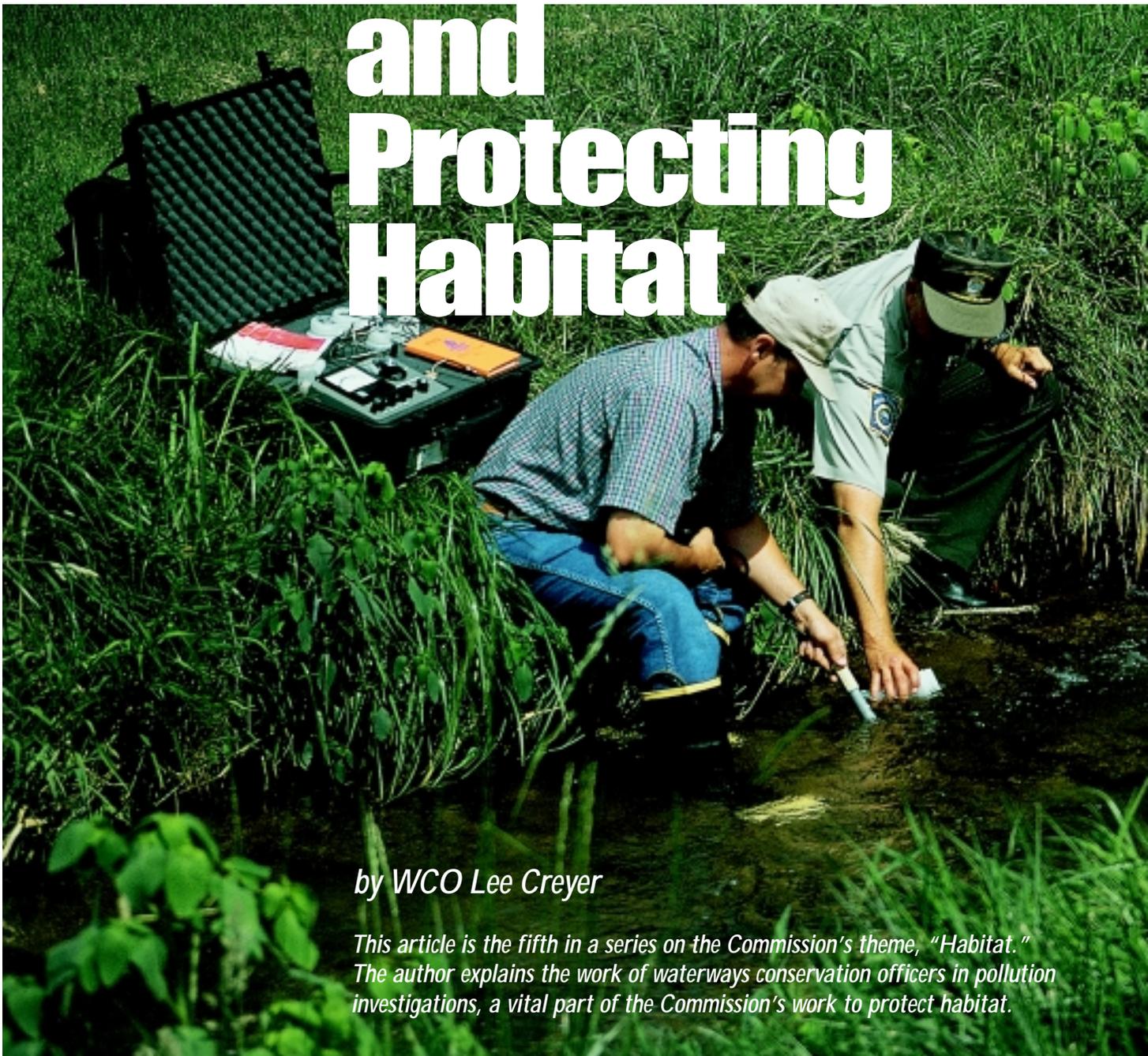


Waterways Conservation Officers

and Protecting Habitat



by WCO Lee Creyer

This article is the fifth in a series on the Commission's theme, "Habitat." The author explains the work of waterways conservation officers in pollution investigations, a vital part of the Commission's work to protect habitat.

The silence of the radio was broken by a voice saying, "County to 18-2. We received a report that the water in Deer Creek, along Park View Road, is milky white and many dead fish were seen in the water."



"10-4 County, I'll be en route, ETA about 15 minutes."

Upon arrival, just looking out the window of my patrol vehicle I could see many dead fish lying along the banks. It was quite obvious something was discharged into the stream, and a pollution investigation would have to begin.

The Pennsylvania Fish & Boat Commission plays an active role in the protection of the aquatic resources in Penn's Woods. Waterways conservation officers statewide investigate and successfully prosecute individuals and corporations under the "Pollution of Waters" section of the Fish & Boat Code.

"Pollution of waters" is defined as any substance, deleterious, destructive, or poisonous to fish that is allowed to run, flow, wash or be emptied into any water. Successful prosecution in these cases requires in-depth investigation and evidence-gathering techniques because these cases may be heard in court. Officers must prove "beyond a reasonable doubt" that a violation has occurred and that a particular person or company was responsible for the act.

On my arrival on a scene, the very first concern is safety. If a substance is toxic to fish, it may also affect the health of the officer investigating the scene. During the pollution, I could see that the birds and plant life surrounding the stream were not affected, so I was comfortable leaving the vehicle.

The Commission works in partnership with the Department of Environmental Protection (DEP) on many pollution incidents in the Commonwealth. Notification is made to DEP as soon as possible after the determination that a pollution has occurred. Similarly, when a call is made to DEP concerning a possible pollution, notification is made to the Commission district officer responsible for that area.

