WRAC fact sheet

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Characterization of Aquaculture in the Western U.S.

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CATFISH FARMING

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Photo: Ponds used to raise catfish in California.

U.S. farmed catfish production is the leading sector of U.S. aquaculture (Figure 1). Catfish production in the U.S. dates back to the mid-1940s when techniques to spawn and raise catfish were developed to support enhancement of wild stocks of catfish for anglers (Swingle, 1958). Commercial production of catfish for food in the U.S. was first reported in 1965 (Madewell, 1971). The development of processing plants for catfish in the Mississippi delta states of Arkansas, Alabama, and Mississippi led to dramatic growth and expansion of the U.S. catfish industry. As a result, Mississippi became the largest supplier of catfish with approximately 69% market share (by sales) in 2018, followed by Alabama, Arkansas, and Texas (Figure 2). The deeply rooted catfish culinary traditions of southern states provided a strong foundation for development of a mainstream market for processed catfish raised in the Mississippi Delta region.

In the Western Region, catfish production also began for stock enhancement purposes with published reports of production in

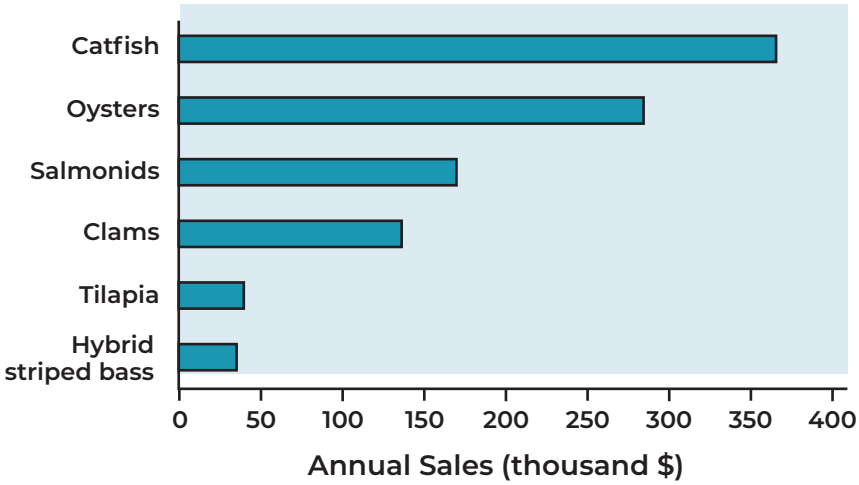


Figure 1. U.S. Aquaculture sales by species group. Source: USDA-NASS (2019)

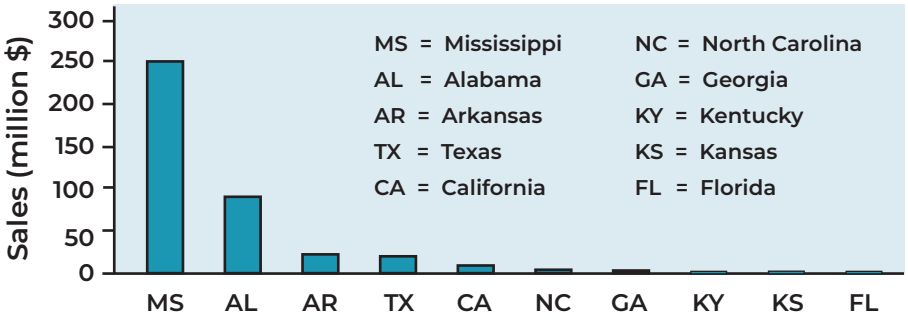


Figure 2. Top ten U.S. catfish-producing states by sales.

Source: USDA-NASS (2019)

Photo credit: Keri Rouse

California as early as 1959 (Prather, 1959). As in other states, the availability of catfish fingerlings facilitated subsequent expansion into foodfish production in the Western Region. By 1982, catfish farms were reported in three Western Region states (California, Idaho, and Arizona) and in Nevada in 1987 (APHIS-CEAH, 1995). Wellborn (1987) reported 2,300 water acres in commercial catfish production in California in 1986 and 120 water acres in Idaho that same year. Census of Aquaculture (USDA-NASS 2000, 2006, 2014, 2019) data from 1998 to 2018 show variability in sales over time but with generally greater sales in the 2013 and 2018 censuses as compared to the earlier years (Figure 3a). However, the number of catfish farms in the region has decreased over time (Figure 3b), exhibiting similar trends to those of other sectors of aquaculture and agriculture. California is the major catfish-producing state in the Western Region, with 78% of the 45 farms listed in the region in the 2018 Census of Aquaculture (USDA-NASS, 2019). Some farms in the region take advantage of geothermal water for catfish production. Catfish farms in the region primarily use open ponds for production, but in Idaho catfish are also raised in raceways.

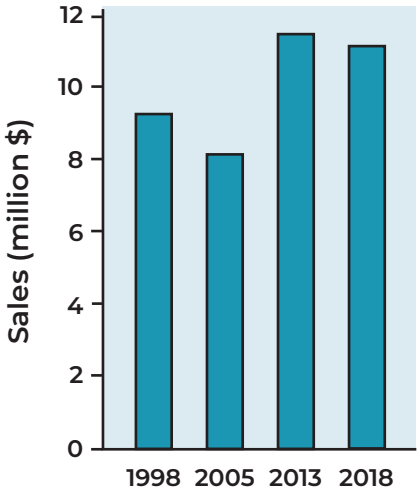
Photo: Keri Rouse

Live catfish for sale in California.

