PLENARY ABSTRACTS

IDAHO CHAPTER AFS 2021 ANNUAL MEETING

WHY AQUACULTURE MATTERS

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Aquaculture is a modern imperative—for food security, economic development, and conservation and recovery of aquatic resources—but in the 'post-fact world', the public is inundated with mis- and dis-information about the fundamentals of fish propagation. Aquaculture is beset by 'fake news' that threatens the social license to operate and the essential services provided by hatcheries and fish farms. The public is largely unfamiliar with aquaculture and uncertain as to its economic and environmental sustainability, and many question the need for hatchery-origin fish and their conservation value. This presentation will review the history of aquaculture in North America, highlight important themes related to the purpose and practice of raising fish, and underscore the many reasons that aquaculture matters.

IDAHO'S AQUACULTURE INDUSTRY: FOOD, JOBS AND MORE

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Fish produced from commercial aquaculture in Idaho supply restaurants and grocery stores throughout the nation, are stocked into private ponds, contribute to aquatic resources, and supply the aquarium trade. Aquaculture farms are located throughout the state, but the industry is concentrated in the Magic Valley between Twin Falls and Hagerman. The Magic Valley produces about 70% of the food-size trout produced in the U.S. Other Idaho produced aquaculture species include tilapia, White Sturgeon, catfish, and ornamental fish. Aquaculture farms are an intermediate link in the Magic Valley agricultural economy, with backward links to suppliers and service providers and forward links to fish processors. Commercial aquaculture is a valuable part of the Magic Valley's agricultural economy through food production and processing, job generation, and flow of new dollars into the region through exports. This presentation will describe the Idaho aquaculture industry, compare the aquaculture industry to other agricultural industries within the region and to aquaculture production in other states and highlight the "more" — the connection to conservation and science.

FISH HATCHERIES AND MANAGEMENT IN THE IDAHO DEPARTMENT OF FISH AND GAME: INNOVATION AND INTEGRATION AT EVERY STATION

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The Idaho Department of Fish and Game operates 21 fish hatcheries statewide that collectively spawn, raise, and release a total of nearly 37 million resident and anadromous fish of multiple species to meet a wide range of fishery management objectives. The history of the hatchery program is rich and long. The first state hatchery in Idaho was built in 1907. Over 100 years later, that facility (Hayspur Hatchery) is still operated by the IDFG. As facilities and functions of hatcheries have evolved and been modernized over the decades, so have policies and practices related to the use of hatchery fish. IDFG fishery managers use hatchery-reared fish to preserve, establish, or reestablish depleted fish populations and to provide angling opportunity to the public. Today, however, a key element of state policy is the emphasis on maintaining genetic integrity of native populations. To most effectively achieve management and policy objectives, the agency has endeavored to foster a culture of innovation and integration of hatcheries with research and management. Those collective efforts have resulted in several groundbreaking programs that have improved fishing opportunities, minimized or eliminated genetic risks, and even developed promising new methods for non-native fish control.

USING CONSERVATION AQUACULTURE TO RESTORE NATIVE SPECIES: A TALE OF TWO FISHES FROM THE KOOTENAI

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Kootenai River White Sturgeon and Burbot are unique keystone species in the Kootenai River and are of immeasurable cultural importance to the Kootenai Tribe of Idaho. These native fish once sustained an important Tribal subsistence fishery, as well as a recreational fishery. Due to large-scale ecosystem changes over the last century, both Kootenai White Sturgeon and Burbot populations have been severely limited to a virtual lack of recruitment. Kootenai White Sturgeon were subsequently listed as endangered in 1994 and Lower Kootenai River Burbot were considered functionally extinct by 1999. The Tribe has operated a successful sturgeon conservation aquaculture facility since 1990. In 2014, construction of a second facility to produce White Sturgeon and Burbot was completed and became fully operational in 2015. Without hatchery intervention, both species would have completely disappeared from the Kootenai River. The implementation of conservation aquaculture is integrated with a holistic transboundary program that includes habitat and nutrient restoration, innovative research, monitoring and evaluation, adaptive management, and outreach in collaboration with scientists, co-managers and the local community. There is still much to be done, but the conservation aquaculture program has restored Kootenai River White Sturgeon in numbers high enough to ward off extinction, and has restored the Burbot population in numbers high enough to provide a subsistence and recreational fishery in Idaho, contributing to the ecological health of the river and the cultural and social health of the Kootenai Tribe and the local community.

SOLUTIONS THROUGH SCIENCE: RESEARCH AS A CRITICAL COMPONENT TO ENHANCING FISH CULTURE AND FISHERIES

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Aquaculture supports Idaho's economy and is an integral tool used to manage and conserve fish populations that are impacted by anthropogenic changes and ongoing human activities. As fisheries professionals, we tend to focus on our "niche", be it fish management, fish culture, fish ecology and so

forth; however, these fields are intertwined. I believe that we all share the common goal of wanting what is best for the resource we work with, but our fisheries resources face many challenges. Therefore, we must work together to effectively address these challenges and develop solutions based on good science. A scientific approach has been applied to fish culture and fisheries for decades. Whether working to recovery Redfish Lake Sockeye, addressing smolt to adult returns for salmon, estimating wild Cutthroat Trout populations, or managing around disease episodes in the hatchery, research aimed at answering critical questions is the foundation for success. Yes, aquaculture involves the "art and science" of fish culture to produce healthy animals but utilizing hatchery fish to meet goals such as enhancing fish populations, contributing to a sport fishery, or providing tribal harvest, requires more than just growing fish and releasing them into the water. You must use the "tool" that aquaculture represents in a way that meets these goals. Examples of research questions that address important problems for aquaculture and fisheries management will be discussed. Results from specific research studies and the implications they have for important fisheries resources in Idaho and elsewhere will be highlighted.