273342].

[Off Panama (9°13'N, 80°43'W); *Oregon*, sta 3592, 240

fms, 30 May 1962].

[Paratype USNM 221414 (♀, 340 mm), Acc. 273342].

[Off Panama (9°15'N, 81°32'W); *Oregon*, sta 3582, 250 fms, 25 May 1962].

[Paratypes USNM 221418 (2 ♀♀, 302, 323 mm), Acc. 273342].

[Off Panama (9°0'N, 81°23'W); *Oregon*, sta 3599, 250 fms, 31 May 1962].

[Paratype USNM 231725 (♀, 274 mm), Acc. 260468].

Collected with the holotype.

SCYLIORHINIDAE

Parmaturus campechiensis Springer, 1979:100, fig. 59.

Holotype USNM 206184 (♀, 157 mm), [Acc. 294076].

Gulf of Mexico, northwestern Bay of Campeche (21°33'N, 96°48'W); *Oregon II*, sta 10956, 1097 m [600 fms], 3 Jun 1970.

SCYLIORHINIDAE

Apristurus canutus Springer and Heemstra in Springer, 1979:16, figs. 10-13, table 1.

Holotype USNM 206176 (♀, 455 mm), [Acc. 294076].

[Lesser Antilles], Leeward Islands near Anguilla (18°18'N, 63° 23'W); *Oregon II*, sta 10834, 687 m, [6 Dec 1969].

Paratypes USNM 206180 (♀, 395 [389] mm; 4 ♂♂, 319-428 [313-424] mm), [Acc. 273342].

[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

Etmopterus carteri Springer and Burgess, 1985:585, figs. 1-2.

Holotype USNM 206090 (♀, 190 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.

Paratype USNM 206091 (♂, 190 [180] mm), [Acc. 294076].

Caribbean coast of Colombia, [off Barranquilla] (11°09'N, 74°26'30"W); *Oregon*, sta 4859, 329-356 m, 19 May 1964.

Paratypes USNM 206092 (3 ♀♀, [179-209]; ♂, [177], 180-212 mm), [Acc. 294076].

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.

SQUALIDAE

Catulus cephalus Gilbert, 1892:541.

[*Lectotype* USNM 125094] (σ , 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.

[*Paralectotypes* USNM 206019 (3 σ σ , 82–86 mm)], [Acc. 163614].

Gulf of California, [near Santa Catalina Island (25°27'30"N, 110°50'30"W)]; *Albatross*, sta 3007, 362 fms, [17 Mar] 1889.

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.

SCYLORHINIDAE

Chiloscyllium confusum Dingerkus and DeFino, 1983:9, figs. 2, 4–7, 51, 57, 61–64, tables 1–28.

Paratype USNM 148105 ([σ], 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 ([σ], 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 ([σ], 546 mm), [Acc. 178732].

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

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

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

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

India, [off] Kerala State, Neendakarai, [08°56'N, 76°30'E]; F.H. Berry, 8 Oct 1966.

Remarks: The specimen was purchased at a fish market.

Paratypes USNM 202671 (2[3], [σ σ], 541–547 [526, 539] mm).

India, Kerala State, Neendakarai (08°56'N, 76°30'E); F.H. Berry, 8 Oct 1966.

Remarks: These specimens were purchased at Neendakarai fish landing. All USNM and other records list 3 specimens in this lot; Dingerkus and Defino's (1983) record of 2 specimens appears to be an error.

Paratypes USNM 202674 (2, 606–623 mm [σ , 595 mm; σ , 614 mm]), [Acc. 272254].

West Pakistan (25°11'N, 66°20'E); *Anton Bruun*, [Cruise 4-B, sta 276A, 12.5 fms], 8 Dec 1963.

Paratypes USNM 221698 (2 [σ σ], 607–612 [600, 611] mm).

West Pakistan (25°11'[16]'N, 66°20'E); *Anton Bruun*, [Cruise 4-B, sta 276A, 12.5 fms/23–26 m], 8 Dec 1963.

HEMISCYLLIIDAE

Hexanchus corinus Jordan and Gilbert, 1880:352.

