

A Device For Injecting Preservative Into The Stomach Of Fish

Examination of the stomach contents of fish is necessary to describe their food habits. To assure an accurate description of a fish's diet, it is imperative that digestion be stopped or the stomach contents removed and preserved immediately after capture. This preserves recently eaten food items in an identifiable condition.

Researchers have used a number of techniques for collecting identifiable fish stomach contents. Giles (1980) and Van Den Avyle and Roussel (1980) used stomach pumps. Needham and Needham (1962) advise slitting the body cavity and placing the fish in preservative; Terry (1977) injected preservative into the stomach of fish using a hypodermic syringe. We have used a hypodermic syringe, but found it cumbersome when processing a large number and variety of fish species in the field. We also had problems with breakage, spillage, and blockage. Therefore, we invented a device for injecting preservative into fish stomachs that is easier to use than a hypodermic syringe.

Our device was made from a 473ml (16oz) plastic plant sprayer with a minor modification (Figure 1). The nozzle orifice was enlarged to permit the hypodermic needle casing to pass through the orifice, stopped by the lip on the base of the needle which forms a seal. The needle is held in place by screwing the nozzle onto the pump. The needle cover can be placed over the needle when the injector is not in use. Disposable hypodermic needles are available in a variety of sizes and can be selected according to the size of fish. We found a 23 gauge needle worked well for fish 60 - 600mm long.

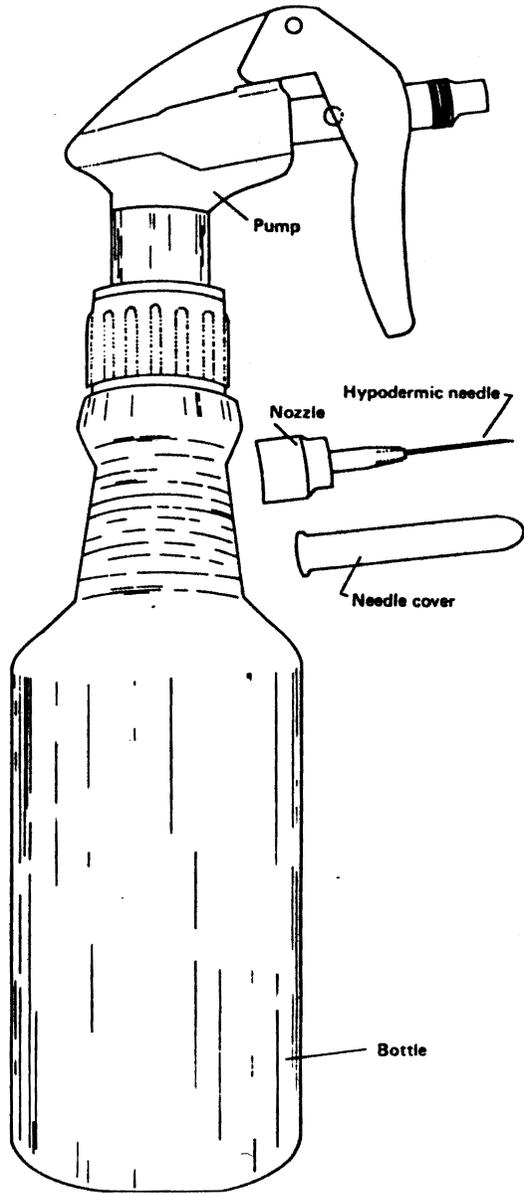
Immediately after capture, fish were injected through the body wall into the stomach cavity with 10% buffered Formalin. Care was taken not to evert the stomachs of fish by hydraulic pressure. Later in the laboratory, injected fish were measured and their stomachs removed and placed in ethyl alcohol. Formalin does affect the lengths of fish (Parker 1963), so appropriate adjustments should be made.

The advantages of the injector are: 1) it is inexpensive (less than \$3.00), 2) almost unbreakable, 3) easy to assemble and repair in the field (replace dull or bent needle), and 4) large capacity. We have processed more than 10,000 fish using this technique and have found the injector efficient and effective in injecting preservative into the stomachs of fish.

FIGURE CAPTION

Figure 1.--Plant sprayer modified for use as a stomach injector
for fish.

Plant sprayer



REFERENCES

- Giles, N. A. 1980. A stomach sampler for use on live fish. J. Fish Biol. 16(4): 441-451.
- Needham, J. G., and P. R. Needham. 1962. A guide to the study of fresh-water biology. Holden-Day Inc., San Francisco. 108 pp.
- Parker, R. R. 1963. Effects of Formalin on lengths and weights of fishes. J. Fish. Res. Bd., Canada 20(6).
- Terry, C. 1977. Stomach analysis methodology: still lots of questions. Pages 87-92 in C. A. Simenstad and S. J. Lipovsky, eds. Fish food habits studies: 1st Pacific Northwest Technical Workshop, Proceedings, Oct. 13-15, 1976. Univ. Wash., Seattle, Div. Mar. Resour., Wash. Sea Grant, WSG-WO 77-2.
- Van Den Avyle, M. J., and J. E. Roussel. 1980. Evaluation of a simple method for removing food items from live black bass. Prog. Fish-Cult. 42(4):222-223.

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