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REPORT NO. 841

INVESTIGATION OF SMELT MORTALITY IN THE STRAITS OF  
MACKINAC AND LAKE MICHIGAN DURING LATE

NOVEMBER, 1942.

Fish of various species were reported to be dying in the Straits of Mackinac by Conservation Officer Joe Hill on November 12th. Subsequent investigation on November 14th by Dr. Eugene Roelofs, District Fisheries Biologist of the Thompson Hatchery District, and I revealed that the mortality was among smelt and that other species of fish found were probably a normal loss. In spite of four inches of snow we collected smelt on the shore of Bush's Bay. Mr. Tasse on Chenux Channel said that he had seen many smelt along the shore but due to the snow, we were unable to find any specimens here.

Mr. Hagen, a commercial fisherman employed by Victor Halberg and Son, at St. Ignace, said that he first noticed the smelt about two weeks ago and that smelt of all sizes were seen. He also said that he thought they were dying some distance off shore because his nets (2 3/4 inch mesh) were set along sand beaches and they took no smelt.

On November 26th, Mr. R. Haken, Conservation Officer at Detour reported that smelt have been coming ashore off Detour and Drummond Island for about five weeks, as well as in St. Mary's river. He further stated, "We have had almost constant southerly winds for a long time and the water has not been clean in this area. Commercial fishermen tell me they have seen the smelt out there and four miles from shore dead and some nearly dead."

In an attempt to determine whether strong winds might have been a factor in the distribution of dead fish, the following weather data at Mackinac Straits was obtained from Mr. Prickett at the U. S. Weather Bureau Station at St. Ignace:

Nov.	Temp.	Wind	ppt.	Velocity	(m.p.h.) Time
1.	47-30	SW	Rain, hail	18	3:30 pm
2.	41-30	NW	No. ppt.	14	1:30 pm-4:30pm
3.	41-29-	NW	" "	10	9:30 am
4.	49-28	S	" "	13	1:30 pm
5.	49-37	S	L. Rain	17	3:30 pm
6.	40-28	W	L. fog	14	7:30 am
7.	38-29	S	L. rain, snow	8	12:30 noon
8.	44-28	W	L. rain	7	11:30, 2:30, 3:30(8)
9.	45-35	SE			
10.	40-24	NW	L. rain, snow	19	10:30 am
11.	33-32	NW	L. snow	19	5:30 pm
12.	40-15	W	L. rain, snow	32	9:00 am(gusts. to 45)
13.	24-12	NW	L. snow	22	3:00 pm
14.	26-12	W	L. snow	5	4:30 am

On November 24, Walter Crowe, District Fisheries Biologist of the Oden Hatchery District, reported that he observed quantities of dead smelt along the Lake Michigan shore from Wilderness State Park to the eastern end of Little Traverse Bay and Mr. H. Shultz reported observing dead smelt as far south as Charlevoix. This was apparently the southern limit of the mortality in Lake Michigan because Conservation Officers from Districts 12 and 13 (from Grand Traverse Co. south through Muskegon Co.) reported on December 17th and January 11th, 1943 that no smelt mortality had been observed in these Districts.

Eugene Roelofs reported on November 27th that dead smelt were observed as far west as Point Aux Barques. No reports have been received to indicate that dead fish were found in Lake Michigan west of this point.

The dead smelt ranged from 3.9 inches to 8.5 inches in length and the ages of the fish, as determined by scale sample, ran from young of the year to fish in their third fall of life. Smelt of all ages were found to be equally abundant.

#### Examination of fish

The smelt were examined with the aid of a microscope but no causative agents could be found. All internal organs appeared to be normal.

#### Comments:

The present mortality among smelt appears to be a continuation of the mortality that occurred in Lake Huron in October (report on memo. no. 149). The latter mortality began about October 3rd from Tawas to Alpena and was subsequently reported north to Presque Isle on October 12. In the present mortality, smelt were first observed at Detour and Drummond Island about October 20th, and finally on November 24th at Charlevoix and November 26th

at Point Aux Barques. Judging from the dates that dead smelt were first observed in the various areas it would appear that the mortality traveled westward. The wind directions from November 1st to the 14th at the Straits of Mackinac, was predominately from the west, which would indicate that the mortality was rather widespread, rather than occurring within a small area and the dead smelt being dispersed by water currents.

Dr. John Van Oosten, in charge of the Great Lakes Fishery Investigations, U. S. Fish and Wildlife Service, suggested that gunfire or bombing practice might be a causative factor and suggested that Captain Allers might have information on this point. Captain Allers, in a personal conversation at the Michigan Department of Conservation Training School at Higgins Lake, said that he did not believe bombing or gunfire was the cause, since only smelt were killed, where other species of fish were not damaged. My examinations did not reveal injuries that could be attributed to such a cause, although injuries from blasting are not always clear.

INSTITUTE FOR FISHERIES RESEARCH

by Leonard N. Allison

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