Type [*Holotype* USNM 27369] (σ , 43" [1021 mm]).

[Washington], at Neah Bay, near Cape Flattery; J.G. Swan, [1880].

Remarks: Jordan and Gilbert state that they had a second specimen collected by C.H. Gilbert at Soquel, on the Bay of Monterey, California. The location of this specimen is unknown; it does not appear to have been received at USNM.

HEXANCHIDAE

Halaelurus dawsoni Springer, 1971:236, fig. 1.

Paratype USNM 205537 (σ , 186 mm), [Acc. 289062].

New Zealand, near Auckland Islands (50°01'S, 167°49'E); 203–205 fms (371–375 m).

Paratype USNM 206096 (σ , 324 mm), [Acc. 294076].

New Zealand, west of southern South Island (44°32'30"S, 166°41' [00"]E); 213–230 fms (389–420 m), [M. Hine], 20 Nov 1970.

SCYLORHINIDAE

Sphyrna diplana Springer, 1940a:46, [figs. 1, 2].

Holotype USNM 108451 (σ , 1.735 m), [Acc. 151799].

Florida, off Englewood; [*Dalton*, sta 819], 24 Jan 1939.

Paratype USNM 108452 ([σ , 1500 mm]), [Acc. 151799].

[Florida, Englewood; S. Springer, 7 Jan 1939].

Remarks: Only the head exists in the USNM collection.

Paratype USNM 110296 ([σ , 2500 mm]), [Acc. 151799].

[Florida, Englewood; S. Springer, 15 Feb 1938].

Remarks: Only the jaws exist in the USNM collection.

Paratype USNM 110297 ([σ , 1850 mm]), [Acc. 151799].

[Florida, Englewood; S. Springer, 7 Jan 1939].

Remarks: Only the jaws exist in the USNM collection.

SPHYRNIDAE

Lamna ditropis Hubbs and Follett, 1947:194.

Paratype USNM 27368 (σ , 792 mm).

California, Santa Cruz; [D.S. Jordan, 1880].

Remarks: This specimen is illustrated in Jordan and Evermann (1900, pl. 6: fig. 22).

LAMNIDAE

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.

TRIAKIDAE

Deania eglantina Jordan and Snyder, 1902:80, [fig. 2].

[Holotype] USNM 49524 (♀, 12" [256+ mm]).

Japan, Totomi Bay [Sea] (= Enshu Bight), off Numazu, [Omai Zaki Lt.]; *Albatross*, [sta 3735, 16 May] 1900.

Remarks: A portion of the caudal fin is missing.

SQUALIDAE

Deania elegans Springer, 1959:31, fig. 1.

Holotype USNM 159603 (♂, 315 [300] mm).

On the continental slope off North Carolina (34°40'N, 75°32'W); *Delaware* [58-1-tow 5], 200 fms, 23 Feb 1958.

SQUALIDAE

Centroscyllium excelsum Shirai and Nakaya, 1990:392, figs. 1-3[4], table 1.

Paratype USNM 300576 (♂, 574 [569] mm).

Emperor Seamount Chain (38°37'-49°59'N, 171°06'-170°00'E); 800-1000 m, 13 Apr-17 May 1977.

SQUALIDAE

Cirrhoscyllium exolitum Smith and Radcliffe in Smith, 1913b:568, pl. 45.

Type [Holotype] USNM 74603 (♀, 33.5 cm [325 mm]), [Acc. 65731].

China Sea, between northern Luzon and China (21°33'N, 118°[116°]13'E); *Albatross*, sta 5310, 100 fms, 4 Nov 1908.

PARASCYLLIDAE

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.

CARCHARHINIDAE

Triakis fehlmanni Springer, 1968:614, figs. 1-4, 5c.

Holotype USNM 202969 (♀, 46 cm [451 mm]), [Acc.

273342].

Somalia, southwest of Cape Guardafui (11°24'N, 51°35'E); *Anton Bruun*, Cruise 9, sta 463, 70-170 m, 17 Dec 1964.

TRIAKIDAE

Hemigaleops fosteri Schultz and Welander in Schultz et al., 1953:9, figs. 5a-f, pl. 1.

