

WRAC fact sheet

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Characterization of Aquaculture in the Western U.S.

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IDAHO

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Photo: Idaho trout farm.

Idaho has long been recognized as a leading aquaculture-producing state, primarily for its substantial trout industry. The first major trout processing facility was constructed in Idaho in the mid-1950s, which laid the foundation for the ensuing development of the farmed trout industry in the U.S. (Brannon and Klontz, 1989). Today, Idaho is referred to as the “Trout Capital of the World,” and Idaho farmers produce more trout than are produced in any other state in the U.S. Idaho is also the fourth-largest foodfish-producing state in the U.S., with trout (first in the U.S.), stur-

geon caviar and meat (second in the U.S.), tilapia (fourth in the U.S.), and catfish production (USDA-NASS, 2019). Along with other species produced, Idaho is the 12th-largest aquaculture-producing state (by value of sales).

Idaho aquaculture farmers have created and sustained multiple and diverse supply chains, which include markets in Idaho and across the country. A recent supply chain analysis funded by the Western Regional Aquaculture Center identified 20 distinct supply chains for aquaculture products raised in Idaho. Figure 1 presents a

In addition to private farms, Idaho has publicly funded hatcheries that raise fish for stocking into lakes and streams to enhance fishing opportunities. Publicly funded hatcheries also support aquaculture supply chain businesses such as feed mills, but it was beyond the scope of this Western Regional Aquaculture Center project to survey publicly funded hatcheries and measure their economic impact to Idaho.

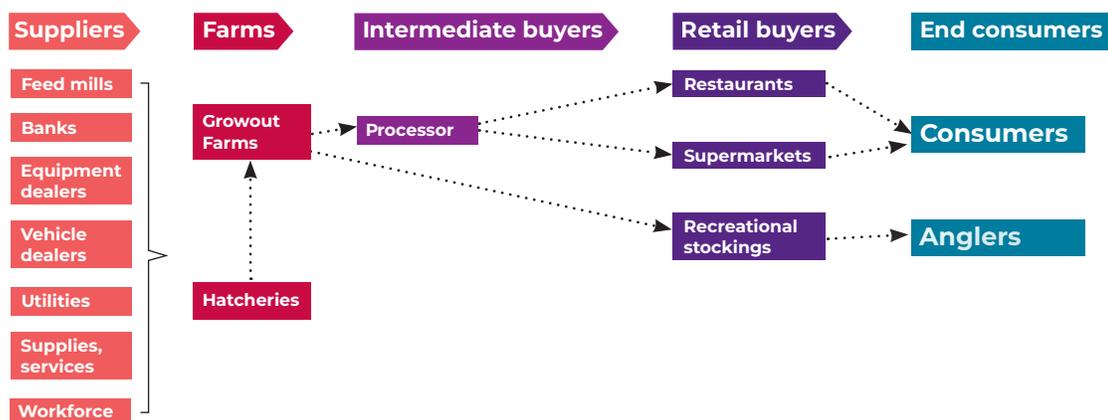


Figure 1. Supply chain map of trout produced in Idaho.

generalized supply chain for trout produced in Idaho. Sturgeon farms in Idaho have created distinct supply chains for their products as have those farms that raise catfish and ornamental fish. While some Idaho-raised tilapia are processed prior to sale, tilapia farmers in the state have developed additional supply chains that sell live fish to stores where live fish are displayed in aquaria so that customers can select the specific fish desired. Such stores typically have staff and facilities to clean and cut the fish to customer specifications.

The Contribution of Aquaculture to the Economy of Idaho

The total economic contribution of aquaculture in Idaho (in 2023) was \$99.4 million¹ (Table 1). Of this, \$55.2 million was from direct contributions from aquaculture farms, \$30.6 million was indirect contributions of supply chain partners, and \$13.6 million was induced output from the additional household spending from the employment created by aquaculture supply chains. Of the



Photo: Keri Rouse for Virginia Tech

Idaho trout farm.

total 620 jobs supported by aquaculture in Idaho, 422 were from jobs on aquaculture farms, 116 from supply chain partners, and 82 from induced effects. Additional economic contributions included \$4.3 million in federal tax revenue, \$1.5 million in state tax revenue, and \$0.5 million in local taxes (Table 2). It should be noted that these estimates of the economic contributions of Idaho aquaculture are those estimated at the farm level. Sales into recreational markets generate substantial, additional impacts (from expenditures by anglers) that were not accounted for in this analysis.

Hatchery Aquaculture Production

Aquaculture farming begins with spawning and reproduction of the animals in specialized hatchery facilities. Most trout farmers in Idaho buy eggs produced from selectively bred broodstock from hatchery farms that specialize in egg production, although some farms purchase fingerlings (young fish that are stocked into growout facilities) or maintain broodstock for spawning on their farm. Sturgeon farmers in Idaho spawn their own fish in compliance with state law that requires farmed sturgeon to originate from within the state.

Table 1. Economic contribution of the private, commercial aquaculture sector to the economy of Idaho.

Type of impact	Employment (number of jobs)	Total economic output (\$)
Direct economic impact	422	\$55.2 million
Indirect economic impact	116	\$30.6 million
Induced economic impact	82	\$13.6 million
Total economic impact	620	\$99.4 million

Table 2. Tax revenue generated from the private, commercial aquaculture sector in Idaho.

