



February 4, 2016

**RE: Senate Bill 1530 relating to mining for precious metals in and near streams
Testimony of Kelsey Kopec of the Center for Biological Diversity**

Honorable members of the Oregon Senate Environment and Natural Resources Committee:

This testimony is submitted on behalf of the Center for Biological Diversity (“Center”), a non-profit conservation group with more than 990,000 members and online activists dedicated to the protection of endangered species and their habitats. The Center and its members across Oregon are concerned about the harmful effects of suction dredging on water quality, fish populations, and the environment across Oregon.

I am a Researcher with the Center’s Environmental Health program focusing on issues surrounding the increasing exposure wildlife and pollinators to toxins. I have a bachelor of science from the University of Oregon, where I studied biology and published an article in the Oregon Undergraduate Research Journal on native bees.

Suction Dredge Mining Impacts on Biological Resources

Suction dredge mining results in numerous impacts to ecosystems, fish, and wildlife. In formulating the opinions, I have relied upon the references listed in this testimony and my own accumulated biological knowledge.

Direct impacts include mortality from the activity itself through the suction and entraining of fish and eggs in the dredge, killing and altering habitat for the organisms fish feed on, and mercury poisoning of a range of organisms in aquatic systems. Indirect impacts to biological resources results from habitat modifications to the waterbodies, dewatering of streams, destruction of riverine vegetation, changes in water turbidity and temperature, and disturbance of wildlife and habitat. The mining process impacts many imperiled aquatic species—such as steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), Coho salmon (*Oncorhynchus kisutch*), Green Sturgeon (*Acipenser medirostris*) [Southern DPS], and Pacific lamprey (*Lampetra tridentate*). Suction dredging activities that occur during the breeding season (typically March through August) alter behavioral patterns of special-status bird species such as the Bank Swallow (*Riparia riparia*) and Willow Flycatcher (*Empidonax traillii*), and special status raptor species that rely upon riparian vegetation.

Suction Dredge mining has a substantial adverse effect, either directly or through habitat modifications, on wildlife that is identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Oregon Department of Fish and Wildlife (“ODFW”) and/or the U.S. Fish and Wildlife Service (“FWS”). It has a substantial adverse effect on riparian habitat, federally protected wetlands, or other sensitive natural. Suction dredging also results in adverse effects to established native resident wildlife or migratory wildlife corridors and may impede the use of native wildlife nursery sites.

Impacts to aquatic species include disturbance of the fish and, depending on the time of year, fish eggs, fry, and the invertebrate communities that fish rely upon for food. The dredging also has adverse impacts on other aquatic or riparian plant and animal species, channel morphology which includes the bed, bank, channel and flow of streams and rivers, water quality and quantity, as well as riparian habitat adjacent to streams and rivers. Dredging also often produces deep holes in the streambed and leaves unstable tailing piles.

Suction dredging creates turbidity in the water bodies where it occurs. Turbidity can have serious impacts on fish species and their habitat. It can interfere with fish feeding, by reducing visibility and smothering eggs and yolk sac fry in gravel. Since suspended sediment blocks sunlight, turbidity also reduces primary production (e.g., algae and other aquatic plants), which forms the foundation of an aquatic food web. The more dredging operations there are in an area, the graver the problem. Although suction dredging effects may not be catastrophic when assessed by operation, the cumulative effects of turbidity can cause serious impacts on fisheries. Turbidity can also impair the ability of juvenile salmonids to feed.

Suction dredging impacts special status birds by altering their behavior, movement, distribution, and reproduction, which may lead to the expenditure of critical energy reserves but which can ultimately result in nesting failure. Human activity, including mechanical noise, can alter bird species composition associated with the activity area by scaring away birds that are sensitive to mechanical noises. It can also cause nest abandonment, increased nest predation through attraction of predators to the area, and discourages late-nesting birds from settling in areas with human-created noise and activity.

Specific disturbance mechanisms include noise associated with dredge rigs, dredgers accessing streams, direct disturbance of riparian habitat, alteration of prey resource base, and suction dredging encampment activities at night (e.g., lights and noise). Even with a regulatory program designed to minimize harm suction dredging can impact special status birds by altering their behavior, movement, distribution, and reproduction. In some cases this may prevent birds from continued nesting in a section of their territory or result in nest abandonment (even temporary), causing mortality to eggs or nestlings. For several of these bird species even a small disturbance could be substantially detrimental to their reproduction and considering the restricted population and/or range of the species in question is a significant impact.

