

Lake States Fire Science Consortium

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THE 1976 SENEY (WALSH DITCH) FIRE & WILDLIFE

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In the summer of 1976, a lightning strike started the Walsh Ditch Fire in a remote area of the Seney National Wildlife Refuge in eastern Upper Michigan. In total, this fire burned more than 100 mi² (260 km²) of the wetland-upland landscape mosaic of the refuge and adjacent state lands. This fire was difficult to contain for many reasons. First, drought had exacerbated the effects of anthropogenic ditching and made peat more susceptible to burning. Peat fires are notoriously difficult to manage. Second, the remote location of the fire made it difficult for people and equipment to access the area for management purposes. Not surprisingly, some evidence suggests that this fire was the most expensive federal fire until that point.

In order to assess the initial impact of the fire on the land and its wildlife, the Seney Fire Evaluation Team was formed, tasked with three main goals: 1) to evaluate how much the fire had impacted fish, wildlife, and their habitats, 2) to provide a baseline for future monitoring of changes in the environment, and 3) to compile a document publicizing the findings and provide recommendations for the future. The impact of the fire on the wildlife was studied for three years using seven, 8-ha paired (burned-unburned) plots.

Although the vegetation responses varied across the burned plots due to the spatial variability in fire severity, in many areas the effects of the fire were hardly noticeable after the second growing season. Plots closer to the Walsh Ditch showed more altered conditions relative to the unburned plots. These effects were so pronounced that they are still easily seen from airphotos.



Photo: USFWS

MANAGEMENT IMPLICATIONS

- 1) Peat fires pose serious management challenges.
- 2) The fire increased species diversity across multiple taxa by changing habitat structure.

Want to learn more?

Greg Corace at Seney National Wildlife Refuge (greg_corace@fws.gov; 906-586-9851 x14).

Anderson, S.H. 1982. Effects of the 1976 Seney National Wildlife Refuge wildfire on wildlife and wildlife habitat. U.S. Fish and Wildlife Service, Resource Publication 146

Fire effects were not quantified for larger mammals since it was assumed that they can quickly evacuate an area. Immediately after the fire, however, researchers found many small mammals only in the unburned areas. There was a high mortality rate of small mammals on the burned areas, possibly because of the lack of cover and food. By 1980 the number of small mammals observed over the entire study area had increased.

Bird species diversity was reduced on the burned areas compared to the unburned areas throughout the study. Data suggest the lack of vegetation structure that the birds needed as a potential causal mechanism. The burned areas, however, were preferred over the unburned plots for bird species that forage or nest on the ground. Multiple species of amphibians and reptiles were observed post-fire that had not been noted as being in Seney prior to the fire (probably due to being unsampled). There was no significant difference in the number of frogs and snakes observed on the burned and unburned plots. Fewer salamanders were found on the unburned plots. There were high populations of turtles within the burned areas. Fish populations were apparently not impacted by the fire, as the fire did not noticeably impact the water quality or life found in the water.

The Fire Evaluation Program's comprehensive study has important implications for the study of fire and ecosystems. This study shows that the wildlife in Seney benefited overall because of the fire. Future studies could be conducted to revisit sampled areas and compare short-term results with patterns that have arisen over the last 38 years.

Related information:

Drobyshev, I., P.C. Goebel, D.M. Hix, R.G., Corace III, and M. Duncan. 2008a. Pre- and post-European settlement fire history of red pine-dominated forest ecosystems of Seney National Wildlife Refuge, Upper Michigan. *Canadian Journal of Forest Research* 38:2497–2514.