

USFWS 2009 Report on Environmental Contaminants RIPRAP Activities

Note: this is an annual report from the U.S. Fish and Wildlife Service regarding its activities to address contaminant concerns outlined in the RIPRAP. Contaminants remediation is conducted independently of and funded outside of the Recovery Program.

II.B. Support actions to reduce or eliminate contaminant impacts

Pesticide exposure prevention The Grand Junction Field Office worked with the local mosquito control agency to prevent mosquitocide exposure of endangered Colorado River fish in grow-out ponds (68 acres), as well as backwater and wetland habitat in approximately 30 miles of the Colorado and Gunnison rivers. The total treatment area is approximately 73 square miles, or a total of 46,720 acres.

Mercury exposure to the endangered Colorado pikeminnow The objectives of this study were to determine mercury concentrations in Colorado pikeminnow (CPM) collected from several different river reaches within critical habitat by using biopsied muscle plugs, and to develop a regression equation between CPM length and mercury concentrations.

During 2008, partners collected 47 Colorado pikeminnow muscle plugs from the upper, middle, and lower segments in the Green River; from the Yampa River; and the White River. Mean mercury concentrations were elevated in Colorado pikeminnow at all collection sites, particularly in the White River. Additionally, mercury concentrations were above EPA's human health consumptive advisory level. Mercury concentrations in Colorado pikeminnow were elevated 2 to 5 times above reported tissue threshold-effect levels protective of both juvenile and adult fish. Sub lethal effects may be occurring within critical habitat.

Sampling continued in summer, 2009, in the Colorado and San Juan rivers. Recently obtained results of mercury analysis of 24 Colorado pikeminnow collected in the Colorado River within the Grand Valley downstream to the Green River confluence show elevated mercury concentrations. Results of mercury and selenium residues in Colorado pikeminnow collected from the San Juan River will be used to help assess potential impacts resulting from deposition of selenium and mercury from the operation of a proposed coal-fired power plant, the Desert Rock Energy Project, in the Four Corners area. The Albuquerque ES office recently collected muscle plugs from Colorado pikeminnow in the San Juan River. The Albuquerque ES contaminant specialist has also taken muscle plugs from archived museum specimens of Colorado pikeminnow collected in the 1950's and 1960's to help determine baseline mercury concentrations.

Comparisons of mercury residues in CPM will be made between the different rivers within critical habitat, and between different river reaches, and also compared to locations of coal-fired power plants. Mercury in tissue residues of CPM will be compared to guidelines and those linked with adverse effects, including endocrine disruption, by other researchers with other species. A comparison of mercury tissue residues in Colorado pikeminnow to their population survey data will be made to determine if there is a correlation.

Salinity Coordinator The Grand Junction EC staff has assumed the role as the Salinity Coordinator for the Service on the Colorado River Basin Salinity Control Program. This position is responsive to the request by various Federal and state and local programs to reduce salinity concentrations within the upper Colorado River Basin to meet salinity compact requirements with Mexico at the US/Mexican Border. This role fits well within the EC program as it provides us with an opportunity to make recommendations into programs that reduce salinity while also evaluating potential reduction in other contaminants including selenium. We attend Work Group and Forum meetings where decisions are made on methods to reduce canal leakage, improve delivery systems and work with landowners to provide more efficient irrigation practices while still protecting wildlife habitat values. This program ties in very nicely with the Aspinall Biological Opinion as we strive to reduce selenium concentrations in the Gunnison Basin with the ultimate effect of reducing selenium concentrations throughout the upper and lower Colorado River Basins.

II.B.1. Evaluate effects of selenium (Ongoing)

The Grand Junction EC staff are finalizing a report for the On-Refuge Investigation entitled *Water Quality Assessment of Grow-out Ponds Used for Colorado River Endangered Fish Propagation*. Comments from 3 peer reviewers are currently being incorporated into the final report. The study's purposes were: 1) assess water quality conditions and food supplies in 16 grow-out ponds currently used by the Colorado River Recovery Program to propagate juvenile endangered razorback suckers, and 2) better define factors associated with water quality parameters which may limit growth, condition, and survival of razorback suckers in both grow-out ponds and eventually after stocking in the Colorado and Gunnison rivers. The project involved about 68 acres of ponds and wetlands, and about 21,000 razorback suckers produced by USFWS hatchery personnel. Elevated levels of selenium were found in water, sediment, and food items in some of the grow-out ponds. Baseline selenium concentrations in muscle plug samples taken from razorback suckers held in the hatchery were compared to those held in grow-out ponds for six months, and those stocked in the Colorado and Gunnison rivers to help assess risk from selenium exposure. Razorback suckers stocked to the rivers and recaptured at least eight months post-stocking still retained elevated levels of selenium in muscle tissue. Recommendations regarding management of water quality in ponds will be provided in the final report. Project partners included: the Colorado River Fisheries Project, U.S. Geological Survey Western Slope Sub-district office, and the U.S. Geological Biological Resources Division (MURR) at Columbia Missouri.