Suction dredging and ancillary upland activities can alter the habitat of animals, which can affect behavior, survival, reproduction, and distribution of numerous wildlife species. Actions that can affect riparian associated wildlife species include dumping of waste materials, nocturnal light

sources, ground disturbance, and noise from dredging activities and encampments. Collection of firewood and clearing areas for encampments can have negative consequences for wildlife species. Disruption of breeding and/or rearing activities can reduce fecundity and recruitment of wildlife. The nutritional or hormonal costs of avoiding or responding to a disturbance may have cumulative and important implications for individual fitness and population productivity.

More directly, human access can increase mortality through non-monitored and controlled hunting, vehicle collisions, or the removal or destruction of animals deemed to be “problems”. Human presence and activities can also alter interspecific interactions, namely rates of predation. Riparian associated species are impacted by off-road vehicle use, which may result in collision, displacement or avoidance, habitat loss and fragmentation, snag or downed log reduction, increasing routes for predators/competitors, introduction of non-native species and disturbance at a specific location. Wildlife movement for small vertebrates is impeded when suction dredgers are densely or consistently active within a stream corridor. This could displace animals utilizing movement corridors along the littoral areas.

Special status species, sensitive natural communities, and wetlands are adversely affected by suction dredging through: access to and egress from streams; establishment of encampments; the dispersal of non-native or invasive species; and unauthorized dredging-associated activities such as direct removal of aquatic or riparian vegetation, destabilization of streambanks, or release of noxious materials (e.g., fuel). The disturbance mechanisms associated with most of these activities result in compaction and erosion of soils. Suction dredge mining within the range of sensitive plant communities further results in trampling, disturbing, or otherwise destroying individuals of these communities.

Stream ecosystem composition, diversity, and resiliency have the potential to be adversely affected by dredging activities. Suction dredging can have substantial short-term and localized adverse impacts on benthic invertebrate abundance and community composition. Persistent or repeated dredging may cause the benthic community to remain in an early state of succession, which could reduce resiliency to disturbance. Dredging can also disrupt the stream ecosystem by: displacing large volumes of material; changing substrate characteristics; dispersing non-native or invasive species; and unauthorized releases of noxious materials (e.g., fuel spills). Activities associated with suction dredging are likely to cause noticeable temporary reductions in biodiversity and resiliency of aquatic ecosystems at the dredging site and potentially at the scale of river reaches. Annual disturbance at mining locations can lead to long term negative changes in biodiversity and resilience.

Suction dredging encampments can have long-lasting damaging effects on habitat. Streambank erosion and channel widening have been found to be more common around areas of concentrated use, such as extended use campgrounds. Other impacts associated with encampments include the trampling of vegetation and compaction of soils. These impacts can affect plant communities, wildlife habitat quality, and a variety of species that are sensitive to habitat structure (e.g., rodents, reptiles, amphibians, and invertebrates). Impacts known to be associated with dredging encampments include improper disposal of trash and chemicals, unsanitary disposal of human waste, and use of off-road vehicles.

Suction dredging equipment including intake nozzles, pumps, pontoons, sluice boxes, masks, wetsuits, vehicles, camping equipment, clothing, and other items moved from one location to another can transport aquatic invasive species becoming a vector for the spread of invasive species.

Thank you for your consideration,

Kelsey Kopec
Researcher
Center for Biological Diversity
PO Box 11374
Portland, OR 97211-0374
971-717-6410
kkopec@biologicaldiversity.org

REFERENCES

California Department of Fish and Wildlife, Suction Dredge Permitting Program, Subsequent Environmental Impact Report (March 2012) section 4.3 Biological Resources available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=27399&inline=1>.

Oregon Chapter American Fisheries Society, Effects of Suction Dredge Mining on Oregon Fishes and Aquatic Habitats, Supplemental Information (March 2015)

Suction Dredge Mining Cases (Judicial Council Proceeding No. JCPRS4720), Declaration of Ileene Anderson M.S., In Support of Plaintiffs Karuk Tribe and Coalition's Opposition to Miners' Joint Motion for Injunction (May 29, 2015).

Suction Dredge Mining Cases (Judicial Council Proceeding No. JCPRS4720), Declaration of Walter G. Duffy, PH.D., In Support of Plaintiffs Karuk Tribe and Coalition's Opposition to Miners' Joint Motion for Injunction (May 29, 2015)

Suction Dredge Mining Cases (Judicial Council Proceeding No. JCPRS4720), Declaration of Peter Moyle PH.D., In Support of Plaintiffs Karuk Tribe and Coalition's Opposition to Miners' Joint Motion for Injunction (May 29, 2015)

Suction Dredge Mining Cases (Judicial Council Proceeding No. JCPRS4720), Declaration of Toz Soto, In Support of Plaintiffs Karuk Tribe and Coalition's Opposition to Miners' Joint Motion for Injunction (May 29, 2015)