VIRGINIA WILDLIFE

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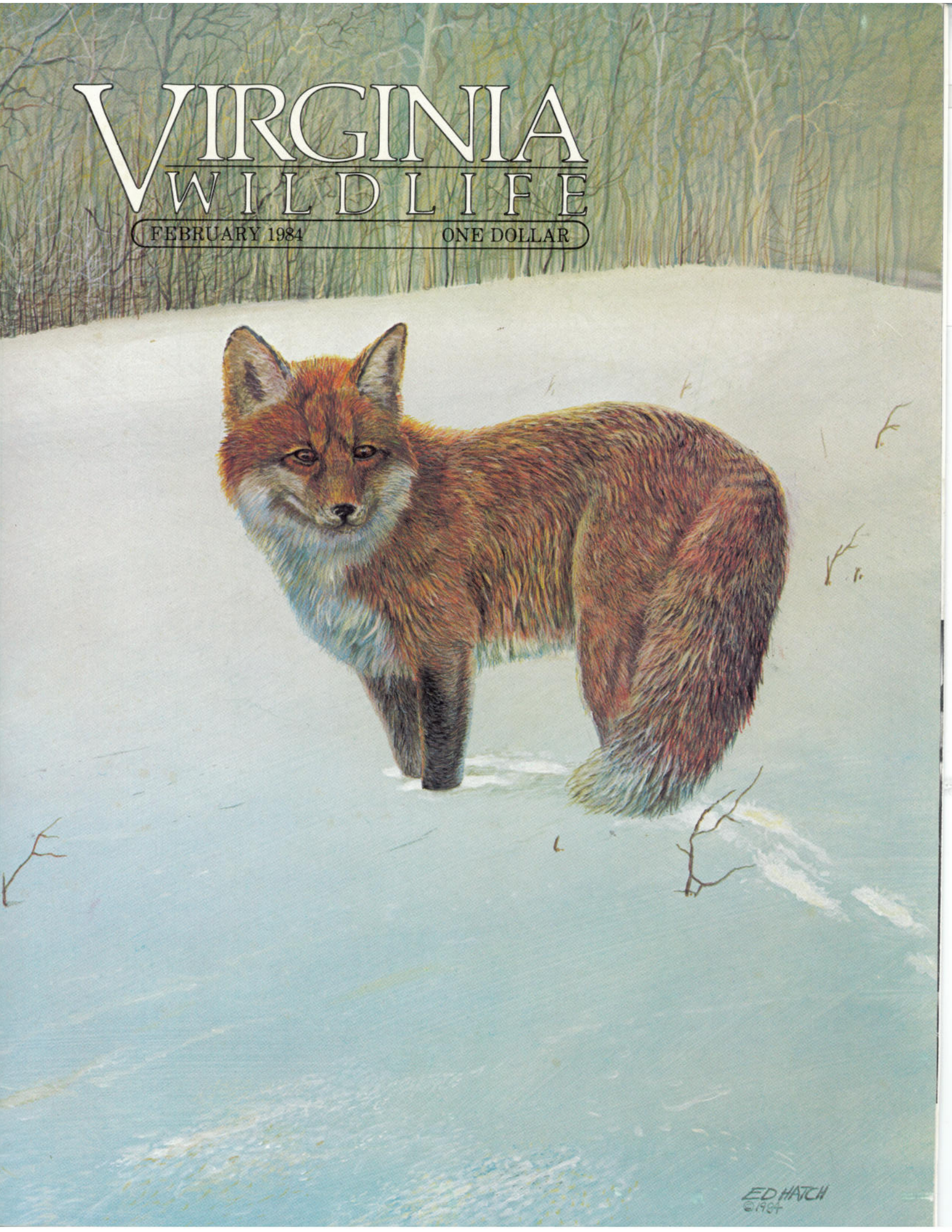

VIRGINIA WILDLIFE

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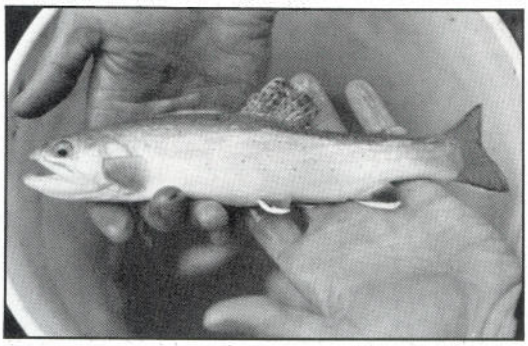
photos by Dale Fuller



Capital Trout

A rare, naturally reproducing population of brookies is found in a stream near the nation's capital.

