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OCCURRENCE OF THE BRAMBLE SHARK *(ECHINORHINUS BRUCUS)* IN CALIFORNIA

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On the basis of a photograph of a 62-inch, 100-pound specimen caught off Santa Barbara, California, in July, 1939, it has been suspected by California ichthyologists that the very rare but wide-ranging bramble shark, *Echinorhinus brucus* (Bonnaterre), occurs along the California coast. Since the shark was not preserved and the head had obviously been mutilated by an injury that. had healed, and since this species had never been reported from near California, the identification did not seem assured and the record has not been published. This strange shark was examined and photographed at the shark processing plant at Moss Landing, California, by a fish and game warden, Charles Holtzhauser, who gave the notes and picture to Robert D. Byers, then on the research staff of the Bureau of Marine Fisheries. The data were then referred to Dr. George S. Myers of Stanford University, who made the identification on the basis of the photograph.

FIG. 16. Bramble shark six feet five inches long, caught off Los Angeles County in 1944: the first record for the eastern Pacific. Photograph taken by Donald H. Fry, Jr., from fresh specimen on day of capture.

The occurrence of the bramble shark in California is now definitely confirmed. On August 21, 1944, Capt. John DiMeglio of the boat "Artemus" took a specimen more than six feet long near Point Vicente in Los Angeles County. It was caught in a gill-net that was set in 50 to 55 fathoms off Portuguese Bend (approximate position : Lat. 33° 43.0' N., Long. 118° 22.5' W.) . Not recognizing the kind, Capt. DiMeglio pre-

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sented the strange shark, eviscerated, to the California State Fisheries Laboratory. It has been donated to the United States National Museum, where it has been given catalogue number 130667. This is apparently the only specimen of the genus that is preserved in any North American museum.

So far as we can find, no record of this kind of shark from the eastern Pacific has been published. The only North American record appears to remain that of a seven-foot specimen which was washed ashore at Provincetown, Massachusetts, in December, 1878 (Goode and Bean, 1879, p. 31) . The second and probably the only other report for the New World is that of an example about two and one-half meters (nearly ten feet) long from Mar del Plata, in the Province of Buenos Aires, Argentina (Berg, 1898, p. 10).

The bramble shark has been reported as somewhat common only on the Atlantic coast of Europe. It has also been recorded from the Mediterranean Sea and from West and South Africa, Australia, Tasmania, New Zealand and Japan (detailed references will be cited by Bigelow and Schroeder in their forthcoming treatise on the elasmobranch fishes of the western North Atlantic). rt probably has a wide range in temperate and subtropical waters.

An Hawaiian specimen described by Pietschmann (1928, p. 297; 1930, pp. 3-4, Pl. 1 and Fig. 1) as *Echinorhinus cookei* seems to fall within the range of variation assigned to *E. brucus*. Pending a thorough comparative study of the genus, we regard this nominal species, and also *E. obesus* Smith from South Africa and *E. (Rubusqualus) mcCoyi* Whitley of Australia, as synonyms of *E. brucus*. Dr. Bigelow has compared the photographs of our specimen with sketches of a European specimen just made by Col. Tenison at the British Museum, and writes that this comparison confirms the view that there is no difference between the Pacific and Atlantic forms of *Echinorhinus*. We follow Garman (1913, p. 243) and more recent authors in adopting the name *E. brucus* (Bonnaterre, 1788) in preference to that of *E. spinosus* (Gmelin, 1789), on the basis of priority. We have, however, made no special study of the dates of publication in question. The synonymy of *E. brucus* will be treated in the monograph by Bigelow and Schroeder referred to above.

An outstanding character of this species of shark is the lack of an anal fin coupled with the small size of the two dorsal fins, of which the anterior one originates about opposite the insertion of the long-based pelvic. The peculiar teeth, similar in each jaw, have a very oblique main cusp and, at each side, a single subhorizontal secondary cusp (published descriptions and figures indicate that two or even three secondary cusps may be developed on one or both sides). The teeth number 12+13=25 in the upper jaw and 12+11=23 in the lower (left side counted first), and thus fall within the range of 22 to 26 in each jaw, as commonly accredited to the species. The skin is distinctively armed with isolated tubercular scales, each with a hard stellate base and a small spine at the summit (hence the common name "bramble shark"). The nostrils are divided by a sharply pointed flap from the front margin. There is a short fold around the corner of the mouth. Most of these specific characters are well shown in the two photographs of the California specimen (figures 16 and 17). After two months in cold storage this specimen

was almost uniform dark brown, without clear indications of the dark spots reported in some descriptions.

Measurements follow of the California specimen, taken on the left side with the aid of special tuna-measuring calipers on the fresh specimen as soon as it had largely thawed out after having been hard-frozen for two months. The proportions are expressed as thousandths of the total length (196 centimeters). Greatest depth of body, about 141. Least depth of caudal peduncle, 62. Distance from tip of snout to first gill-slit, 192; to last gill-slit, 261; to insertion of pectoral fin, 260; to insertion of pelvic, 583; to origin of first dorsal fin, 590. Distance between origins of dorsal fins, 103. Interdorsal space, 39. Distance between bases of second dorsal and caudal fins, 37. Length of front

FIG. 17. Head of the California specimen of *Echinorhinus brucvs*, showing structure of mouth, lips, teeth and nostrils, and the arrangement of the prickly scales. Photograph by Donald H. Fry, Jr.

margins of fins: first dorsal, 97; second dorsal, 88; upper caudal lobe, 218; lower caudal lobe, 117; pectoral, 115; pelvic, 89. Length of base of fins : first dorsal, 55; second dorsal, 51; pectoral, 72; pelvic, 104. Distance from origin of first dorsal fin to lateral line, 51. Height of first gill-slit, 44; of last gill-slit, 65. Length of snout : preocular, 81; preoral (from fold of lip), 72. Least distance between nostrils, 45. Width of left nostril, 15. Least interorbital width, 91. Length of orbit, 18. Suborbital width, 24. Width of mouth overall, **111.** Length of mouth perpendicular to line joining ends of jaws, 41. Length of grooves at corner of mouth : upper, 16; lower, 19. Depth of snout above front of mouth, 51.

Although it was six feet, five inches long prior to preservation the male specimen at hand does not appear to have attained full maturity, for its claspers are very simple in structure, with merely a groove along one side, and are short, not reaching the posterior angle of the pelvic fin.

The taking of the bramble shark in California is a prompt confirmation of the opinion recently expressed in this journal by Barnhart and Hubbs (1944, p. 53) to the effect that many discoveries will follow upon a more thorough exploration of the fish fauna of the moderate depths along the coast of this State. Probably *Echinorhinus* will prove to be much less rare in California than the available data would seem to indicate.

Acknowledgements

For information and references dealing with the distribution of this shark we are particularly indebted to Henry B. Bigelow of the Museum of Comparative Zoology of Harvard University. Further advice has been received from Leonard P. Schultz of the United States Natural Museum and from three California ichthyologists, George S. Myers and Rolf L. Bolin of Stanford University and W. I. Follett of Oakland. Robert D. Byers, now of the Fish and Wildlife Service, has given data on the specimen that was caught off Santa Barbara. We also thank the Union Ice and Storage Company for the cold storage of the specimen. Donald H. Fry, Jr., of the California Division of Fish and Game, cooperated by taking the two photographs here reproduced.

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