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THE 1957 PIGEON RIVER FLOOD

by

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Sometime during the night of May 14, 1957, it rained on the watershed of the upper Pigeon River. It was a heavy storm, but not unusual for the area; the recording rain gauge at the Pigeon River Trout Research Station, located on the river 13 miles east of Vanderbilt in Otsego County, read 1.09 inches the next day. The indirect results of the storm, however, were unprecedented in the history of the river.

On the morning of the 15th, the caretaker of the privately owned Pigeon River Ranch, which included a 65-acre impoundment in the river just above the research area, observed the rising water level in the reservoir and went out to open the gates of the dam. This was standard procedure; the gates had to be opened after every rainstorm of moderate to heavy degree to increase the spill and prevent the water from overtopping the dam.

But this morning not everything ran according to plan. A floating log had jammed the spillway gate. The caretaker, unable to free the log, finally made a frantic telephone call to the research station. There, Gerald Myers, fisheries research assistant employed at the station, received the call about 10 A.M.

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Myers and Dr. Leonard Allison, fish pathologist for the Department, rushed immediately to the site of the dam, after notifying the District office at Gaylord.

Meanwhile, other Department workers alerted Field Administration personnel, state police, and the county road commission for possible trouble downstream, and then headed out to search the area for persons who might be in or near the stream.

At the dam, Myers and Allison quickly removed the obstructing log--less than 15 minutes after the caretaker's phone call. But it was too late! Already the waters had gullied through the earth roadway on the dam and were rising rapidly, despite the increased spill through the opened gates. Within minutes, gullies filled with rushing, roily water were eroding into the downstream side of the dam. The earth fill in about one-fifth of the 150-yard-long dam was quickly being carried away.

Helpless and sick at heart, the small group of onlookers--which now included conservation officers--stood by and watched. At 10:25 A.M., the washout over the dam gained momentum visibly. The bank on the east side of the dam, undercutting swiftly, toppled into the water. At 10:30 A.M. the concrete wingdam on one side of the spillway, with all its supporting earth behind it gone, crashed into the impatient waters--and a twelve-foot head of water went roaring downstream. Some 300 acre-feet of water washed through the six miles of experimental trout stream in about six hours, at 10 to 20 times the normal flow of the river.

The results of the flood were plainly visible throughout the Pigeon's valley during the following trout season and, not incidentally, will be for some time. Huge trees had been uprooted and lay high on the banks. Thick layers of sand and muck had been deposited on the banks on the inside of river bends. Much natural cover had been ripped out, as well as numerous stream improvement devices. In many places, sod had been peeled back from the river's edge like partially

rolled-up rugs. Stumps and logs were piled on the banks high above normal water level, and a mile and a quarter downstream a stump jam had formed against a concrete bridge, damming the high waters which overflowed the road and washed part of it away. Four miles downstream, a U. S. Geological Survey recording stream-level gauge reached its maximum--more than four feet above normal--and could not record any higher. And, probably worst of all, the bottom of Section E, a mile-and-a-quarter experimental section immediately downstream from the dam, was now covered with a wide, flat ribbon of shifting sand in place of its usual food-producing gravelly riffles.

Fortunately, no one was fishing in the area at the time. One fisherman, who had a trailer in a camping area, was alerted and assisted with the evacuation of his camp. Had the flood occurred during a holiday weekend, when a large number of anglers were in the stream, the results might have been tragic.

Excitement did not die quickly. For nearly two weeks following the flood, the river remained, for practical purposes, virtually unfishable. It was feared, and logically so, by many of the river's angling devotees that the stream's trout population might have received such a mauling that normal fishing would not be experienced for several years.

Conservation Department biologists, however, confident of the stream's ability to recover and furnish normal fishing in the near future, had other fears.

Of first concern was the possibility that the trout population, particularly in Section E, had really suffered significant losses. Observations made along several miles of stream bank, however, turned up only one dead trout. Since a population estimate had been made in April, 1957, in a portion of Section E, the data were available for comparison; another estimate made in the same section

following the flood indicated about the same density of trout or even slightly more. At least here was conclusive evidence that the trout population had not been decimated.

Of concern, too, was the fate of the young-of-the-year trout--in the fry stage at this time of year--and about which the two population estimates gave no information. Evaluation of the effects of the flood upon this group would have to wait until September when the routine fall population estimate would be made in the entire research sector of the river. At that time, the young-of-the-year population--by September, in the fingerling stage--could be compared with other years.

Worst fears, however, were felt for an even greater possible loss than the present population or a single year's reproduction. These fears were for the intangible damage to fact-finding investigations already in progress. Conceivably, the loss of present populations, a reduced reproduction for the year, or changed habitat in the research area, could interfere considerably with projects underway by adding new variables of catastrophic degree to the reasonably well controlled conditions in the Department's outdoor laboratory.