Holotype USNM 152917 ([♀], 662 [652] mm), [Acc. 188107].

Bikini Atoll, Reer Island; [L.R.] Donaldson and [A.D.] Welander, 8 Jul 1946.

CARCHARHINIDAE

Carcharias fronto Jordan and Gilbert, 1882a:102.

[Holotype] USNM 28167 (♀, 36" [825 mm]).

Mexico, Mazatlan; [C.H. Gilbert].

CARCHARHINIDAE

Halaelurus garmani Fowler, 1934:235, fig. 1.

Type [Holotype] USNM 43749 ([♀], 240 mm).

East Indies; *Albatross*, Philippine Expedition, 1907-10.

SCYLIORHINIDAE

Rhinotriacis henlei Gill, 1862:486.[Holotype USNM 4487] ([♀], 9¹/₄ [""] [228 mm]).

California, [San Francisco]; S. Hubbard.

TRIAKIDAE

Pentanchus herklotsi Fowler, 1934:238, fig. 3.

Type [Holotype] USNM 93134 ([♀], 312 [326] mm), [Acc. 65731].

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.

SCYLIORHINIDAE

Scyliorhinus hesperius Springer, 1966:603, figs. 7, 9, 15, 27, tables 1, 3, 4.

Holotype USNM 187732 (♀, 415 [404] mm), [Acc. 241344].

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.

SCYLIORHINIDAE

Mustelus higmani Springer and Lowe, 1963:245, fig. 1, [table 1].

Holotype USNM 156930 (♂, 48 cm [487] mm).

Surinam, northeast of Parimaribo (= 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,

1958). All specimens of *M. higmani* in the USNM collection collected during the above specified cruises are treated as paratypes. The holotype was collected on 30 May 1957, at station 155 aboard the *Coquette*, and not during June–August as stated in the original description. Therefore, any additional specimens collected aboard the *Coquette* during the month of May are also treated as paratypes. Of the 808 “paratypes” indicated by Springer and Lowe, 40 are in the USNM collections; none of these are embryos.

[Paratype USNM 187693 (♀, 515 mm).

Off Surinam [8°32'N, 59°53'W]; *Oregon*, [sta 225, 22–25 fms, 28 Aug 1958].

[Paratype USNM 187695 (♂, 476 mm), Acc. 241344].

Off Surinam [6°24'N, 54°27'W]; *Oregon*, [sta 2325, 17 fms, 15 Sep 1958].

[Paratypes USNM 187697 (4 ♀♀, 366–392 mm), Acc. 241344].

Off Surinam [6°21'00"N, 54°59'00"W to 6°20'30"N, 54°54'W]; *Coquette*, [sta 145, 14 fms, 30 May 1957].

[Paratypes USNM 187698 (2 ♀♀, 392, 395 mm), Acc. 241344].

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

[Paratypes USNM 187720 (5 ♀♀, 397–535 mm; 8 ♂♂, 313–440 mm)].

Off Surinam [6°37'N, 55°13'W]; *Oregon*, [sta 2281, 22 fms, 7 Sep 1958].

[Paratypes USNM 187721 (4 ♀♀, 475–485 mm; ♂, 447 mm), Acc. 241344].

Off Surinam [7°00'N, 55°43'W]; *Oregon*, [sta 2273, 38 fms, 3 Sep 1958].

[Paratypes USNM 187723 (6 ♀♀, 329–397 mm), Acc. 241344].

Off Surinam [6°24'N, 54°55'W]; *Coquette*, [sta 140, 14 fms, 30 May].

[Paratypes 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].

[Paratypes USNM 196546 (3 ♀♀, 368–375 mm; ♂, 437 mm), Acc. 236241].

Off Surinam, northeast of Parimaribo (= 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 2281, 22 fms, 7 Sep 1958].

TRIAKIDAE

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 3815, [228–312 fms, 28 Mar] 1902.

Remarks: This specimen has been partially skinned. The head and fins are intact except the caudal fin, which is damaged.

CARCHARHINIDAE

Carcharias lamiella Jordan and Gilbert, 1882b:110.

[Holotype] USNM 27366 (♂, 2' [717 mm]).

