



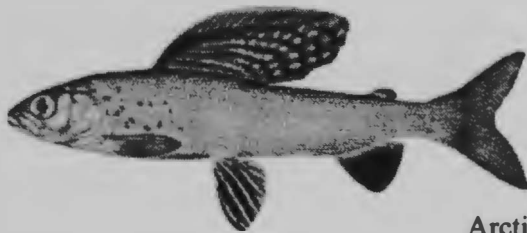
Westslope Cutthroat Trout  
*Oncorhynchus clarki lewisi*



Paddlefish  
*Polyodon spathula*



Pallid Sturgeon  
*Scaphirhynchus albus*



Arctic Grayling  
*Thymallus arcticus*

# SYNOPSIS OF THE SYMPOSIUM

## PRACTICAL APPROACHES FOR CONSERVING NATIVE INLAND FISHES OF THE WEST

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The Montana Chapter and Western Division of the American Fisheries Society (AFS) hosted a symposium entitled "Practical Approaches for Conserving Native Inland Fishes of the West" 6-8 June 2001 at the University of Montana in Missoula. The purpose of this symposium was to bring together fishery professionals from throughout the western United States and Canada to share their ideas and experiences about conservation of native fish in the region. As the keynote speaker, Dr. Bruce Rieman, noted conservation management of fishes is a discipline in transition with threats to native fishes increasing while management goals and our understanding of these systems are changing. Here, I present a brief review of that symposium and introduce five papers appearing in this issue that resulted from the symposium. The National Fish and Wildlife Foundation graciously paid publication costs for this issue of the *Intermountain Journal of Sciences* in order to disseminate this information. Extended abstracts covering the entire symposium (Shepard 2001) can be found on the Montana Chapter AFS web site at (<http://www.fisheries.org/AFSmontana/>) under "Special Features," **Abstracts from the Practical Approaches to Conserving Inland Fish Species Symposium.**

The symposium included 49 oral presentations and 6 poster presentations and covered a broad range of topics relevant to native fish: conservation agreements and the value of native fish, conserving fish in large river systems, impacts of nonnative fish on native fish, methods for removal of nonnative fish, habitat use and restoration, genetic issues, miscellaneous contributed papers, and a case study.

Conservation of native fish will require that management be more consistent with natural processes, but also will need to include some type of "reserves" (Rieman 2001). Conservation must be an adaptive process because we are continually learning new things about both population and ecosystem processes and changing our management goals and objectives (Rieman 2001). Native fish are valuable for anthropocentric, biocentric, legal, and spiritual reasons and one should be aware that different individuals view native fish differently based on their own personal value system (Wiltshire 2001).

The U.S. Endangered Species Act (ESA) is an overarching law that regulates conservation of native fish and criteria used for evaluating conservation efforts under this law are unclear (Gloman 2001, Lentsch and Toline 2001, Phillips 2001, Watson et al. 2001). Conservation agreements, for both state and private entities, are one legal avenue for potentially meeting legal requirements of ESA (Kruse 2001); however, to be effective these agreements must demonstrate that sound science is being used, all appropriate people and agencies are collaborators, monitoring is included, the program is funded, there is a track record of success, and individual conservation agreements are part of a larger plan to ensure a species is conserved throughout a large geographic area (Phillips 2001). Conservation efforts will probably be more effective if they begin before a species declines to a level where extinction is likely (Gloman 2001, Lentsch and Toline 2001, Phillips 2001).

Conservation of native fish in large rivers presents a daunting challenge, especially since most river systems have

been altered by large impoundments. Fertilization has been used to restore nutrient inputs and cycling in large systems that have large impoundments that act as nutrient sinks (Ashley et al. 2001, Marotz et al. 2001). Flow and water temperature management, conservation aquaculture, fish passage, and harvest restrictions were also either used or proposed to conserve native fishes in large rivers (Gardner 2001, Marotz et al. 2001, McMahan et al. 2001, Muth et al. 2001, Paragamian et al. 2001). Flow variation, particularly peak flow events, was linked to native fish community structure in a Southwestern river (Rinne 2001).

Nonnative fish threaten many native fish populations. In the past the two chemicals rotenone and antimycin-A have been used to remove nonnative fish, but their continued use depends upon legal registration as piscicides and upon public acceptance that their use is warranted and safe (Brawer 2001, Brooks and Propst 2001, Clancey 2001, Finlayson 2001, Hepworth et al. 2001, Joscelyn 2001, Moore et al. 2001, Schnick 2001, Sexauer 2001, Stevens 2001, Wheelis 2001). Holcomb (2001) presented techniques and tips for effectively communicating potential risk of these chemicals to the public. Nonnative fish have been removed using piscicides (Buktenica et al. 2001, Brooks and Propst 2001, Clancey 2001, Holden et al. 2001, Sexauer 2001, Stevens 2001), electrofishing (Buktenica et al. 2001, Moore et al. 2001, Shepard and Spoon 2001a, 2001b), angling (Stelfox et al. 2001), seines (Holden et al. 2001), and pheromonal attraction to hoop nets (Young 2001). The effectiveness of these removal techniques and the response of native fish to these removals were variable.

Temperature was shown to be an important viable influencing habitats selected by native fish and may potentially mediate interactions between native and nonnative fish (Ebersole et al. 2001, Haas 2001, Muth et al. 2001, Sloat et al. 2001). Life history variability, ontogenetic habitat shifts, and connectivity between habitats are all probably important for maintaining bull

trout (Carnefix et al. 2001) and coastal cutthroat trout (Hendricks and Gresswell 2001) populations. Diel habitat shifts were observed for juvenile bull trout in a large river system (Muhlfeld et al. 2001). Restoration efforts to improve and connect habitats in the Blackfoot River appeared to increase abundances of both native bull and westslope cutthroat trout (Peters et al. 2001, Schmetterling 2001). Connectivity or isolation of a native fish population can both be used as management tools depending upon threats to a particular population (Hepworth et al. 2001, Knotek et al. 2001, Peters et al. 2001, Schmetterling 2001, Sexauer 2001, Shepard and Spoon 2001a, 2001b). Habitat restoration was shown to enhance an allopatric native westslope cutthroat trout population (Oswald 2001). Brown et al. (2001) and Miller and Skidmore (2001) described philosophies and approaches for restoring stream habitats.

Genetic analyses can provide important information to infer how much isolation individual populations may have experienced over time (Leary 2001, Spruell 2001). This information could be used to determine whether a particular conservation effort should focus on connectivity or isolation among individual stocks of fish. Spruell (2001) suggested as most reasonable a hierarchical conservation approach that uses genetic, demographic, ecological, and environmental variability. Spruell et al. (2001) also suggested a hypothetical application of this type of approach for bull trout in the lower Clark Fork River drainage in Montana and Idaho.

The following five papers provide more detailed information on various aspects of native fish conservation. Dale Hepworth and his co-authors review 25 years of native trout conservation in southern Utah. Wade Fredenberg reports on the displacement of native bull trout by introduced lake trout in Glacier National Park. Matt Sloat and his co-authors relate the presence of dispersal barriers and water temperature to the distribution of native westslope cutthroat trout in the Madison River drainage of

Montana. Vaughn Paragamian and his co-authors explain how they developed an international strategy for recovering burbot in the Kootenai River/Koontay Lake drainage of Idaho and British Columbia. Finally, my co-authors and I describe a project to remove nonnative brook trout and restore stream habitat degraded by past placer mining to conserve a small population of native westslope cutthroat trout in a tributary to the Missouri River in Montana.

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