

March 28, 2001

**WRITTEN TESTIMONY FROM THE XERCES SOCIETY
ON SENATE BILL 606**

The Xerces Society is an international non-profit scientific society dedicated to protecting biological diversity through the conservation of invertebrates.

Scott Hoffman Black, Executive Director, is the principle author of this testimony. He has degrees in entomology and ecology. He has years of experience working in aquatic ecosystems including implementing macroinvertebrate bioassessment protocols and studying endangered fish and other aquatic species.

Jeff Adams, Aquatic Program Director, also contributed to this testimony. He has been involved in the study of oceans, estuaries, lakes, rivers, and streams for over 10 years. He has a Master's degree in macroinvertebrate bioassessment from the University of Washington.

The Xerces Society has concerns with Senate Bill 606 specifically because of the suction dredging provision. Our comments are limited to the motorized surface dredges as stated in section 18 (c) of the bill. We are concerned about the impact of suction dredging on aquatic ecosystems and how suction dredging will be effectively regulated.

NEGATIVE IMPACT OF SUCTION DREDGING

The potential significant effects on the environment from suction dredging include impact to: (a) benthic (bottom dwelling) invertebrate communities, (b) fish and fish eggs, (c) other aquatic or riparian dependent plant and animal species, (d) channel morphology which includes the bed, bank, channel and flow of streams and rivers, (e) water quality, and (f) riparian habitat adjacent to streams and rivers (State of California, 1997).

A review completed by the State of California Department of Fish and Game indicates that suction dredge mining with a 6" or smaller dredges (as allowed in the bill) can have a significant effect on aquatic ecosystems (State of California, 1997).

Impact on aquatic invertebrates

Suction dredging can cause significant short-term, localized alterations of stream substrates as well as adverse effects on the habitat and abundance of aquatic organisms, especially insects (Prussian et al. 1999, Harvey 1982). The effects of turbidity and sedimentation produced by suction dredging are also localized and temporary, but can be significant (State of California, 1997). For example, increase in turbidity can reduce the production of many types of algae, aquatic plants and benthic invertebrates that form the base of the aquatic food chain in streams (Hoffman-Black 1998).

Direct impact to stream bank and channel

Stern (1988) and McCleneghan and Johnson (1983) cite observations of damage to streambeds, banks and channels as a result of suction dredging. Effects to channel morphology, riparian habitat, and stream banks can be long term and may significantly affect fish and fish habitat. (State of California, 1997). Bed, bank and channel of a stream can be significantly affected by suction dredging (Stern 1988, Thomas 1985). Dredging excavates streambed materials, leaving holes of varying size. Use of a suction dredge can cause channelization of a stream, deepening and narrowing of the natural channel (North 1993). Channelization can eliminate fish habitat by physically decreasing the area available to fish, by increasing velocity, or by removing cover and by changing riffle and runs into pool type habitat thereby eliminating areas with high invertebrate productivity (North 1993).

Stream banks can be significantly affected by undermining of the banks below the water line, causing bank sloughing and failure (McCleneghan and Johnson 1983, Stern 1988). This adversely affects stream bank structure and stability, thus negatively impacting riparian vegetation and animal species dependent on those habitats. The condition of the stream bank and riparian zone is closely linked to quality of fish habitat. Over wintering juvenile steelhead and Coho salmon are particularly dependent on stable, undercut stream banks for cover (Stern 1988).

Direct effects on fish

The affects of suction dredging on fish eggs and yolk sac fry can be significant. Populations of fish in these early stages of life can experience 100 percent mortality if sucked through a suction dredge of any size or covered with sediment produced by suction dredging (Griffith and Andrews, 1981). Salmon may use suction dredge tailings as nesting sites or redds. However, redds on dredge tailings are more likely to be scoured away during high waters, resulting in significant negative consequences for the survival of Chinook salmon eggs and embryos (Harvey and Lisle 1999).

Evidence overwhelmingly shows negative impacts from suction dredging

There is some old and antidotal evidence that suction dredging actually helps fish. A 1960 study found that gravels left behind were beneficial for spawning. Another 1962 study found that it can improve spawning riffles below dams where there are limited high seasonal flows (California, 1997). Some suction dredgers also cite positive effects of suction dredging on the environment. Despite these accounts, there is little or no scientific, peer-reviewed evidence to support these claims. Peer-reviewed documents point to negative impacts, both short and long term, on riparian and stream habitats that support salmon and other aquatic species.

MONITORING IMPACTS AND INSURING COMPLIANCE

The bill has provisions that describing how suction dredges should be operated to protect aquatic resources. If these provisions in Section 17 of the Bill were followed it could limit some of the impact on these aquatic ecosystems. Although these are good measures to limit impact there are no provisions in the bill to monitor impact or ensure that these measures are followed.

For example, how will the State regulate when and where suction dredging occurs to ensure protection of anadromous fish? Anadromous fish (salmon and steelhead) run at various times of the year that may vary depending on stream flow and water temperature. How can the State insure that suction dredging does not harm the redds or fry of these species when the timing and location of spawning is not known? There are also no studies that show the cumulative impact of these dredges across the landscape. Without oversight and monitoring the State cannot ensure that there will be no significant negative impacts to Oregon's waterways.

CONCLUSION

The majority of the scientific literature shows that suction dredging can have a significant negative impact on aquatic ecosystems. The State of Oregon needs to ensure the protection of salmon and other aquatic species for future generations. The rivers of Oregon are a public trust and should be protected as such.

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