Farmers raising catfish in the Western Region found and developed very different markets and supply chains for catfish from those developed in the Mississippi Delta. Western Region catfish farmers have continued to supply catfish to sportfishing markets but have also developed market channels to sell catfish live to fish markets that have facilities to hold and display live fish for sale to their patrons. Catfish are also processed in the Western Region, but on a smaller scale and in product forms that differ from those sold by Mississippi Delta companies.

The supply chains developed for catfish in the Western Region begin with the businesses that supply inputs to catfish farms. Pelleted feeds are a major expense in catfish farming, and feed mills have developed to meet the demand for manufactured feeds formulated specifically to meet nutritional requirements of catfish. Live sales of catfish require investment in trucks and specialized hauling tanks with oxygen systems to ensure that fish arrive at markets in good condition. Catfish farms also purchase electrical and

a) Sales of catfish in the Western Region, 1998–2018.



b) Number of catfish farms in the Western Region, 1998–2018.

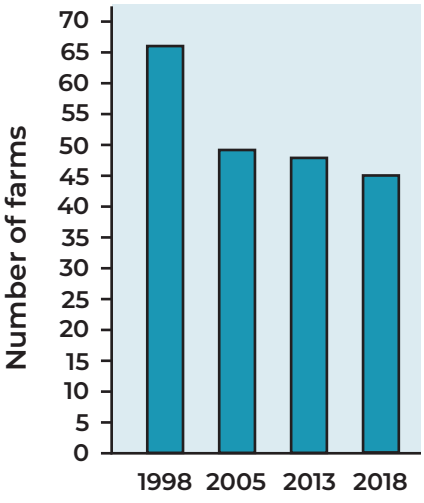


Figure 3. Catfish farming trends in the Western Region.

Source: USDA-NASS (2000, 2006, 2014, 2019)

communications services, fuel, insurance, and other inputs from many upstream supply chain partners. Some catfish farms in the Western Region spawn their own broodstock to obtain eggs and fingerlings, while others purchase fingerlings from other farms. Catfish farms in the Western Region provide jobs not just on farms but in businesses throughout the supply chain.

Downstream supply chain activities include private ponds and lakes where fish are stocked for anglers to catch. Some catfish farmers have constructed fee fishing ponds and fishing lakes on their property and also sell catfish to other landowners with fishing ponds and lakes. Catfish sold to live fish markets are transported either by farm personnel or by specialized livehauling businesses that purchase, transport, and re-sell catfish to fish markets with the appropriate facilities to handle live fish. In these fish markets, patrons choose the specific fish they prefer from aquaria used to display fish. Many fish markets have included a cleaning station, where staff clean and cut the fish to customer specifications. Live markets also sell to smaller markets and restaurants. Across the Western Region, 16 distinct supply chains were identified for farmed catfish; Figure 4 illustrates a generalized supply chain map for catfish.

Photo: Keri Rouse

Catfish egg masses in California hatchery.

Catfish farms in the Western Region have developed markets and supply chains that are distinct from those developed by catfish farmers in southern states. Catfish farms that sell into market channels that supply primarily fillets into the U.S. seafood fillet market have faced competition from lower priced imports of catfish and catfish-like products that are raised under much less stringent regulatory frameworks (Engle et al., 2022; Hegde et al., 2023). The Western Region markets developed for catfish, while substantially smaller, do not compete in the same processed fillet markets and do not appear to be affected by imported products to the same degree as the rest of the U.S. catfish industry.

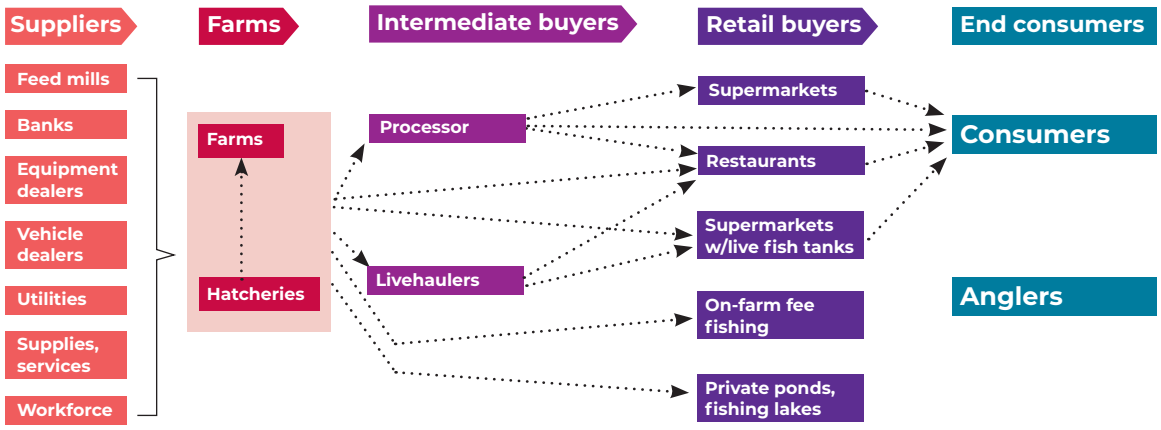


Figure 4. Generalized supply chain map for catfish production in the Western Region.

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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*

Photo: Keri Rouse

Harvesting catfish pond in California.

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This project was supported by the Western Regional Aquaculture Center award number 2020-38500-32561 from the United States Department of Agriculture National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

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