Tax category	Tax revenue (\$)
Federal	\$4.3 million
State	\$1.5 million
Local/county	\$0.5 million
Total	\$6.3 million

¹ Various state and federal agencies and universities that collect and report data from farms do not always report farm-gate prices and costs per pound of production on a standardized basis. Thus, not all published data on “farm prices” are equivalent because they have not been calculated in the same manner. See Appendix, “Explanatory Notes Related to Consistent Accounting of Farm Production Costs and Farm-gate Prices,” in Engle et al. (2024) for specifics.

Farmers raising other species have options to either spawn their own fish on farm or to purchase from hatcheries in other states.

Markets and Supply Chains Supported by Idaho Aquaculture Farmers

Idaho aquaculture farmers primarily supply farm-raised products for food. The largest market for Idaho products is that of fish processed into fillets and other cuts of fish. Eighty-eight percent of Idaho aquaculture sales (by value) were of food-sized fish sold to plants for processing into various product forms desired by customers (Table 3). Another 2% of food-sized fish were sold to specialized hauling companies with oxygenated tanks

to transport the fish live to markets with aquaria for subsequent sale to customers. Thus, 90% of Idaho aquaculture is sold as food products. An additional 9% of the value of Idaho aquaculture products are sold into recreational markets for stocking fishing ponds and lakes to support angling in the state. The remaining 1% of “other” sales includes production of ornamental fish, shrimp, and other species sold into diverse market channels.

As the major U.S. producer of trout, Idaho sells various forms of processed trout products to restaurants and supermarkets across the U.S. to meet consumer demand. A high percentage (91%) of trout raised in Idaho were sold for processing, with a smaller percentage

(9%) sold into recreational markets to support sportfishing by anglers.

Recent Trends of Aquaculture in Idaho

Sales of aquaculture products from Idaho increased by 32% from 1998 to 2013 on slightly fewer farms as average sales of trout farms increased through 2013 (Figure 2). Growth of average farm sizes has occurred across most sectors of U.S. agriculture, generally as a result of economies of scale, which have been shown to include effects of increasing regulatory costs on U.S. aquaculture (Engle et al., 2019). From 2013 to 2018, the sales from Idaho aquaculture decreased by 6% (Figure 2). Structural trends in Idaho trout farming have included consolidation, which has continued since the 2018 Census of Aquaculture (USDA-NASS, 2019) and has resulted in fewer, larger farms, similar to trends observed in other leading sectors of U.S. aquaculture (Engle et al., 2022). While many factors contribute to consolidation of various economic sectors, increasing volumes of imported trout, particularly from Norway, Chile, and Peru (Sun et al., 2023); water rights and competing uses of water; and the high regulatory costs in U.S. trout farms (Engle et al., 2019; 2021) likely have played a role.

In-depth surveys of U.S. trout farms (including Idaho) revealed that the regulatory framework in the U.S. has negatively affected the U.S. salmonid industry’s ability to respond to strong demand for U.S. farm-raised trout products by increasing on-farm costs, but also preventing attempts of salmonid

Table 3. Relative proportions of aquaculture products sold into various supply chains, Idaho.

Supply chain	% of aquaculture products sold
Foodfish sales (\$) to processors	88%
Sportfish sales (\$) to recreational markets	9%
Live foodfish sales (\$) to fish markets	2%
Sales to other markets (\$)	1%

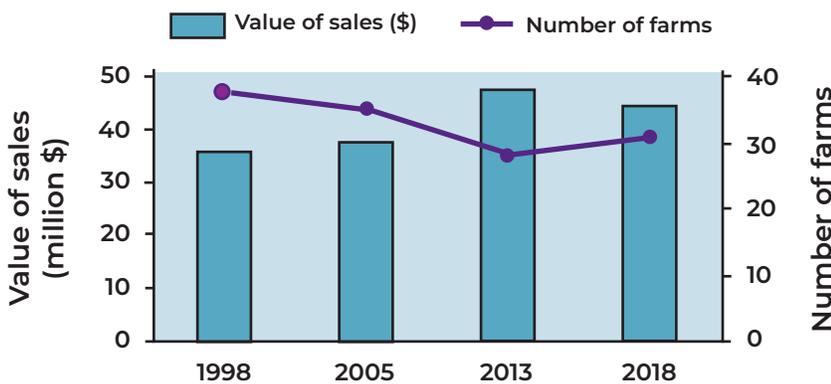


Figure 2. Total aquaculture sales and number of farms in Idaho, 1998 to 2018. Source: USDA-NIFA (2000, 2006, 2014, 2019).

farmers to expand production. The U.S. seafood market is dominated by international imports, which account for 70 to 85% of the total seafood consumed in the U.S. (NOAA, 2023), but are produced at lower cost under less stringent regulatory frameworks (Abate et al., 2016). A renewed commitment to smarter, more streamlined regulatory systems would allow Idaho aquaculture to increase its supply (and economic contributions) of sustainably farmed products to consumers in Idaho and across the U.S. while maintaining the levels of environmental quality desired by all.

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Photo: Keri Rouse for Virginia Tech

Rainbow trout.

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* *Census of Aquaculture 2005, 2013, and 2018 available at: https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Aquaculture/index.php*

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