A GUIDE TO THE RECOGNITION OF FISHES CAUGHT WITH THE USE OF EXPLOSIVES [1]

By CONSTANCIO Y. MADERAZO
Fish Culturist, Bureau of Fisheries, Manila

The necessity of curbing the depredations by unscrupulous fishermen upon the fishery resources of our country through the illegal use of explosives in obtaining fish for the markets is a primary objective of the Bureau of Fisheries in its policy of developing and conserving the aquatic resources. Up to a few months ago, the apprehension of fishermen fishing with explosives has been a "catch-as-catch-can" proposition, but recently the Bureau of Fisheries has been prosecuting fishermen for illegal fishing on the basis of laboratory examination reports on fish collected from the fishing boats as they arrive at the various fish landings. To gain the cooperation of other law enforcing agencies in this important activity by strengthening their arguing points in the courts, the Bureau of Fisheries has prepared this guide to the determination of fish caught with the aid of explosives.

Fishes are caught with explosives through the detonation of a tin can filled with explosive powder which is usually obtained from unexploded bombs, artillery shells, torpedoes, or other sources. The can is fitted with a blasting cap ignited by a short fuse timed to explode some seconds after it is lighted with a match. The fish stunned or killed by the resulting concussion may then be taken by simply diving and gathering them in baskets. Fishes inhabiting shallow coral reefs and banks such as caesios, sea basses, snappers and surgeon fishes are the usual catch, but even pelagic species are attacked in open waters with great wastage of the fish that sink to the bottom beyond diving range.

The Bureau of Fisheries bases its laboratory determination of fishes caught with the aid of explosives mainly upon the following points:

A. External manifestations:

1. Fishes near enough to the blast center suffer wounds and mutilations of various parts of the body such as the loss of scales, the breaking or

[1] This paper was presented by the Philippine Delegation before the second meeting of the Indo-Pacific Fisheries Council held at Cronulla, N.S.W., Australia, April 17–28, 1950.

tearing off of fins, tails, eyes, and lower jaws. Fishes with bodies that are deeper than long may have their abdominal regions literally blown away.

2. Effusions of blood, visible as red splotches under the skin of the fin bases and of the nape, chin, or cheeks.

3. In small and translucent fishes, effusions of blood may be noted through the skin and flesh in the region of the vertebral column and the abdominal cavity.

4. Portions of the viscera may be noted protruding from the vent.

5. The body freely bends sidewise and when pulled lengthwise has a distinct feeling of being loose. This is due to the breakage or loosening of the vertebrae in the spinal column. Fresh fish caught by other means have the stiffness or rigor mortis.

B. Internal manifestations:

1. Fishes near the vicinity of the blast center usually have the contents of the abdominal cavity crushed, out of position, and mixed with blood.

2. Dislocations or fractures of the vertebrae in the abdominal and/or the caudal region are usually encountered.

3. If bone fractures are present, it will be noted that the broken ends or edges cause the tearing of adjacent tissues and blood vessels, manifested by blood clots and dark-red discolorations of the fish.

4. Even without fractures in the vertebral column, the spinal blood vessels below the vertebrae rupture and cause hemorrhages of varying degree along that region.

5. The swim bladder, if present, is almost always ruptured and blood clots in its lumen may be found.

6. The rupture of the blood vessels of the internal organs causes the formation of blood clots in the abdominal cavity or else a bloody discharge may be noted upon opening the abdomen.

7. Internal organs like the liver and the gonads of spawning fishes may be crushed by the concussion.

8. If the fish are still fresh with the intestinal tract still firm and undamaged by decomposition especially those living on a diet of hard foods, like crabs and mollusks (sea bass and snappers for example), the hard parts of their food may cause the laceration, rupture, and discharge of the contents of the stomach into the abdominal cavity.

C. Other manifestations:

It has been shown to a certain extent in the microscopic studies by Medina (1949) that the chromatophores located on the meninges of the brain change from their usual round, and/or more or less regular stellated shapes to irregular astral forms. This change is easily shown in flat mounts of the brain membrane of a freshly dynamited fish.

Fish should be examined for external manifestations as soon as possible.

In the internal examinations, fish should preferably be hardened first by having them soaked overnight in ten per cent formalin or 70 per cent alcohol so as to allow all liquid blood to coagulate. After the hardening process, the fish should be split along the back from the tail to the skull passing the knife

close to the vertebral column. Thus, an examination of the vertebral column, the ribs, and surrounding areas may be easily made. In exposing the abdominal cavity, a pair of strong scissors should be used and a cut carefully made along the belly and through the throat until one flank covering the abdomen is removed. In this way the arrangement of the internal organs is not disturbed, making the examination of their condition easier.

BIBLIOGRAPHY

ALPIN, J. A.

The effect of explosives on marine life. Calif. Fish and Game 33 No. 1 (1947) 22–30.

DOMANTAY, J. S.

Notes and observations on the effect of dynamite and other explosives on marine fauna and the determination of fishes caught by explosives. Natural Research Council Bulletin No 23 (December 1939).

FITCH, J. E., and P. H. YOUNG.

Use and effect of explosives in California coastal waters. Calif. Fish and Game 34 (1948) 53–70.

INDRAMBARYA, B.

Note on the effect of explosives on fish in Siamese coastal waters. Department of Fisheries, Siam (1949).

MEDINA, R.

Unpublished Manuscript (1949).