II.B.1.a. Identify actions to reduce selenium contamination to levels that will not impede recovery (Ongoing)

Selenium Task Force Numerous accomplishments of the selenium task force demonstrate the value of continued Fish and Wildlife Service involvement. Selenium task force members have been successful in acquiring congressional write-ins to the National Irrigation Water Quality Program (NIWQP) for piping irrigation laterals and lining irrigation canals, thus reducing selenium and salt loading in the lower Gunnison River Basin and in turn in the Colorado River.

Task force members have successfully prepared and received grants for pilot projects which explore remediation of selenium contaminated water. Phytoremediation has been investigated by task force members by using selected agricultural crops and trees with economic value to remove selenium from soils and water, thereby reducing selenium-loading from irrigated lands. Task force members were recently awarded grants to 1) research selenium reducing bench-scale bioreactor for reducing selenium in Grand Valley tributaries, and 2) evaluate pond lining technologies for salt and selenium reductions. Future land use plans and associated effects of urbanization have been studied by task force members, with the purpose of making recommendations to local officials and developers to avoid future water quality impairments from selenium and salt-laden drainage. The selenium task force members have been involved with the dissemination of information and education to the public regarding wise water use and non-point source pollution control measures. Efforts have resulted in the establishment of a Western Slope Wise Water Use Council, the development of draft irrigation standards, partnerships with the Grand Junction Drought Response Information Program, collaboration with water providers, and partnering with Colorado State University Cooperative Extension on the development of a Wise Water Use Video for airing on local television stations and for distribution to the public.

The most recent development with the Se task force has been a draft document with recommendations of appropriate selenium total maximum daily loads (TMDL's) to address the exceedence of the Colorado selenium water quality standard in about 35 miles in the Gunnison River between the Uncompahgre confluence and the Colorado River confluence, which is designated critical habitat for the Colorado pikeminnow and razorback sucker. Also affected are about 3000 acres of adjacent flooded bottomlands and ponds. USGS has just posted the Grand Valley Tributaries Report Online "Concentrations and Loads of Selenium in Selected Tributaries to the Colorado River of the Grand Valley." It can be found at <http://pubs.usgs.gov/sir/2008/5036/>.

Technical Assistance The Grand Junction EC staff has been involved with the development of the Aspinall Programmatic Biological Opinion (BO), which involves Bureau of Reclamation re-operation of the Aspinall Unit, affecting in-stream flows in the Gunnison River which is designated critical habitat for the Colorado pikeminnow and razorback sucker. Because this is a programmatic BO, selenium loading from the Uncompahgre Project Area (provides for delivery of irrigation water) will be addressed. Selenium loading resulting from canal/lateral seepage and deep percolation from irrigated fields occurs on the east side of the Uncompahgre Valley, and results in selenium concentrations which exceed the Colorado state water quality standard, and adversely affect reproduction in selenium sensitive species including some aquatic birds and endangered fish. A Selenium Reduction Program is being developed in conjunction with the BO, to implement remediation projects associated with selenium exceedences in the Uncompahgre Project area and downstream. This involves about 70 miles of designated critical habitat for the Colorado pikeminnow and razorback sucker in the Gunnison and Colorado rivers. Information from the study *Water Quality Assessment of Grow-out Ponds Used for Colorado River Endangered Fish Propagation* was used in the selenium hazard assessment for the Gunnison and lower Colorado rivers.

Prediction equation for selenium in fish tissue The Grand Junction EC staff is finalizing a report

for the Off-Refuge Investigation entitled *Selenium in Fish Tissue: Prediction Equations for Conversion between Whole body, Muscle, and Eggs*. The purpose of this study is to develop a model (regression equation) to predict fish whole body and ovarian (with eggs) selenium concentrations from a measured muscle plug residue. Results will give managers the ability to determine selenium concentrations in fish whole body and egg tissues through use of non-lethal muscle biopsy methods. Non-lethal methods of assessing risk from selenium exposure are particularly necessary when dealing with threatened and endangered species, as well as state-protected fish species. The ability to determine tissue selenium residues through non-lethal methods will also prove beneficial to national fishery resources. We found that different fish species incorporate different selenium loads into eggs and ovaries, and this may not be apparent from looking at only whole body selenium concentrations. A fish whole body selenium criterion has been recently proposed by U.S. EPA as the new selenium water quality standard however, associated implementation guidelines have not yet been presented. Data from our prediction equation study will be critical in the development of appropriate implementation guidelines and thus protect trust resources nationwide. Raw data from our study was provided to EPA and their contractor (GLEC) to incorporate into the new selenium criteria and implementation documents. This data will affect the new EPA selenium criteria, which will most likely include a guideline for selenium in fish eggs and ovaries. Project partners include Colorado River Fisheries Project, Colorado Division of Wildlife, and the U.S. Geological Biological Resources Division (MURR) at Columbia Missouri.