(Left) Clearing trees and construction of a sewer line caused this habitat destruction in Fairfax County. Still, as this small male brookie (above) shows, a healthy population of native trout has survived in nearby Difficult Run.

If you mention brook trout to a fisherman, chances are he will think of cool, clear mountain streams far from the hustle and bustle of urban life. For the most part, this scenario is correct: in general, brook trout are wilderness creatures and prefer colder habitats, rarely living in waters that exceed 70°F. This is shown in their distribution which includes most of northeastern North America and extends southward into Georgia only along the Appalachians in the cooler environment of the mountains. Brook trout are common in the highlands of Virginia and are our only native trout. Due to their popularity with many fishermen, they are often introduced outside their usual mountain habitat into lowland streams, where ordinarily, they survive only during the cooler months and die in the summer.

Of course, there are exceptions to every rule. An isolated population of naturally reproducing brook trout exists in the Piedmont region of northern Virginia. These trout are found only in the upper reaches of Difficult Run, the largest watershed entirely within the confines of Fairfax County. Most people would take one look at the stream and laugh if they were told that there were trout in it.

Nevertheless, brook trout have been in the stream since at least 1899 when their existence was first documented in a publication listing fish species known to inhabit the area surrounding Washington, D.C. The fish were again mentioned in a 1915 paper which stated that their presence made Difficult Run unique among area streams. Neither of these reports presented any additional information on the trout and it was not until 1968 that they were mentioned again. A list of fish species published in that year remarked that in former years brook trout had been found in Difficult Run, but due to the vast amount of development in the county, they were assumed to have been long since exterminated. This assumption was based on speculation, because the brookies were rediscovered in 1975 by Dr. Donald P. Kelso and his George Mason University students. This discovery initiated a series of studies by several undergraduate and graduate students to determine the number of individuals surviving, their exact distribution in the watershed and their reproductive potential.

Perhaps the most baffling question of all was how the trout became established in Difficult Run, since the stream is about 50 miles from their preferrred mountain habitat. One possibility is that they were stocked in the stream prior to 1899; however, no state or federal records can be found to substantiate such a claim. This does not rule out the possibility of private stocking. If the brook trout are truly wild, which means that they became established in the stream through means other than stocking, there are two attractive theories that can be used to explain their presence.

The first is that the population in Difficult Run is a relict or remnant of a once more widespread distribution. It is possible that before North America was colonized, brook trout ranged well into the Piedmont region of Virginia and other Atlantic coastal states. Early ichthyologists speculated that even the cooler tributaries of Rock Creek in the District of Columbia may have at one time supported native trout. As the forest was cleared, stream temperatures rose above levels that brook trout could tolerate and thus caused the extinction of many local populations. Perhaps the trout were able to survive in Difficult Run because de-forestation was not as severe

(Right) Despite its setting—Fairfax County, a densely populated area characterized by extensive development and destruction of wildlife habitat—Difficult Run is supporting brook trout. (Center) George Mason University graduate students weigh and measure brook trout, having electrofished the stream. (Far right) Habitat destruction near source of stream, resulting in heavy siltation.

as in other watersheds or because of peculiar properties of the stream itself.

The second theory is that the brookies may have been displaced from their highland haunts by a large flood and then carried down the Potomac River to Difficult Run which was the first suitable refuge encountered. If this is the mechanism that introduced the trout, why aren't they found in other similar area streams? It is possible that the stream possesses some unique chemical or physical properties that the trout prefer, but, if so, these properties are not yet evident.

