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Metallic Sulfide Mining:
Impacts on Michigan's Wildlife

Mining in metallic sulfide-ore bodies in Michigan's Upper Peninsula presents a potential threat to native wildlife, particularly trout and other aquatic species. Mining can turn world-class trout streams into dead zones in which fish and other aquatic wildlife cannot survive. The rare, native coaster brook trout, whose only breeding habitat on Lake Superior's south shore is the Salmon Trout River, is among those that could be harmed by new sulfide mining operations.

The Salmon Trout River flows through an area known as Yellow Dog Plains, an expanse of largely undeveloped woods and wetlands that provide habitat for deer, bear, moose, wolves and birds, including northern harriers and upland sandpipers. Near the headwaters of the Salmon Trout River in Marquette County, mining exploration is under way, as mining interests probe a nickel and copper deposit.


FWS, Jim Leopold

How Mining Affects Wildlife

Mining is a large-scale industrial activity that involves building roads, using heavy earth-moving equipment, using toxic chemicals, and generating large volumes of toxic waste. All of these activities can hurt wildlife by causing habitat destruction and exposure to pollution that impairs growth and reproduction and even kills fish and birds. Noise and lights associated with construction and industrial activity can scare deer, birds, and other animals away from the area.

But not all mining has the same impact. The Upper Peninsula's familiar iron mines extract the metal from oxide ores as opposed to sulfide ores. When sulfides come into contact with air and water, sulfuric acid is generated. The acidic run-off mobilizes heavy metals like lead, cadmium, aluminum, selenium, and arsenic. This mixture of sulfuric acid and heavy metals is called acid mine drainage. When acid mine drainage is not contained, it increases the acidity of nearby rivers, streams, and groundwater and the amount of heavy metals dissolved in them. Mining in oxide ores does not trigger acid mine drainage, but mining in sulfide ore bodies does.

Fish, aquatic plants, amphibians, and invertebrates are sensitive to stream acidity and exposure to heavy metals.[1] Highly acidic water carrying heavy metals can cause major fish kills, but even mildly acidic water can stress fish and reduce populations of the algae and invertebrates upon which they feed.[2] Developing eggs and larvae have even less tolerance for pollution than adults.[3]

Historic and Current Examples

Beginning in 1973, acid mine drainage from the Dober Mine Complex, an underground and open pit iron mining operation in Iron County near the Wisconsin border, killed all the aquatic life in a seven-mile stretch of the Iron River immediately downstream from the site and damaged a ten-mile stretch of the Brule River.4 Today, the Dober Mine continues to produce acid mine drainage and requires ongoing water treatment.5

In the western United States, stream reaches in more than 40 percent of the region's watersheds are contaminated by mining, much of it related to acid mine drainage.6 And many watersheds still suffer chronic pollution from historic and current mining operations that have killed fish and birds. For example:

Photo: USFWS

EPA

- In northern New Mexico's Red River watershed, acid mine drainage from abandoned mines and waste rock piles at an operating molybdenum mine killed most of the aquatic life in an eight-mile stretch of what was once a state-designed Blue Ribbon fishery. According to local anglers, heavy metals, such as aluminum, cadmium, and copper, have coated the gravel beds trout require to spawn.[7]

- For years, Colorado's Upper Arkansas River, which flows through one of the most heavily mined areas in the state, was completely devoid of fish for a stretch of 50 miles downstream from the town of Leadville. Because of water pollution from mining, a once-legendary brown trout fishery in the Upper Arkansas was taken off of the state's official "Gold Medal" designation in 2001.[8]

- Between October 2000 and March 2001, dozens of dead migratory birds were found at the Morenci copper mine in Arizona. The birds had ingested toxic wastewater stored in waste ponds.[9]

- In November 1995, more than 300 geese were found dead in the abandoned Berkeley Pit copper mine in Butte, Montana.[10]

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[2] Ibid.

[3] Ibid.

[4] Larry, Elmleaf, Michigan Department of Environmental Quality, Environmental Response Division, Lansing, MI. Steve Casey, MDEQ, Surface Water Quality Division, Marquette, Mi. Dave Blouin, Mining Impact Coalition of Wisconsin.

[5] Ibid.

[6] Liquid Assets 2000: America's Water Resources at a Turning Point, U.S. Environmental Protection Agency. May 2000.

[7] Settled, Mined, and Left Behind: The Legacy of Abandoned Mines in the West, Trout Unlimited. 2004. http://www.tu.org/site/pp.asp?c=7dJEKTNuFmG&b=296662

[8] Ibid.

[9] "Mine firm pleads to bird deaths in Arizona," United Press International, August 9, 2004.

[10] "Berkeley Pit Water Kills Healthy Birds in ARCO's Tests," Erin P. Billings, *Helena Independent Record*, April 26, 1996.