

Applying HACCP principles to prevent spread of Asian Carp species in aquatic shipments.

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Preventing further spread of invasive species to uninvaded habitats is an important element in a control plan. Like zebra mussels, the Asian carp (silver, bighead and black) invasion will or has already, spread throughout the Mississippi River Basin and contiguous waters except where dams or barriers have blocked their expansion. With such well established invasives firmly entrenched across a large area it will be difficult to block all human assisted pathways to new waters unless the control plan thoroughly covers each pathway. Juvenile Asian carp are easily misidentified and included within shipments or collections of native or widely established non-native species. The collection of baitfish by anglers below dams and used above the dam for fishing has been suggested as a serious pathway for spread above barriers. Similar examples of Asian carp species contamination have been reported from aquaculture shipments. Black carp first arrived in the United States as a non-target contaminant in a shipment of grass carp (Nico and Williams, 1996). Silver carp hitchhiked to Florida in a shipment of grass carp (Middlemas, 1994). Contaminated aquatic shipments are potential pathways with significant risks of spreading invasive Asian carp to new waters and river systems.

Pillsbury Foods developed HACCP (Hazard Analysis and Critical Control Point) as a strategic planning process to remove hazards (contaminants) at critical control points throughout the food production process. Sea Grant Universities modified the HACCP planning process for aquaculture as a tool to remove and prevent spread of zebra mussels and other aquatic invasive contaminants from their shipments. The intended species being shipped is referred to as the "target" and "non-targets" describe all contaminating, or hitchhiking, species likely to be included unless specific removal actions are taken. HACCP planning is straightforward. Its five linked forms guide and focus planners on key actions to remove and prevent aquatic shipment contamination and reduce the risk of spread through this pathway. HACCP Plans document: *who, what, why, where, when, and how*. Reviewing HACCP plans prior to delivery of shipments allows management to make recommendations based on identified risks.

The Fish & Wildlife Service further expanded the HACCP concept as a Pathway Management strategy and developed a support website (www.HACCP-NRM.org) providing; blank forms, planning guides, training announcements, links and a searchable database of completed HACCP plans.

HACCP Planning's Five Steps Corresponds To a Specific Form

1. Describing the Activity
2. Identifying Potential Hazards
3. Diagramming the Flow of Steps in the Activity
4. Analyzing the Hazards and Documenting in a Worksheet
5. Completing the HACCP Plan

Why include HACCP in the control plan?

HACCP planning provides a systematic method to control Asian carp spread through the aquatic transfer pathway and requires shippers to take preventative measures. Without prevention measures, all fish shipments originating from the Mississippi Basin are at risk of having Asian carp species included as non-target contaminants.

What is the difference between HACCP planning and establishing protocols?

HACCP planning is the best way to develop protocols. Often, managers develop protocols and are not involved with actually using/implementing the defined procedures. HACCP's straightforward planning

makes the protocol development process transparent to everyone. The final product, step 5, or the HACCP Plan, becomes a “check-list” of specific actions and directions which is easily provided to technicians as a guide. Those doing the work know what has to be done. Reviewers can base the risk of Asian carp introductions as a non-target contaminant in shipments based on identified pathway prevention features.

How could HACCP planning be an effective prevention tool?

Management agencies with responsibilities for state resources could require HACCP plans as a requirement for intra and interstate aquatic shipments that have the potential to introduce Asian carp species to new waters. Reviewers could block or propose alternatives for high risk pathways.

What resources are available to implement this prevention tool?

The Service is developing training materials for HACCP planning trainers which should be ready for workshops in a few months. Sea Grant’s training for private aquaculture, ANS-HACCP, has material available and the HACCP support website (www.HACCP-NRM.org) is an easily accessed web-based source of information. Upcoming trainings and workshops will be announced on the website and through FWS Regional Aquatic Invasive Species Coordinators noted in the HACCP Fact Sheet.

Nico, L.G. and J.D. Williams. 1996. Risk assessment on black carp (Pisces: Cyprinidae). Final report to the Risk Assessment and Management Committee of the Aquatic Nuisance Species Task Force. U.S. Geological Survey, Biological Resources Division, Gainesville, Florida

Middlemas, K. 1994. Local angler hooks a peculiarity. The News Herald (September 25, Panama City, Florida.