Whatever the reason for their establishment, the important thing is that they are there and that they probably have been for 83 years. The next question is, how do they manage to live and reproduce in a habitat that is considered to be far less than ideal? For example, water temperature readings taken during the summer have frequently exceeded 70°F. Furthermore, the sections of stream that harbor trout are relatively slow-moving and have large areas of bottom covered with silt which makes successful spawning difficult. Brook trout reproduce in a fashion similar to most other salmon-like fishes: females dig nests (or redds) in gravelly, riffled areas; then they deposit their eggs as they are fertilized by the males. Gravel is then fanned over the fertilized eggs. Once the redd is covered, it serves two main purposes. First and foremost is protection of the eggs. The gravel effectively hides the eggs from potential predators. The second purpose behind excavating a redd in coarse sand or gravel is circulation. The developing embryos need a constant supply of fresh oxygen and the water flowing through the spaces between the stones assures this. In addition, this flow washes away waste products produced by embryonic metabolism.

Studies have shown that heavy siltation into streams can cause drastic reductions in trout populations. The silt covers spawning beds and either kills existing eggs and embryos or discourages the adults from spawning due to the lack of suitable spawning sites. Although spawning has not actually been observed at Difficult Run, there are several reasons to believe that it occurs. First, brook trout have been present in the stream continuously during the seven years of study and most brook trout only live four years. Also, males intensify in color and females become laden with eggs as the early winter spawning season approaches. Perhaps the best evidence of all is that juvenile trout of several size classes have periodically been found in the stream.

When studies were initiated, brook trout were found in three tributaries. As in most populations of Virginia brook trout, these fish rarely exceed 10 inches. Each tributary maintained a small number of individuals in a short length of stream. Mark and recapture studies conducted with electrofishing equipment revealed that in one tributary there were only 36 to 94 individuals. During the course of this study, two tributaries ceased to yield brookies when sampled. Those familiar with Fairfax County are aware of the large amount of suburbanization that has occured and will occur; most of the land in the watershed is zoned for housing subdivisions. Construction activity on one branch involved partial clearing and channelization along the stream and a large influx of silt. These factors probably caused the destruction of the few trout that lived there by 1978.

The second branch in question was found to contain brown trout in 1980 at the same time that brook trout disappeared. Since browns are not native to North America they were obviously stocked. The existence of brown trout may be one reason the brookies disappeared from that branch. Studies have repeatedly shown that brown trout can effectively outcompete brook trout under almost all circumstances. Another potential problem became evident when a brown trout was removed from the stream for stomach content analysis and found to contain several parasitic flukes. Since brookies are known to be plagued by several species of these parasites, it is possible that the brown trout introduced the worms to the native trout. However, one brookie was captured in this stream in the fall of 1981, indicating that the fight may not yet be over in that tributary.

All of this brings us to the third branch which may be the last stronghold for the Fairfax County brook trout. Fortunately, much of the bottom land there is designated flood plain park and construction activity is restricted or prohibited; but this may not be enough to ensure maintenance of a suitable environment for trout, since the remainder of the watershed is zoned for development. Public interest in preserving the remaining rural areas in the county may have helped the few brook trout that survive. One proposal brought to the county to build a large community swimming pool was denied for several reasons, not the least of which was the trout. Concern over potential discharges of chlorine into the stream was an important argument on the fishes' side.

Why should such a fuss be made over a few fish that are not even an endangered species? There are several reasons that the survival of this population should be ensured.

The first is that brook trout are excellent biological indicators. If environmental quality deteriorates, they are often the first to show the effects. It would speak well of our concern for the environment if an organism as sensitive to disturbances as these fish could exist within minutes of our nation's capital.

Second, there is widespread public interest in brook trout as a resource both for aesthetic and recreational purposes.

The third reason is that if these trout are unusual enough genetically to tolerate the conditions of Piedmont streams, then they would be extremely valuable from a fisheries standpoint as breeding stock, supplying fishermen in Northern Virginia and elsewhere the brook trout for other suitable lowland streams.

So where does this leave these fish? Meetings of concerned parties at George Mason University have produced several approaches towards preserving this population. The Northern Virginia Chapter of Trout Unlimited has been very helpful and they hope to begin a program of constant stream monitoring and improvement, in addition to initiating a program of public awareness. Furthermore, a proposal has been submitted that suggests reclassification of the stream to enact more stringent controls regarding discharges of pollutants. These actions, combined with careful land management practices, may be enough to ensure the survival of the brook trout for years to come. If not, a special part of the fauna of Fairfax County may be gone before we even know how it got there. □