CIRCA 1956

56-2

A NEW TAGGING TECHNIQUE USING ATKINS TAGS

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While conducting a tagging program concerned with silver hake (Merluccius bilinearis) in Atlantic coastal waters, the writer developed a technique for marking fish using nylon streamer tags with the following advantages: tags can be applied in moderate to rough seas, the operation can be completed in less than a minute; the wound produced is small and generally has been observed to heal readily; the method requires one simple tool and may open the way for a more general use of streamer tags.

Since silver hake are soft-fleshed fish, have a restricted temperature range, are easily suffocated in trawl nets, and will not withstand much handling, a solution was sought to the problems of finding suitable tags and methods of applying them.

Of the various types of tags experimentally tried on silver hake, the streamer type appears to cause the least irritation and the wounds heal rapidly. Tags employing wire pins appear to be unsuitable because extensive damage to the tissues was observed in tagged fish recovered several weeks later.

This tag was not successful. Only two returns received. Fritz tag is superior.

Although the advantages of nylon streamer tags seemed obvious, the methods of applying them were impractical in a choppy sea. One of the most recent methods (Joeris, 1952) requires the use of curved surgical needles with cutting edge and a split eye for application of the tag. In any sea, other than a calm one, the method is useless. Other methods reviewed involved threading the eye of a needle and appeared to occupy a relatively long period of time for the operation.

The nylon streamer tag employed in the writer's work falls in the category of the "Atkins type" defined by Rounsefell and Kask (1945), and used by Joeris (1952) in his work. The tag consists of an oblong plastic plate 1 inch long by 3/8 inch wide and between 0.02 and 0.03 inches thick with rounded corners. A circular hole 0.1 of an inch in diameter is centered near one edge. To apply the tag, an ordinary stainless steel crochet needle, standard size No. 13, is employed without modification. The handle of the needle is wrapped with black plastic tape (Scotch plastic electrician's tape No. 33), and taped onto the improvised handle is a bight of 1/2-inch nylon cable or cord which can be slipped over the wrist to prevent loss. The tags are threaded with nylon spinning line. At least two types are suitable. Gladding Platyl monofilament spinning nylon line No. 6, having a test strength of 5.8 pounds, was best, since it was rigid enough to permit easy hooking and tying with the needle, although it does require twisting or passing the loop twice through the hole in the tag to hold permanently. The other approved line was Ashaway L. R.'s spinning line, braided of Dupont Nylon with 8-pound test strength. This line was easier to tie, but more difficult to hook up with the needle. The No. 69 Nylock nylon gill-net twine used by Joeris was not suitable since it tends to collapse and stick together when wet.

The nylon line is cut for a suitable length (11 inches in this instance) depending on the size of the fish, length of the tag, and thickness of that portion of the fish the thread will pass through, then folded in two, and knotted firmly at the free end to make a noose. The knot end is passed through the hole in the tag, the unknotted end passed over the tag, through the loop near the knot and pulled out firmly knotting the line on the tag hole. If the knot is placed at the free end of the noose it will be impossible to carry out the operation.

Streamer tags tend to foul one another if stored together. One handy technique used successfully by the writer merely requires that each threaded tag be inserted in a separate scale envelope (2 inches by 3 inches) with the number of the tag recorded on the outside. Scales or fin rays may be removed from the specimen and stored for reference in the envelope.

The method does away with clip boards and notebooks in the field, permits sorting the envelopes in numerical order and recording the data in the laboratory at leisure. Plastic bags serve as useful items for storage.

To apply the tag to a fish, place the fish carefully on a measuring board with the snout pointing towards the tagger's left (if right handed). The fish is held down with the palm of the right hand and turned dorsal side away from the tagger. The crochet needle is than passed about 3/8 inch below the posterior portion of the first half of the second dorsal fin in silver hake, and shoved straight through the back until the point just projects on the opposite side. The tag is held between the index and second finger (from the thumb) of the left hand. It was found helpful to cut away these fingers of the left hand glove to permit firm grasp of the tag. Next, hook the loop of the nylon thread with the crochet needle, as shown in figure 1A, all the while keeping tension on the tag end with the two fingers of the left hand, and draw the crochet needle, with the thread attached, back through the fish. Pass the needle through the tag hole (fig. 1B) and pick up the loop on the opposite side of the fish and pull through the tag hole. Again pass the needle through the tag hole (fig. 1C and 1D), from the same side and pull the loop through the hole. Slide the loop over the top of the tag (fig. 1E), pull it down around the base of the tag and draw against the fish until the knot is formed securely. The fish is now ready for release.