California, San Diego Bay; [C.H. Gilbert and D.S. Jordan].

Remarks: In addition to the holotype, Jordan and Gilbert had a pair of jaws (paratype) taken from a specimen from the coast of lower California. There is no record that these jaws were received at USNM, and their present location is unknown.

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], (13°42'N, 120°57'15"E); *Albatross*, sta 5268, 170 fms, 8 Jun 1908.

[Paratype USNM 76679] (♀, 11.5 cm [108 mm]).

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

SQUALIDAE

Carcharias longurio Jordan and Gilbert, 1882a:106.

[Syntype, Lectotype] USNM 28330 (♂, 32" [792 mm]).

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

Remarks: V.G. Springer (1964) revised *Rhizoprionodon*, in which genus *C. longurio* is included, but neglected to designate a lectotype for *C. longurio*. We take this opportunity to do so here. Dimensions of the lectotype can be found in Springer's (1964) table 14. As a result of our action the remaining syntypes become paralectotypes.

[Syntype, Paralectotype] USNM 28306 ([♀, 517 mm]).

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

[Syntype, Paralectotype] USNM 28331.

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.

[Syntype, Paralectotype] USNM 29541.

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.

[Syntype, Paralectotype] USNM 29551 ([♀, 518 mm]).

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

CARCHARHINIDAE

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. Böhlke (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).

SQUALIDAE

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.

TRIAKIDAE

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.

[*Paratypes* USNM 221660 (14 ♀♀, 309-367; 2 ♂♂, 307, 316 mm), Acc. 273221].

Collected with the holotype.

SCYLIORHINIDAE

Schroederichthys maculatus Springer, 1966:605, figs. 4, 5, 7, 9, 16a, 17, 19, tables 1, 5, 6.

Holotype USNM 185556 (♂, 328 mm), [Acc. 220144].

In the Caribbean sea NNW of Cape Gracias a Dios,

Honduras (16°39'N, 82°29'W); *Oregon*, sta 1870, 410 m [225 fms], 21 Aug 1957.

Paratype [USNM 185557] (♀, 335 mm), [Acc. 220144].

Collected with the holotype.

Remarks: Springer (1966:606) stated that *S. maculatus* was known from 48 specimens (recorded under "Notes"), but he provides measurements on 49 specimens (table 6). Because S. Springer designated a holotype and a paratype, the other 47 specimens are not paratypes according to ICZN Article 72(b)(VI).

SCYLIORHINIDAE

Scyliorhinus meadi Springer, 1966:600, figs. 3, 7, 14, 27, tables 1, 3, 4.

Holotype USNM 188049 (♂, 247 [240] mm), [Acc. 241344].

Florida, off Cape Kennedy (28°21'N, 78°[79°]51'W); Silver Bay, [Cruise 36], sta 3711, 329 m [180 fms], 26 Jan 1962.

[*Paratypes*]

Remarks: Springer (1966:600) stated under "Additional material examined" that the species is known only from the holotype, two immature females [USNM 188050] from the same station as the holotype, an immature male [location unknown] from Silver Bay station 2475, and an immature male [USNM 188051] from Combat station 51. The specimens other than the holotype are here considered to be paratypes.

[*Paratypes* USNM 188050] (♀, [230 mm; ♂ 178 mm]), [Acc. 241344].

Collected with the holotype.

[*Paratype* USNM 188051] (♂, [191 mm]), Acc. 241344.

Florida, St. Augustine [29°44'N, 80°12'W]; *Combat*, sta 51, 185 fms, 19 Aug 1956.

SCYLIORHINIDAE

Sphyrna media Springer, 1940b:162, [fig. 3].

Paratype USNM 28160 (♀, 777 [735] mm).

[Mexico], at Mazatlan; C.H. Gilbert.

SPHYRNIDAE

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.

CARCHARHINIDAE

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.

CARCHARHINIDAE

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.

TRIAKIDAE

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

Holotype USNM 106639 (♂, 723 [711] mm), [Acc. 144867].

Florida, off Englewood; 3 fms, S. Springer, 5 Mar 1938.

