

A SUGGESTIVE NOTE AS TO WHAT MIGHT BE BROUGHT
TO LIGHT ABOUT THE PADDLEFISH THROUGH
DEEP LAKE DREDGING.*

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One of the most remarkable things in modern biological research concerns what has been brought to light through deep sea dredging. Many new species of fishes, often grotesque in appearance, constructed so as to resist pressure, and many of them furnished with phosphorescent organs enabling them to see in the darkness of the abyss, have through such researches been added to the list. An instance of the kind from our own marine waters relates to the only specimen known of *Raja abyssicola*—a male obtained at a depth to 1,588 fathoms from off the coast of the Queen Charlotte Islands, British Columbia. Upon this fish, in my "Check List of the Fishes of the Dominion of Canada and Newfoundland," I bestowed the vernacular name of Deep Sea Ray; and in a foot note, here quoted from that work, I drew attention to that remarkable find:—

"No ray was ever found at any such a depth as this before. A ray from a depth of 565 fathoms is included in the list of deepsea fishes obtained by the dredgings of the 'Challenger' (Günther), and '*R. mamillidens*', a uniform jet-black species, has been obtained from a depth of 597 fathoms in the Bay of Bengal' (Bridge), but as far as available records show, none have been obtained at a greater depth than some 600 fathoms except this one."

Now, it has occurred to me, for reasons presently to be pointed out, that possibly something concerns the distribution of the Paddlefish (*Polyodon spathula*), which as yet is unknown. This singular fish still exists in plenty in the Mississippi Valley, and in waters of the southern United States, besides which, at exceedingly rare intervals, it has been found in waters of the Great Lakes system, its records, as again quoted from my "Check List," being these:—

"Exceedingly rare in Canada—the following appearing to be its records: Lake Huron, near Sarnia, Ontario (two specimens); Spanish River, District of Sudbury (one specimen); Lake Helen, Nipigon River (one specimen); Lake Erie (if from the Canadian side of the lake—one specimen): plentiful in the Mississippi valley and southern United States: also recorded from Ohio River (LeSueur, 1817, as *Platirostra eden-*

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tula; and Rafinesque, 1820, as *Acipenser lagenarius*); and from Lake Ontario (Rafinesque, 1820, as *Proceros vittatus*)."

Supplementing its records, a quotation from Dr. Prince, given as a foot note in the Check List, is introduced here:—

"Old fishermen near Point Edward, on the Lambton county shore, vaguely refer to other specimens occurring in Lake Huron."

The form and structure of the paddle-fish determine it to be a species whose habitat is at the bed of the rivers or lakes where ordinarily it occurs. The fusiform body is little compressed, and its long spatulate and somewhat flexible blade, preceding the rest of the head, enables it to scoop among the mud or ooze in the obtaining of its food. It is probably for this reason that it has seldom been found in lakes or rivers tributary to such deep lakes as Lakes Superior and Huron are, and the inference is that it normally remains in the depths; and whilst it is true that individuals of this fish have been found with ripe eggs in Kentucky, in the month of May, and that the paddle-fish was then swimming up stream, so that it has been supposed to spawn in bayous along the river, yet its spawning grounds do not appear to have been located; besides which the fry are entirely unknown, and the young of the paddle-fish, even where it occurs plentifully in the United States, has never been found of a length less than about six inches.

The idea that the paddle-fish normally remains in the depths, or even spawns there, is perhaps strengthened by what is known concerning the structure and habits of its only immediate ally, the fish known as *Psephurus gladius* of great rivers of China, such as the Hoangho and Yang-tse-Kiang. That fish, which is said to attain the great length of twenty feet, has a rostrum of conical shape instead of a spatulate blade like that of the paddle-fish, but this organ also serves the purpose of scooping in the mud; and it may therefore readily be seen how well it is equipped for living at the beds of those great rivers in China, which appear locally to vary in their character from clear and sparkling to turbid and muddy.

This suggestive note claims to be no more than a hypothesis, but the idea seemed to commend itself to Dr. Garman, the ichthyologist of the Cambridge, Mass., University, and to Dr. Hussakof, the palaeontologist of the American Museum of Natural History, New York, to whom I mentioned it; and these gentlemen seemed to share my opinion that there is no saying what deep lake dredging, carried on after the manner of deep sea dredging, which has been so prolific in what it has yielded, might bring to light concerning the paddle-fish which otherwise must remain unknown.



Halkett, Andrew. 1915. "A Suggestive note as to what might be brought to light about the Paddlefish through Deep Lake Dredging." *The Ottawa naturalist* 29(9), 114–115.

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