1973

Device for Obtaining from Small Ponds Water Samples or Lagoons

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Device for Obtaining Water Samples from Small Ponds or Lagoons

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A RESEARCH project was recently initiated which requires that water quality samples be taken from small ponds and lagoons in west-central Illinois. A method for obtaining these pond water samples was desired that could be handled conveniently by one person and would not require a small boat. The pond water sampler described here was developed to satisfy this need.

The sampler developed allows one person to obtain a water sample at any desired depth while remaining on the shore. After assembling the device it may be floated to any position on the pond surface, lowered to the desired depth, and a sample taken. It is then retrieved by following the previous steps in reverse order as illustrated in Fig. 1. Water samples have been obtained at a distance of 40 ft from the pond shore and at a depth of 16 ft below the pond surface.

The pond water sampler consists of a telescoping rod, manufactured for window washing units, with a T-handle and fishing rod reels on one end (Fig. 2); and the sampler head (Fig. 3) and float on the other end. Cords run from the operator end of the sampler to the sampler head and float to allow the operator to control the float and sampler head. The sampler head holds the sample bottle and may be triggered to allow sampling to occur when the operator desires.

The sampler (Fig. 3) consists of three separate components: the sampler head base, the bottle plate, and the stopper plate. The sampler head base is attached to the telescoping rod and contains the water port through which water enters the sample bottle. An extension to the water port which extends into the sample bottle is attached to the sampler head base. Additionally, the base contains an air escape port. The bottle plate is attached to the sampler head base and is fabricated with threads for the sample bottle. The bottle plate may be easily removed from the sampler head base so that other bottle plates fitting different sample bottles may be used with the same sampler head. The stopper plate with stopper is spring loaded to seal the water port while it is being positioned for sampling and after the sample has been taken.

To obtain a sample the rod is extended to the desired length and the bottle is attached to the sampler head on the pond shore (Fig. 1a). The bottle and sampler head is floated to the desired position on the pond surface with the float held tightly to the sampler end of the rod (Fig. 1b). The cord to the float is then released to allow the sampler head and bottle to sink to the desired sampling depth (Fig. 1c). When the

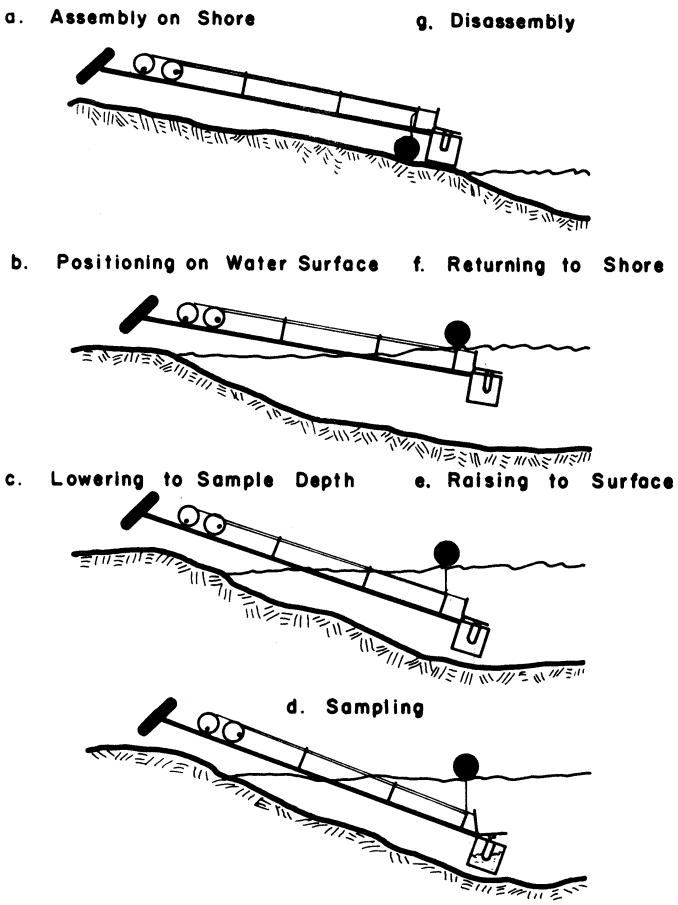

FIG. 1 Pond water sampler operation scheme.

This article has been reviewed and approved for publication by the ASAE Instrumentation and Controls Committee.

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This article is reprinted from the TRANSACTIONS of the ASAE (Vol. 16, No. 3, pp. 544, 545, 1973)
Published by the American Society of Agricultural Engineers, St. Joseph, Michigan

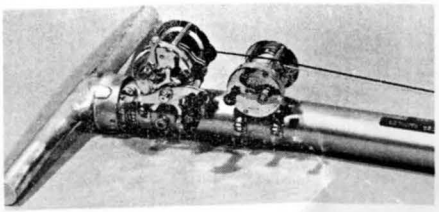

FIG. 2 Operator end of sampling device. The T-handle and reels provide a convenient control point. One reel contains the cord to the float; the other reel contains the cord to the sampler head.

desired depth is reached, the sampler head cord is pulled and water is allowed to fill the sample bottle (Fig. 1d). Pulling the sampler head cord removes the stopper from the water port thus allowing the bottle to fill with water through the water port and extension. The air is allowed to escape through the small air-escape port in the sampler head base and is conducted a few feet from the sampler head through a flexible tube. This reduces the possibility of escaping air changing the oxygen content of the water which is being sampled. The sampler head and bottle are returned to the surface using the float and float cord (Fig. 1e), and the apparatus is floated back to the shore (Fig. 1f).

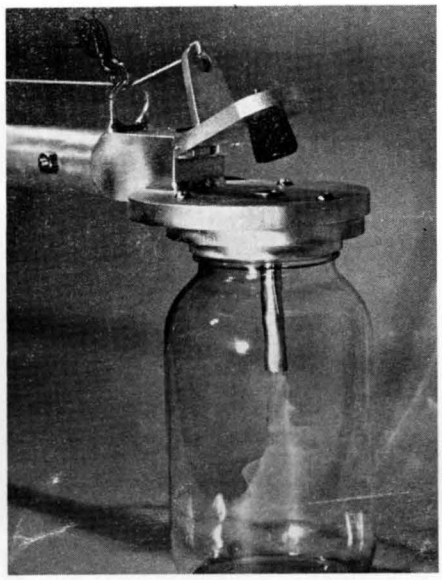

FIG. 3 Sampler head.

The water sampler pictured here and an earlier model of the sampler are being used monthly to obtain three samples from each of 15 different ponds in western and southern Illinois. They have both performed satisfactorily and need a minimum of maintenance. Further detailed information and drawings of the sampler heads may be obtained by contacting the authors directly.