Allotype [*Paratype*] USNM 57369 (♀, 825 [787] mm), [Acc. 46822].

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. 46822].

Collected with allotype.

TRIAKIDAE

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.

SPHYRNIDAE

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].

CARCHARHINIDAE

Apristurus parvipinnis Springer and Heemstra in Springer, 1979:25, fig. 15, table 1.

Holotype USNM 206178 (♂, 476 [470] mm), [Acc. 294076].

Gulf of Mexico, Florida, off Pensacola [28°33'N, 87°09'W; *Oregon* II, sta 10874], 1115 m [610 fms, 15 Jan 1970].

Paratype USNM 206179 (♀, 465 [453] mm), [Acc. 294076]. Collected with holotype.

Paratype USNM [220969] (♀, 395 mm).

Off the Caribbean coast of western Panama [09°20'N, 81°24'W]; *Oregon*, sta 3586, 875–930 m, [25 May 1962].

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

SCYLORHINIDAE

Etmopterus 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: V.G. Springer and J.P. Gold (1990, pl. 3a) provide a color photograph of the holotype approximately 0.6× natural size.

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 (4 ♀♀, [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 phorcys Jordan and Evermann, 1903:163.

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

Hawaiian Islands, Honolulu; field no. 03747, [D.S.] Jordan and [B.W.] Evermann, 1901.

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

CARCHARHINIDAE

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

Paratype USNM 200413 (♀, 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 philippinus 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

Eulamia (Platypodon) platyrhynchus 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 platyrhynchus* 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 (1).

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. Böhlke (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 46850.

[*Syntype*, *Paralectotype* USNM 46850] ([♀, 798 mm]).

Lower California, [Mexico], Magdalena Bay; *Albatross*, [field no. TT 768], [1889].

CARCHARHINIDAE

Isistius plutodus Garrick and Springer, 1964:679, figs. 1a, 2a,c, table 1.

Holotype USNM 188386 (♀, 423 [415] mm), [Acc. 247715].

Off the coast of Alabama, [off Mississippi Delta] (28°58'N, 88°18'W), 445–545 fms, *Oregon*, sta 3102, [27 Oct, 1960].

Remarks: The depth at which the specimen was captured was not determined, although the bottom depth was 445–545 fathoms.

SQUALIDAE

Etmopterus polli Bigelow et al., 1953:241, fig. 7.

Type [Holotype USNM 163370] (♂, 197 [213] mm), [Acc. 199661].

Tropical West Africa, [52 miles W by S of Moita Seca, Angola] (06°08'S, 11°24'E); [Expédition Océanographique Belge, 1948–49, sta 53], 350–380 m, [26 Oct 1948].

Remarks: This specimen was originally cataloged as MCZ 38001; received from Dr. Max Poll. It is probably the 208 mm male reported by Poll (1951:67) from station 53, as *Etmopterus hillianus*.

[*Paratype* USNM 163364] ([♂, 149 mm]), [Acc. 199661].

Tropical West Africa, [35 miles W of Cape Morro de Benguela Velha, Angola] (10°45'S, 13°10'E); [Expédition Océanographique Belge, 1948–49, sta 87], 350 m, [12 Dec 1948].

Remarks: One of 10 specimens (five females and five males, 106–232 mm) listed as “additional material” contributed by Dr. Max Poll, and all originally cataloged as MCZ 38000. The remaining nine paratypes are deposited in the MCZ collection as non-types. All 10 specimens were probably among the 83 specimens reported by Poll (1951:67) from station 87, as *Etmopterus hillianus*.

SQUALIDAE

Pentanchus profundicolus Smith and Radcliffe in Smith, 1912b:490, pl. 42.

Type [Holotype] USNM 70260 (♂, 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 Leyte and Mindanao [9°6'30"N, 125°00'20"E], *Albatross*, sta 5495, 976 fms, 1 [2] Aug 1909.

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

[Paratype USNM 99492] (♀, 22.5 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 99493] (♀, 44 cm [405 mm]), [Acc. 65731].

Between Marinduque and Luzon [13°21'N, 122°18'45"E]; *Albatross*, sta 5219, 530 fms, 23 Apr 1908.