Gathering evidence begins immediately after we determine that the area is safe. The first hour after arriving at a

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PHOTOGRAPH BY TOMMY STONER

scene, things can become quite hectic. Officers must remain vigilant during this time to secure the immediate area and prevent the destruction of any evidence. Necessary telephone calls are made, along with repeated contact with the county dispatchers. Information from any witnesses in the area is noted. Unlike vehicle accidents or burglaries, we are dealing with flowing water; our evidence can quickly be washed away or be significantly diluted by the flowing water. Pollutions are treated like any other crime scene because that is exactly what they are.

Photographs and water samples are taken at several locations throughout the affected area. The first sample is always taken at the immediate point of discharge into the stream, if possible. Another is taken farther downstream, which can help determine the total length of the affected area. A final control sample is taken upstream, above the point of discharge. This "control" sample is vital in any prosecution. The analysis of this control sample shows the quality of the water above the area that was affected by the discharge. This analysis is then compared to the results from the water samples taken below the point of discharge. Biologists can then make a determination if the product discharged into a stream was harmful to any fish or if it was below the limits of a permit issued to a company.

There are thousands of discharges permitted across the state for a variety of reasons. Sewage treatment plants, industrial plants, gas and oil companies and paper mills are just a few of the legally permitted possibilities. When issued these permits, the holders must maintain water quality standards listed in the permit. Dissolved oxygen, pH, phosphates, nitrates and water temperature are only a few of the many parameters listed and monitored closely by the DEP. The holders of these permits must maintain records and are subject to inspection at any time. There are times when reports are received that a certain



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the next step is locating the source and stopping the flow of the pollutant entering the stream. Many investigations are instigated by a sudden discharge from a manufacturing plant or sewage treatment system that incurred an accident. A supervisor of the plant is immediately notified. The supervisor is often already aware that a problem exists. Depending on the extent and amount of the pollutant, local fire departments and county HazMat (hazardous materials) teams are dispatched. These are additional resources we frequently call on to assist during a pollution. They are well-trained in the deployment of containment booms, absorbent pads, and other devices used to prevent further damage to the aquatic environment. A quick response and placement of these aids contains and minimizes the flow, which thereby prevents further damage downstream. Sometimes we notify nearby residents, especially in farming areas where cattle may drink from a stream. If a public water system may have been affected, we also notify those authorities.

When the pollutant has ceased flowing and the site is under control, the interview begins with the suspected violator. The majority of the time, industry personnel open their gates and freely permit entrance to the facility. We attempt to find out exactly what happened and why. Was it just an accident or a deliberate act? Was it an act of nature, negligence of an employee, or just plain carelessness?



Agricultural areas are prone to manure entering streams, which very quickly reduces the amount of dissolved oxygen in the water that fish need. Herbicides and pesticides are also encountered. These can have a devastating effect on macroinvertebrate life.



Stocked brook trout. WCOs closely monitor a stream's macroinvertebrate life, including mayflies, stoneflies, caddis flies and other aquatic insects. These species are fish food. Without aquatic insects for fish to feed on, fish will leave an area or die.

One of the most difficult tasks officers must face is trying to separate fact from fiction. The amount of cooperation we receive during an interview can greatly influence the results of these violation investigations. We often make suggestions such as reimbursing fire companies for absorbent pads, installing an alarm system, building containment devices to prevent future spills, or performing monthly preventive maintenance on operating systems. Although a pollution has occurred and damage has been done, officers attempt to protect water resources by suggesting methods to prevent future occurrences.

After the interview, it's back to the stream. If a fish kill has occurred, each fish is identified, its length measured, and, if possible, kept as evidence. Depending on the severity of the fish kill, the identification and collection process can be quite time-consuming. It normally takes several hours to walk a section of stream, counting and identifying fish. If the kill is significant, where miles of stream have been affected, this process can take days.

Another item that is closely monitored during any pollution is the macroinvertebrate life present in a stream. Macroinvertebrate life includes the mayflies, stoneflies, caddis flies and other aquatic insects that are present in most streams. These species are basically fish food. Without the aquatic insects for fish to feed on, fish will leave the area or die. Depending on the pollutant that entered a waterway, the fish may not be harmed, but the macroinvertebrate life may have been severely affected. Other times the macroinvertebrate life is fine, but the fish have been killed. Then there is always the possibility that a pollution has affected both fish and macroinvertebrate life.

Throughout the Commonwealth, officers encounter a great variety of pollutants. Agricultural areas are prone to

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In mountainous areas of the state, improper timber operations can result in large amounts of sediment carried into streams during a rainstorm. Sediment can cover much of the streambed, smothering any aquatic life and thereby eliminating the food that fish need. Sediment is often a factor contributing to pollution around any type of land development where effective erosion controls are not implemented.

The coal mining areas of the state, with both operating and abandoned mines, have a chronic problem with acid mine drainage. The exposed soil and rock allow a chemical reaction to occur, forming iron oxide and sulfuric acid. This acid then dissolves minerals and metals from the surrounding rock, which flows through the ground water system to the surrounding streams. The severe acid conditions, as well as metals such as aluminum and manganese, can reach toxic levels.

In urban areas, industrial facilities such as steel mills, paper mills and power plants use a wide variety of chemicals. These facilities are required to have discharge permits issued by the DEP. These kinds of pollutions are commonly known as point source discharges and are regulated by the conditions of the permit. However, accidents do happen, and unknown, non-permitted discharge sources are discovered every year. □