The Pigeon River Trout Research Station was established in 1949, and since that year complete angling data have been secured under a compulsory permit system of fishing on six miles of the river. Here, the effects of various experimental management techniques--such as method and time of planting hatchery trout, new regulations, and stream improvement--can be determined. Several projects of this type were under way at the time of the May flood, along with other programs of a more basic fact-finding nature. True, since 1949, there have been natural fluctuations--in some years fishing (and fish density, as determined by the routine September population estimates) have been way up; in other years, some low points have been encountered. But never in the

history of the research station had there ever been any natural, uncontrolled factors which had the apparent potential to modify fish and fishing conditions as did the flood on May 15.

Basic data, accumulated in some sections of the research area since 1949, on trout populations, fishing pressure and harvest, under normal, natural conditions, form an absolutely essential part of the evaluation of experimental management by providing data with which to compare the experimental conditions--the "before" part of a test. And these accumulated data are important, too, for future experiments not yet in the idea stage--and become more important as the years go by.

Effects of the flood upon future research programs will, of course, have to be determined in the future. But at the present time, now that the data for the 1957 trout season have been summarized, we can at least take a look at the immediate effects of the flood.

Of primary concern, of course, are two principal points of information regarding the 1957 season: the anglers' catch, with its related data, and the post-season trout population which had survived both the flood and the fisherman.

First, let's look at the fishing.

It was obvious to everyone concerned with the activities of the research station at the close of the 1957 season, that the anglers' catch of wild trout had reached the lowest point since the establishment of the station. The total catch had been only 858 wild trout for the six miles of stream, as compared with an average of over a thousand previously. This was not an extreme reduction, however, and might, conceivably, be due to naturally fluctuating factors.

At hand are more detailed data for the three or four years prior to 1957. During the years 1953 through 1956, the total catch averaged 1,341 wild trout

and ranged from a low of 1,033 in 1953 to a high of 1,938 in 1954, while the catch in 1957 was only 858. Fishing pressure, however, was also lowest in 1957.

Of some interest, also, is the pattern of success throughout the open season. It is well known that the best fishing usually occurs in late spring and early summer, which is the time that the largest portion of the anglers' catch is made. In 1957, however, it was just about that time that the effects of the flood were most apparent in the research area of the river: new vegetation had not yet covered up the scars, debris still hung high in streamside brush, and the stream itself was dark and roily for some time. The total catch in the one week following the flood was only two trout, while the average catch in that week for the previous three years had been 85. The catch in 1957 in the four weeks following the flood was 175, while the average catch during this period of time for the previous three years was 395--a difference of more than 200 trout!

Obviously, the low total catch in 1957 was due primarily to poor fishing conditions during that part of the season usually most productive; it was unfortunate that the flood occurred just before this time of the best fishing.

Next, let's look at the September population.

This information is obtained by electrofishing with a direct-current shocker, making two complete runs with a crew of five men through the entire six miles of the research sector--measuring, marking with a temporary fin clip, taking scale samples, and releasing the fish unharmed back to the stream at the same spot they were shocked. Using a direct-proportion calculation, the numbers of fish are estimated from the number marked in the first run and the percentage of marked fish recaptured in the second run. In this way, estimates can be obtained of the number of trout present--by species, age, and size in each experimental section, and whether hatchery or wild trout. Made each year in September at the close of the trout season, the study requires two full weeks.

Ordinarily, the population study is undertaken as an interesting, though routine, chore--sometimes an uncomfortable one when heavy fall rains bring

high, roily water, or early snow and sleet storms bring cold hands and shivering wet necks; more often, however, the job is a vigorous, exhilarating experience in the crisp, sunny days of early fall. This time, however, the study was commenced with a spark of apprehension obviously apparent. Several of the more interested local residents, concerned about the fate of their favorite trout stream, were on hand to watch and lend a hand almost every day.

The results?

Well, no one was left unsurprised. And all who were there acquired an appreciation of the ability of a trout population to withstand apparent destruction. When the calculator was finally shoved aside, the figures told the story: the population was even slightly larger than it was the previous year!

The number of legal-sized trout remaining was greater than the previous year (989 compared to 883 in September, 1956); and the young-of-the-year population, for which most concern had been felt, was about 400 larger than the average of the previous two years!

These figures for the entire six miles of the research sector (five experimental sections combined) do not tell the whole story, however, for there is one dark chapter. The trout population in Section E, immediately below the dam, was about 1,000 less than the previous year (the result of about 1,000 fewer young-of-the-year)--the overall increase being the result of well over a thousand more trout in the other four sections. This may be a reflection of the drastically changed bottom type in Section E; if so, it will be some years before the productivity of Section E returns to normal, for the ribbon of shifting sand now present on the bottom of Section E will be a long time "shifting" away.

No doubt, in the evaluation of future research projects recognition will have to be taken of the abnormal conditions of the stream and the trout population in 1957--the year of the big flood.

Several points of interest to us now stand out. First, the anglers' catch may be reduced by a damaging flood, not so much by damage to the trout themselves, but by causing poor fishing conditions. Secondly, the relative changes in the population in Section E, with its spawning and food-producing facilities drastically reduced, point up the desirability of a gravel bottom instead of shifting sand in a trout stream. And finally, the ability of a wild trout population to withstand the onslaught of a destructive flood, like the one that swept the Pigeon's valley last May, has been clearly demonstrated.

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