

Case study six

Research on diets for threatened and endangered fish species held in captivity gains ground

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Top photo
Lahontan cutthroat trout
Courtesy of USFWS

Bottom photo
Bull trout
Courtesy of USFWS



For more than a century, the National Fish Hatchery System of the US Fish and Wildlife Service (FWS) has produced economically important species, such as Chinook salmon and rainbow trout, for mitigation purposes. Currently, more than 100 species of plants and animals are reared at the Service's 70 National Fish Hatcheries (NFHs) and seven Fish Technology Centers (FTCs). More than 1.9 million pounds of rainbow trout alone are produced annually by the Service. Considering the amount of fish feed used at NFHs and FTCs each year, the Service is a significant commercial fish feed consumer.

Numerous federally listed species are reared at the agency's hatcheries and technology centers, to support the recovery plans for many aquatic species which recommend propagation of captive fish. The objective of these captive rearing programs generally is to augment remaining natural populations until habitat conditions improve. A few examples of federally protected species currently reared by the Service include bonytail, bull trout, fountain darter, pallid sturgeon, razorback sucker, Lahontan cutthroat trout, and Rio Grande silvery minnow. Among other challenges, hatchery personnel must identify appropriate commercial feed for those and other species reared in captivity.

Aquaculture feeds used in the US have been developed to meet the specific nutritional requirements of a few species, including channel catfish, rainbow trout, salmon and tilapia. The commercial diets available for those species are the result of decades of research conducted by fish nutritionists and feed companies. Even today, fish nutritionists continue to improve diets for commercially important species. But, limited research has been conducted on the basic nutritional needs of any of the federally listed threatened or endangered species of fish reared in captivity.

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Federally protected species of fish exhibit feeding behaviors ranging from strictly carnivorous to strictly herbivorous. Other than general information on feeding behavior and diet in the wild, relatively little is known about the nutritional needs of these species. Furthermore, some protected species may complete their entire life cycle at a national hatchery and have access only to commercial fish food. As commercial feeds evolve and more alternative ingredients are included in the formulations they will have to meet the nutritional requirements for the entire life cycle of those species and have no detrimental effects on their health or reproduction over long periods of time. Currently, Service personnel are attempting to identify the most appropriate commercial diets for various protected

species. For example, studies evaluating commercial diets for Rio Grande silvery minnow, bonytail, and Atlantic sturgeon were published recently. Research on nutritional needs of protected aquatic species is ongoing and is essential for the successful propagation of these animals.



Production of fish feed at Abernathy Fish Technology Center
Photo courtesy USFWS