II.B.2.a. Ensure that all new petroleum product pipelines have emergency shutoff valves (Ongoing)

One consultation occurred involving a gas pipeline crossing the CO River, Mesa County. An emergency shut-off valve was recommended, even though the shut-off valve was not included in the original project description. An unknown number of pipelines are suspected of being constructed across the river but without a depletion, or some other federal nexus the Service is typically not notified.

II.B.3. Review and recommend modifications to State and Federal Hazardous materials spills emergency response programs (Ongoing)

Education Presentation to Colorado River Fish Recovery Program: Spill Response in Aquatic Systems: Utah EC staff gave an invited presentation at the 2009 Annual Researchers Meeting of the Colorado River Fish Recovery Program on spill response measures in aquatic systems. Meeting attendees included academic researchers, State wildlife management agencies, Federal agencies, and biological consultants. A result of the presentation was the assemblage of spill kits for State and Federal fish biologists. Threatened and endangered, and native fish species from the Colorado, Yampa, Green, White, and San Juan Rivers will benefit from resource managers' increased awareness of spill preparedness and response activities.

Spill contingency response EC staff from Grand Junction and Salt Lake City maintain an ongoing presence within State and Federal hazardous materials spills emergency response

programs. Through routine participation in response programs we review and recommend modifications to various response actions, contingency plans, and spill drills affecting the CO River and tributaries. We have recognized a need to update existing Sub Area Contingency Plans under the National Contingency Plan. EPA has the lead for developing and updating Sub Area Contingency Plans; we have informed EPA of the need to update plans associated with the CO River and tributaries.

II.C.1. Support actions to reduce or eliminate contaminant impacts of selenium in the Grand Valley (Ongoing)

The Grand Junction EC staff has remained involved with both the Gunnison Basin Selenium Task Force and Grand Valley Selenium Task Force. These two local interest groups are composed of partners from the State, Federal, County and City governments as well as local irrigation companies, drainage districts, and private landowners. Participants have come together to continue to look at means to reduce selenium loading to the Colorado and Gunnison rivers, as well as associated tributaries. A significant need to remediate for selenium impacts on the western slope still exists, due to the large proportion of critical habitat for endangered Colorado River fishes and migratory bird habitat encompassed in the selenium-impacted area.

II.D. Support actions to reduce or eliminate selenium impacts at Ashley Creek and Stewart Drain (Ongoing)

The Utah EC staff sampled aquatic invertebrates and fish at Stewart Lake in July, 2009 to determine if concentrations of selenium were potentially adversely affecting the aquatic community. This was the first biota sampling that had occurred in approximately five years and following tissue analyses, we will have a better understanding of how remedial activities are influencing bioaccumulation of selenium in aquatic organisms. The Colorado Fish Recovery Program has proposed to stop remediation for a period of 3 years and use Stewart Lake as a nursery for endangered razorback sucker. Our recent and future assessments will help determine the best management strategy for Stewart Lake to support its beneficial uses to fish and wildlife.

APPENDIX: CONTAMINANT-RELATED RIPRAP ITEMS

GENERAL

	II.B.	Support actions to reduce or eliminate contaminant impacts. [NOTE: Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program]		
	II.B.1.	Evaluate effects of selenium.	FWS-ES	Ongoing
	II.B.1.a.	Identify actions to reduce selenium contamination to levels that will not impede recovery.	FWS-ES	Ongoing
	II.B.2.	Identify locations of petroleum-product pipelines and assess need for emergency shut-off valves.	FWS-ES	Ongoing
>*	II.B.2.a.	Ensure that all new petroleum product pipelines have emergency shutoff valves.	FWS-ES	Ongoing
	II.B.3.	Review and recommend modifications to State and Federal hazardous materials spills emergency response programs.	FWS-ES	Ongoing

GREEN

II.D.	Support actions to reduce or eliminate selenium impacts at Ashley Creek and Stewart Drain. [NOTE: selenium remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.]	FWS-ES	Ongoing
-------	---	--------	---------

COLORADO

II.C.	Support actions to reduce or eliminate contaminant impacts. [NOTE: Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.]	-	
II.C.1.	Support actions to reduce or eliminate contaminant impacts of selenium in the Grand Valley.	FWS-ES	Ongoing
II.C.2.	Support remediation of groundwater contamination at the Atlas Mill tailings site.	FWS-ES	Ongoing
II.C.3.	Identify measures to minimize risk of hazardous materials spills in Black Rocks and Westwater Canyon from transport along the adjacent railway to protect humpback chub populations.	FWS-ES	Ongoing

GUNNISON (Proposed addition)

II.C.	Support actions to reduce or eliminate contaminant impacts. [NOTE: Contaminants remediation (in all reaches) will be conducted independently of and funded outside of the Recovery Program.]	-	
II.C.1.	Support actions to reduce or eliminate contaminant impacts of selenium.	FWS-ES	Ongoing