

specimen for your inspection. It is a yellowish-white worm, about two inches long when alive, and is usually found inside the fish, not far above the vent, with its head firmly fixed in the flesh, to which it clings with great tenacity. Having discarded the idea that the fish came to rub off parasites, I next thought that it might be blind and not know where it was going, but I soon found out that it could see as well as myself. On two occasions I stood between a Frost Fish and the beach, and, as he came on, turned him with a long stick head to sea, making him swim out, but in a minute or two he turned again for the shore, going up high and dry as fast as possible, so, as he seemed to have set his mind upon landing, I gave up the attempt to influence his decision, and just took him home for breakfast. All the Frost Fish which come on shore here are in fine condition; they seem to be in perfect health, and their landings appear to be deliberate acts of self-immolation. Their food, I believe to be the young of *Clupea sagax* or *Clupea sprattus*, but I have only found one specimen with food in its gullet sufficiently perfect for identification. I have seen one *Baracouta* forcing itself on shore in the same way as the Frost Fish.

Accompanying this paper, I forward for your inspection a specimen in spirits of the internal parasite of the Frost Fish, and with it specimens of a recent addition to the interesting class of phosphorescent fishes, hitherto represented in the Colonial Museum by *Phosichthys argenteus* and a small fish obtained by Dr. Hector in Milford Sound. A specimen similar to those before you was forwarded to Captain Hutton for identification, and he has written to say that it is certainly a new species.

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ART. XXIX.—Notes on the Sword Fish (*Ziphius gladius*).

By T. F. CHEESEMAN, F.L.S.

[Read before the Auckland Institute, 16th August, 1875.]

DR. HECTOR, in a valuable contribution to New Zealand ichthyology, printed in last year's volume of "Trans. N. Z. Inst.," introduces the well-known Sword Fish of the North Atlantic (*Ziphius gladius*) as an inhabitant of the New Zealand seas, on the authority of a dried snout obtained by Mr. G. M'Leod from the natives at Ngunguru, and presented by that gentleman to the Auckland Museum. During the last year I have been able to collect some additional evidence of the occurrence of this curious fish that appears to me to be worthy of record.

In the early part of last January an adult specimen was stranded at Shelly Beach; and, through the kindness of Mr. T. Jenkins, I was enabled to secure the greater portion of the skeleton for the Museum, and to obtain

the following measurements while the animal was still entire :—

	Feet.	Ins.
Total length from tip of snout to end of caudal fin	11	3
Length of snout from tip to centre of eye ...	3	11½
"    "    "    "    to gape ...	4	1
"    "    "    "    to free edge to operculum	4	6
"    "    "    "    to nostrils ...	3	7
"    of lower jaw from point to gape ...	0	11
Projection of upper jaw over lower ...	3	2
Height of dorsal fin ...	1	3
From dorsal to caudal ...	4	0
Length of pectoral fins ...	1	5
Length of anal ...	0	8
Height of second dorsal ...	0	2½
From anal to caudal ...	1	8
Width across the tail ...	2	3
Girth just behind the eyes ...	2	11
"    behind dorsal ...	4	8
"    "    caudal ...	0	11
Diameter of eye ...	0	3

The extreme point of the snout (or so-called sword) was broken off, about three inches being wanting. This, of course, will require to be taken into account in considering the above measurements.

About two months ago a paragraph appeared in the *Southern Cross* newspaper stating that a Sword Fish was then being exhibited in Auckland. This proved to be a second specimen of the *Ziphius*. On enquiry, I found that it had been washed by a heavy gale into shallow water inside the mouth of the Waikato River, and, being noticed by some sailors struggling among the breakers, was killed, and brought to Auckland for exhibition. Its length was slightly under that of the first example, being less than ten feet, but the proportions were about the same.

A second species of Sword Fish has occasionally been observed on our coasts, belonging to the genus *Histiophorus*, distinguished from *Ziphius* by the round snout and the presence of ventral fins. A good skull is in the Museum, obtained by Captain Mair near Opotiki; and I recently observed two nearly perfect skeletons not far from the mouth of the Waikato River, but unfortunately had no means of removing them.