Remarks: This specimen is in very poor condition.

[Paratype USNM 99495] ([♀], 33.5 cm [317 mm]), [Acc. 65731].

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

[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.

SQUALIDAE

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

[Holotype] USNM 35646 ([♂], 20¹/₂" [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 vertebrae 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 317570.

[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.

PROSCYLLIIDAE

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

[Paratype USNM 51388] ([♂, 332+ mm]).

Japan, Misaki; [D.S.] Jordan, and [J.O.] Snyder, summer of 1900.

Remarks: The caudal fin is missing and the specimen is in poor condition. Jordan and Fowler (1903) spelled *Centrocyllium* 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

Centrocyllium ruscusum Gilbert, 1905:580, fig. 230.

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

Hawaiian Islands, vicinity of Kauai (18°-26°N, 156°-172°W); *Albatross*, sta 3997, 418-429 fms, [D.S.] Jordan, [B.W.] Evermann, Nutting, Snyder, and Fisher, [14] Jun 1902.

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].

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

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), [Acc. 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), [Acc. 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.

PRISTIOPHORIDAE

Etmopterus schultzi Bigelow et al., 1953:252, fig. 9.

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

Gulf of Mexico (29°11' N, 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 160849] (♀, 284 mm), [Acc. 190888].

(29°23' N, 82[87]°25' W); *Oregon*, sta 270, 220 fms, 17 Feb 1950 [1951].

[*Paratypes* USNM 160850] (2 ♀♀, 195, 273 mm; ♂, 256 mm), [Acc. 190888].

(29°24' N, 86°56' W); *Oregon*, sta 271, 300 fms, 18 Feb 1950 [1951].

[*Paratypes* USNM 160851] (2 ♀♀, 265, 293 mm; 4 ♂♂, 252–280 mm), [Acc. 190888].

Collected with the holotype.

[*Paratypes* 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] (2 ♀♀, 232, 250 mm; 3 ♂♂, 260–290 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

Galeus schultzi Springer, 1979:67.

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.

Paratype 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.

SCYLORHINIDAE

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.

TRIAKIDAE

Catulus spongiceps Gilbert, 1905:579.

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

Hawaiian Islands, vicinity of Bird Island; *Albatross*, sta 4151, 313–800 fms, [5] Aug 1902.

SCYLIORHINIDAE

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

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

CARCHARHINIDAE

Schroederichthys tenuis Springer, 1966:606, figs. 16b, 18, tables 1, 5, 6.

Holotype USNM 188052 (♂, 230 mm), [Acc. 241344]. Atlantic [Ocean], [Brazil], off the mouth of the Amazon River (01°49'N, 46°48'W); *Oregon*, sta 2083, 410 m [225 fms, 17 Nov 1957].

Paratype USNM 188053 (♂, 180 mm), [Acc. 241344], collected with the holotype.

SCYLIORHINIDAE

Pentanchus verweyi Fowler, 1934:237, fig. 2.

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

Borneo, vicinity Sibuko Bay, [Sipadan Island (04°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 51583 ([♂], 170 mm), [Acc. 43076].

Hawaiian Islands, off the south coast of Molokai, [Lae-o Ka Laau Light]; *Albatross*, sta 3824, 222–498 fms, [1] Apr 1902.

SQUALIDAE

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.

[*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].

[*Paratypes* USNM 160852] (0), [Acc. 190888].

Northern part of Gulf of Mexico (29°13'[13'18"N, 88°00'W]; *Oregon*, sta 351, 200 fms, [22 May 1951].

Remarks: The USNM ledger states that this lot originally contained seven specimens, all of which were exchanged to MCZ. According to MCZ records, MCZ 38160 contains six specimens exchanged from USNM 160852. The discrepancy has not been solved.

[*Paratypes* USNM 160853] (3 ♀♀, [209–225 mm]), [Acc. 190888].

Northern part of Gulf of Mexico (27°44'N, 85°09'W); *Oregon*, sta 489, 254 fms, [29 Sep 1951].

Remarks: The USNM ledger states that this lot originally contained five specimens, of which two were exchanged to MCZ. According to MCZ records, MCZ 38081 contains one specimen exchanged from USNM 160853. The discrepancy has not been solved.