The time element, so important in reducing tagging mortality, was reduced to 35 seconds or less once skill had been perfected. Since the silver hake is a fairly gregarious fish it was decided to follow the customary practice of releasing fish in groups. This arrangement also permitted the fish to recover from the shock of handling and enabled the biologists to remove fish which were sickly. Fish were tagged and dropped into a twine-bottom live car until 50 or 100 had collected before being released as a group. The streamer tags, unlike the Petersen disc tags, did not foul one another when tagged fish were crowded in the car. Fish released after one-half to one hour swam off rapidly toward the bottom. The holding interval also made it possible to observe whether the knots had been tied properly. Some tagging work has been done in choppy to rough seas from small boats and despite the discomfort it was possible, using this method, to tag fish at a fair rate of speed.

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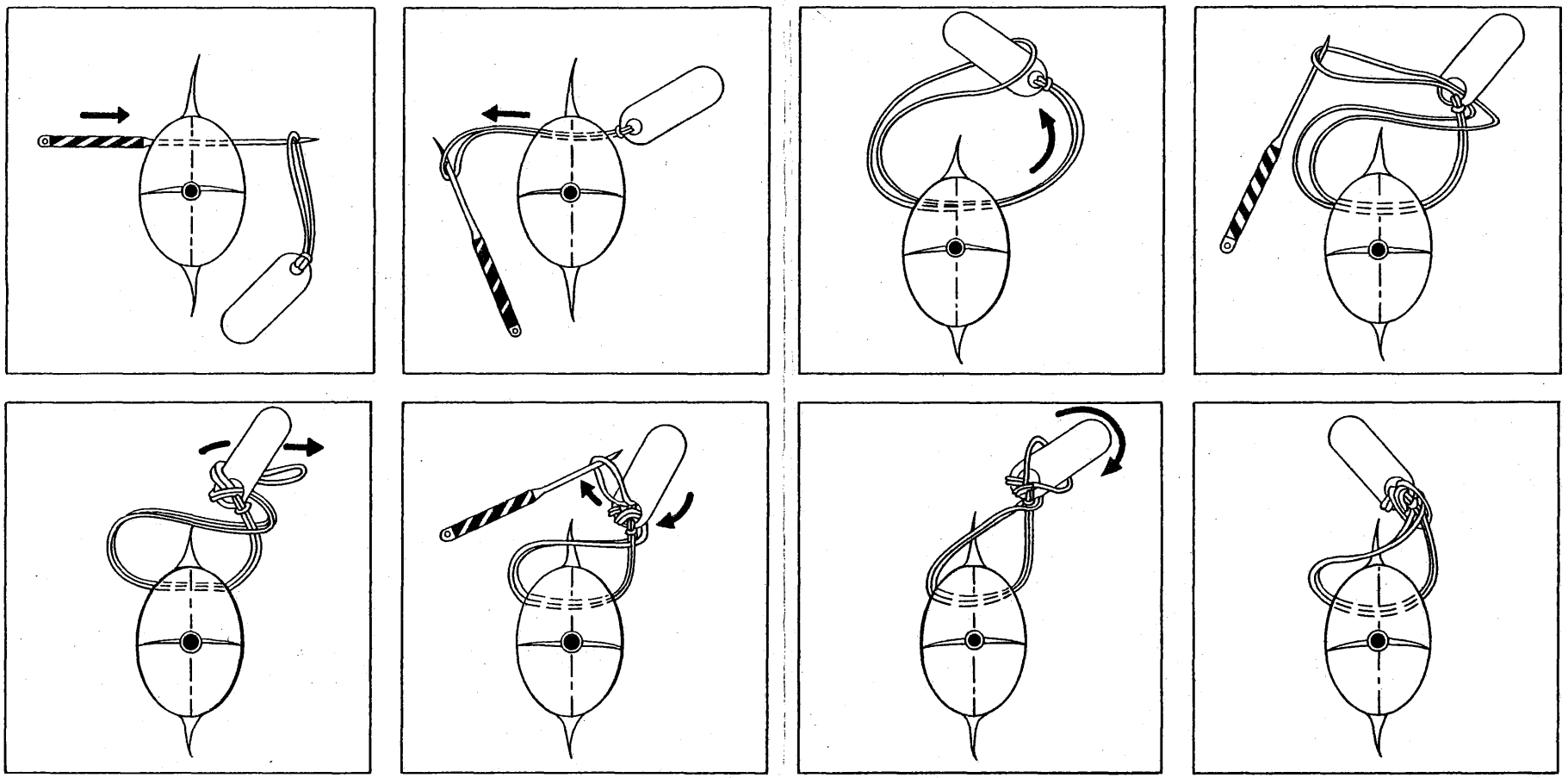
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