

USDA Agricultural Research Service

National Program 106

Aquaculture

External Panel Retrospective Review: 2020-2024

May 8, 2023

Executive Summary

The mission of the United States Department of Agriculture, Agriculture Research Service (USDA-ARS) National Program (NP) 106-Aquaculture is to enhance domestic aquaculture production efficiency and product quality while minimizing the environmental impact on natural resources. The program conducts research and develops technologies to achieve these goals. Initially, research was conducted by ARS research laboratories at 10 different locations through 14 projects involving 50 ARS scientists and collaborations with 12 institutions. Additional research areas were added with increased funding from Congress. As of 2022, ARS supports 65 scientists and their staff, working on 15 projects in 11 main laboratories, collaborating with 15 universities or non-profit institutions. The investigations are carried out under six main components: Improving the Efficiency and Sustainability of Catfish Aquaculture, Improving the Efficiency and Sustainability of Salmonid Aquaculture, Improving the Efficiency and Sustainability of Hybrid Striped Bass, Enhancing Shellfish Aquaculture, Developing Marine Finfish Seedstocks, and Developing Sustainable Aquaponic Production Systems.

This NP 106 – Aquaculture Retrospective Review provides a summary of research and technology transfer highlights from 2018 to 2024. It also identifies any gaps between the action plan and the achieved deliverables. The review panel for NP 106 consisted of five subject experts and experienced professionals who meticulously evaluated over 200 pages of documents. They participated in an interactive panel orientation session, two panel deliberation sessions, and a debriefing. During the orientation session on April 20, 2023, Dr. Caird Rexroad, the National Program Leader, introduced the six program components, presented problem statements under each component, and highlighted the outputs and impacts as evidence of program productivity. It is important to note that this report provides a comprehensive review of each component of NP-106-Aquaculture program, rather than focusing on individual projects.

Despite the challenges posed by the Covid-19 pandemic, the panel unanimously agreed that overall NP-106 successfully met its goals and objectives through outstanding research. The panel acknowledged the difficulties faced by scientists, such as travel restrictions, limited access to workshops, conferences, and field samples, as well as reduced training and collaborative activities due to social distancing requirements. However, key indicators such as the number of peer-reviewed publications, support for students and post-docs, and material transfer agreements remained similar to pre-pandemic levels,

All 65 scientists working in NP 106 have made solid contributions to the scientific knowledge in the field of aquaculture across the six program components. Their research has provided a good understanding of biological processes in primary farmed aquaculture species in the US, forming the foundation for applying this knowledge in farms, hatcheries, and fish feed industry. The report presents ample evidence of the high quality of their scholarship, as reflected in the publication of their research in reputable peer-reviewed journals.

The review panel has highlighted the most impactful achievements in the report while also identifying areas where additional work may be beneficial. This includes efforts to make research results applicable and readily available for faster adoption by the industry.