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DIVISION OF FISHERIES
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COOPERATING WITH THE
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REPORT NO. 1071

WATER TEMPERATURES IN MAIN AU GRES AND EAST BRANCH
OF AU GRES RIVER DRAINAGES IN THE VICINITY
OF THE PROPOSED AU GRES RIVER CUT-OFF

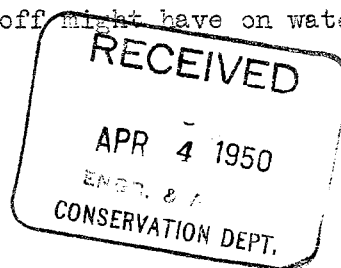
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by

David S. Shetter

On Sunday afternoon, August 4, 1946, temperatures were taken at 23 points in the upper Au Gres river drainage. Hot summer weather, with afternoon air temperatures in the high 80's, occurred during the preceding two days, and Friday and Saturday nights air temperatures remained between 60° F. and 65° F.

All temperatures were taken with a pocket thermometer between 1:30 P.M. and 6 P.M. The air temperatures varied between 78° F. and 85° F. The sky was 1/3 cloudy in the early afternoon and clear after 3:30 P.M. A strong northwest or west wind blew constantly. The water temperatures obtained should represent near-maximal thermal conditions under high mid-summer air temperatures. The locations of the sites where temperatures were taken are given in the accompanying table. The sites were chosen with the idea in mind that it might be possible to predict what effect the proposed Au Gres River Cut-off might have on water temperatures in the East Branch of the Au Gres.



Interpretation of the data

It will be noted that water temperatures from points on the drainage of the East Branch of the Au Gres were, with the exception of the site about 1/4 mile below Hale Lake, all well below the toleration limit of 83° F. given by Weedham (1938) for rainbow trout ranging from 60° F. to 73° F. Even at the lowermost point visited (3 miles south, 1 mile east of McIvor), after the stream flows through a ditched channel with more or less open banks, the water temperature was only 73° F. with the air at 84° F.

On the other hand, stream temperatures on the Main Au Gres drainage ranged from 66° F. on Hope Creek to 30° F. on the Main Au Gres 1.8 miles east of Whittemore. Water temperatures apparently follow within 3 to 6 degrees of the air temperature on the Main Au Gres, which means that it will approach 85° F. or 90° F. in periods of extreme heat.

From the differences in water temperatures observed on the East Branch and the Main Au Gres, it can be theorized that should the proposed out from the Main Au Gres (starting at the mouth of Elm Creek and running parallel and just north of the Arenac-Iosco county line to the East Branch) be dug, water temperatures in the East Branch below the entrance of the out would be raised, probably from 4 to 8 degrees (to 77-81 degrees Fahrenheit) depending on the volume of water coming from the drainage of the Main Au Gres River. This would tend to reduce the summer trout carrying capacity of the stream below this point and further limit what little mid-summer trout fishing may take place in the lower East Branch and the Whitney A Drain. How much mid-summer trout fishing takes place below National City is not known. However, during the spring and fall, considerable angling is done all along the Whitney A Drain and the Lower East Branch.

As already pointed out by C. T. Black in his memorandum to Mr. Fontanna (July 18, 1946), one of the worst probable results of the proposed drain on the lower East Branch would very likely be the increased silt deposition below the entrance of the new cut. Just how the additional large stream of water, ^{diverted} from the Main Au Gres drainage might affect the spawning run of rainbow trout which enters the East Branch, should large-scale floods occur during the spring migration, cannot be predicted.

INSTITUTE FOR FISHERIES RESEARCH

by David S. Shetter

Report approved by A. S. Hazzard

Report typed by M. A. Klaphaak

Water temperatures and air temperatures on Au Gres drainage, Iosco County, Sunday, August 4, 1946.

All temperatures are given in degrees Fahrenheit. Horizontal line separates East Branch from Main Stream. Sky 1/3 cloudy to clear with W and NW winds all afternoon.

Name of stream	Point of examination	Location	Air	Water	Time	Remarks
		T. - R. - S				
Hale Creek	0.8 mi. W. of Hale	23N.-5E.-22	84°	78°	1:30 P.M.	Stagnant
" "	1.2 mi. S. of Hale on M-65	23N.-5E.-27	82°	68°	1:40 P.M.	Slow flow
Trib. of Hale Creek	2.5 mi. S. of Hale on M-65	23N.-5E.-34	..	..	..	Dry
E. Branch Au Gres	At bridge 1/2 mi. W. of Guiley Pond	22N.-6E.-8	81°	64°	2:10 P.M.	Low
" " " "	At M-55 bridge	22N.-6E.-21	84°	70°	3:15 P.M.	Very low
" " " "	1 mi. E. of National City	21N.-6E.-3	84°	72°	5:00 P.M.	18" below normal
" " " "	1.5 mi. S. of McIvor	21N.-6E.-14	85°	72°	4:50 P.M.	Very low
" " " "	3 mi. E., 1 mi. S. of McIvor	21N.-6E.-26	84°	73°	4:35 P.M.	Very low
Guiley Creek	At Parker's Bridge	22N.-6E.-9	81°	60°	2:45 P.M.	Low
Sand Creek	0.5 mi. N. of M-55	22N.-6E.-22	82°	60°	3:00 P.M.	Low
" "	At M-55 crossing	22N.-6E.-22	82°	64°	3:10 P.M.	Low
Manery Creek	At M-55 crossing	22N.-6E.-22	..	..	..	Dry
Main Au Gres	3 mi. W. of M-65, M-55 crossing	22N.-5E.-20	78°	74°	5:40 P.M.	Very low
" " "	M-65 crossing	22N.-5E.-34	84°	78°	3:35 P.M.	Low
" " "	1.8 mi. E. of Whittemore	21N.-5E.-12	85°	80°	5:15 P.M.	Very low
" " "	3 mi. S., 2.1 mi. E. of Whittemore	21N.-6E.-30	79°	76°	4:25 P.M.	Very low
Latter Creek	M-55 crossing	22N.-5E.-23	85°	67°	3:25 P.M.	Low
Potterfield Creek	M-65 crossing	21N.-5E.-2	84°	69°	3:45 P.M.	Very low
Hale Creek	M-65 crossing	21N.-5E.-14	..	..	..	Dry
Johnson Creek	M-65 crossing	21N.-5E.-23	84°	70°	4:00 P.M.	Very low
Elm Creek	3 mi. S., 1 mi. E. of National City	21N.-6E.-26	84°	79°	4:15 P.M.	Stagnant
Hope Creek	2 mi. W. of Hale Fire Tower	22N.-5E.-9	83°	66°	1:55 P.M.	Stagnant
" "	1 mi. W. of M-65 on M-55	22N.-5E.-21	85°	69°	5:30 P.M.	Low