[*Paratypes* USNM 160854] (5 ♀♀, [164–244 mm]; 3 ♂♂, [159–198 mm, Acc. 190888].

Northern part of Gulf of Mexico (27°44'N, 85°09'W); *Oregon*, sta 489, 254 fms, [29 Sep 1951].

Remarks: This lot originally contained 12 specimens, of which four were exchanged to MCZ according to USNM records. MCZ has no record of these specimens.

[*Paratypes* USNM 160861] (6 ♂♂, [95–159 mm]), [Acc. 190888].

Northern part of Gulf of Mexico (29°12'[11'30"N, 88°08'[07'30"W]; *Oregon*, sta 382, 190–210 fms, [21 Jun 1951].

[*Paratypes* USNM 160862] (2 ♀♀, [84, 230 mm]; 1 ♂, [83 mm]), [Acc. 190888].

Northern part of Gulf of Mexico (29°13'[18"N, 88°00'W); *Oregon*, sta 351, 200 fms, [22 May 1951].

[*Paratypes* USNM 160863] (♀, [67 mm]; ♂, [65 mm]), [Acc. 190888].

Northern part of Gulf of Mexico (27°44'N, 85°09'W); *Oregon*, sta 489, 254 fms, [29 Sep 1951].

[*Paratypes* USNM 160864] (2 ♀♀, [76, 78 mm]; embryo, [55 mm]), [Acc. 190888].

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

[*Paratypes* USNM 165560] (♀, [195 mm]; ♂, [170 mm]), [Acc. 190888].

Collected with the holotype.

Remarks: Both specimens were originally part of USNM 160859.

SQUALIDAE

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 (♀, 142 cm), [Acc. 252953].

Collected with the holotype.

HEXANCHIDAE

Catulus xaniurus Gilbert, 1892:540.

[*Syntype*, *Lectotype* USNM 46719 (♀, 543 mm) Acc. 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'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.

SCYLIORHINIDAE

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.

TRIAKIDAE

Taxa Arranged Alphabetically by Family, Species, and Subspecies

CARCHARHINIDAE

Carcharhinus natator
Carcharias aethalorus
Carcharias fronto
Carcharias insularum
Carcharias lamiella
Carcharias longurio
Carcharias nesiotus
Carcharias phorcys
Eulamia ahenea
Eulamia altima
Eulamia nicaraguensis
Eulamia (Platypodon) 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

PARASCYLLIIDAE

Cirrhoscyllium exolitum

PRISTIOPHORIDAE

Pristiophorus schroederi

PROSCYLLIIDAE

Eridacnis radcliffei

RHINCODONTIDAE

Micristodus punctatus

SCYLIORHINIDAE

Apristurus canutus
Apristurus parvipinnis
Catulus brunneus
Catulus cephalus
Catulus spongiceps
Catulus xaniurus
Galeus arae 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 tenuis
Scyliorhinus hesperius
Scyliorhinus meadi
Scyliorhinus retifer besnardi
Scylliorhinus [Scyliorhinus] profundorum

SPHYRNIDAE

Cestracion oceanica
Sphyrna bigelowi
Sphyrna diplana
Sphyrna media

SQUALIDAE

Centrocyllium (= Centroscyllium) ritteri
Centroscyllium excelsum
Centroscyllium ruscsum
Deania eglantina
Deania elegans
Etmopterus brachyurus
Etmopterus bullisi
Etmopterus carteri
Etmopterus lucifer
Etmopterus perryi
Etmopterus polli
Etmopterus schultzi
Etmopterus villosus
Etmopterus virens
Isistius plutodus
Nasisqualus profundorum
Squaliolus laticaudus
Squalus philippinus

TRIAKIDAE

Galeorhinus zyopterus
Mustelus abbotti
Mustelus dorsalis
Mustelus higmani
Mustelus lunulatus
Mustelus nigromaculatus
Mustelus norrisi
Mustelus schmitti
Rhinotriacis henlei
Triakis acutipinna
Triakis barbouri
Triakis fehlmanni
Triakis semifasciatum

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