



Environmental Concerns Committee
May 2006

Mr. Mel Nevils, Section Chief
Land Quality Section, Division of Land Resources
North Carolina Department of Environment and Natural Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

Re: Impacts of Floodplain Mining on North Carolina's Mountain Streams

Dear Mr. Nevils:

The Environmental Concerns Committee (ECC) of the North Carolina Chapter of the American Fisheries Society (NCAFS) is concerned about an important issue that we believe should be addressed by the North Carolina Department of Environment and Natural Resources, Division of Land Resources. This issue is floodplain mining on mountain streams in North Carolina.

The mission of the ECC is to promote the conservation and responsible management of aquatic species and their habitats, to identify actions that may harm or benefit aquatic resources, to consider advocacy positions when deemed necessary, and to provide a forum for the exchange of ideas, information, and concerns through committee meetings, the NCAFS newsletter, and written correspondence. The NCAFS is a 139-member society of scientists representing state and federal regulatory and resource management agencies, academic institutions, and private organizations. Most NCAFS members are also members of the American Fisheries Society (AFS). The AFS was founded in 1870 and is the oldest and largest professional society representing fisheries scientists. The AFS promotes scientific research and enlightened management of aquatic resources for optimum use and enjoyment of the public.

Floodplain mining has a long history in the North Carolina mountains and it appears to be increasing with population and development trends. Most mountain streams and rivers occupy narrow, steep valleys that are underlain with gravel, cobble, and other alluvial deposits. These "river rocks" are in high demand for construction and decorative landscaping because of their smooth and rounded surfaces. Floodplain mining requires a low operational investment when compared with quarry operations, yet river rock is four times more costly than quarry stone to the consumer. Many operations individually disturb less than one acre of land and are not currently subject to the Mining Act of 1971 (as amended, 1982; G.S. 74-46 through 74-68; 15 NCAC 5). However, as a land disturbing activity, floodplain mining presumably is subject to riparian buffer restrictions on trout-classified streams.

Many mountain streams where floodplain mining occurs support sensitive aquatic life that requires cold to cool water temperatures with relatively clean bottoms and low turbidity. Mining occurs along the Cane, Catawba, South Toe, and Pigeon rivers where species such as Appalachian elktoe (*Alasmidonta raveneliana*, State and Federal Endangered), stonecat (*Noturus flavus*, State Endangered), blotchside logperch (*Percia burtoni*, State Endangered), and sharphead darter (*Etheostoma acuticeps*, State

Threatened) can be found. Critical habitat for the elktoe occurs on the Cane, South Toe, and Pigeon rivers at or downstream of floodplain mines. The upper reaches of these rivers also support high quality trout fisheries. Trout streams are a limited and important fishery resource to North Carolina's economy. They provide recreation for about 173,000 trout anglers who add about \$28.8 million in recreational dollars to the mountain region¹.

Loss of riparian vegetation from floodplain mining is a concern because of its importance to the habitat quality of mountain streams. Pits, berms or levees, and access roads eliminate riparian vegetation that provides channel stability and cover for fish and wildlife. This vegetation also provides shading and insulation necessary to maintain cold water for trout. It also is a source of wood and other organic debris that forms the basis of aquatic food webs.

Stream channel instability and severe changes in morphology are a particular concern near floodplain mines. Stream migration across floodplains is a normal process that typically occurs slowly. However, the potential for sudden channel shifts or braiding during major flood events increases considerably where floodplain mining has removed riparian vegetation, lowered the floodplain, and disturbed alluvial soils. Major channel changes or "blow-outs" occurred near floodplain mines on the Cane, South Toe, and Pigeon rivers during flooding in late 2004.

Inundation of floodplain mines can eliminate or reduce stream flow in natural stream channels, and may also harm aquatic resources through erosion and redeposition of large amounts of sediments. Fine soils that are waste or used for reclamation can be redeposited downstream where they fill the interstitial spaces of normally clean cobble and gravel bottoms. This can render fish spawning and macroinvertebrate habitats unsuitable. Further, chronic sedimentation can occur as subsequent floods continue to erode the mine site and new channel/s at an accelerated rate. Gravel and cobble from stockpiles and berms, the latter of which are often constructed in an attempt to protect mines from flooding, are also susceptible to erosion during major floods. These bedloads aggrade, often rapidly and in mass, where they further contribute to stream channel instability and erosion.

Some mountain streams may change direction and capture floodplain mines during major floods regardless of the width of the riparian zone that separates the mine from the channel. In contrast, mining on other streams may have a low potential for this provided adequate protective measures are utilized and enforced. There currently is a lack of understanding and oversight of floodplain mining in the mountains of North Carolina. Therefore, an assessment and implementation of appropriate levels of resource protection with this activity is needed to ensure the sustainability of the cold water aquatic habitats and important threatened and endangered species in our state.

It is the position of the Environmental Concerns Committee (NCAFS) that mining in the floodplains of mountain streams has the potential to have significant, adverse effects on wild trout populations, Natural Heritage Areas, and federal and state listed species. Therefore, as President of the NCAFS, I urge you and the staff of the North Carolina Division of Land Resources to:

1. Determine the extent and environmental effects of floodplain mining on streams in western North Carolina.
2. Consider a moratorium on all mining along mountain streams until its cumulative effects can be assessed and protective measures initiated that would conserve aquatic resources.
3. Consider a ban on floodplain mining on mountain streams where it cannot be accomplished in an environmentally sustainable fashion.

¹ United States Fish & Wildlife Service. 2001. National Survey of Fishing, Hunting and Wildlife-Associated Recreation, North Carolina.

The NCAFS, with its diverse and knowledgeable membership, can aid the Division of Land Resources in assessing the cumulative effects of floodplain mining on mountain stream habitats and how to restore those damaged by floodplain mining. Thank you for your attention to this matter and please do not hesitate to contact if you would like to discuss this issue. My telephone number is 704/986-6109.

Sincerely,

A handwritten signature in cursive script that reads "Lawrence Dorsey". The signature is written in a dark ink and is positioned below the word "Sincerely,".

Lawrence Dorsey, President
North Carolina Chapter, American Fisheries Society