

Barrens Topminnow HACCP Plan

HACCP Step 1 – Activity Description

Activity Description	
Facility: Dale Hollow National Fish Hatchery	Site: Dale Hollow National Fish Hatchery
Project Coordinator: Rick Nehrling	Activity: Barrens Topminnow Restoration in South-Central Tennessee
Site Manager: Andrew L. Currie	
Address: 145 Fish Hatchery Road Celina, TN 38551-6268	
Phone: (931) 243-2443	

Project Description i.e. Who; What; Where; When; How; Why
<p>Dale Hollow National Fish Hatchery grows out Barrens topminnows propagated at Conservation Fisheries Incorporated (Knoxville, Tennessee) and the Tennessee Aquarium (Chattanooga, Tennessee). Upon receipt at Dale Hollow National Fish Hatchery, the fish are placed into closed, re-circulation systems for rearing. All Barrens topminnow culture activities are confined to the Imperiled Aquatic Species Culture Building located at Dale Hollow National Fish Hatchery. Culture water is obtained by running domestic water through reverse-osmosis units. Once the fish reach proper size, they are released into suitable habitat within the species historic range in order to prevent listing under the Endangered Species Act.</p>

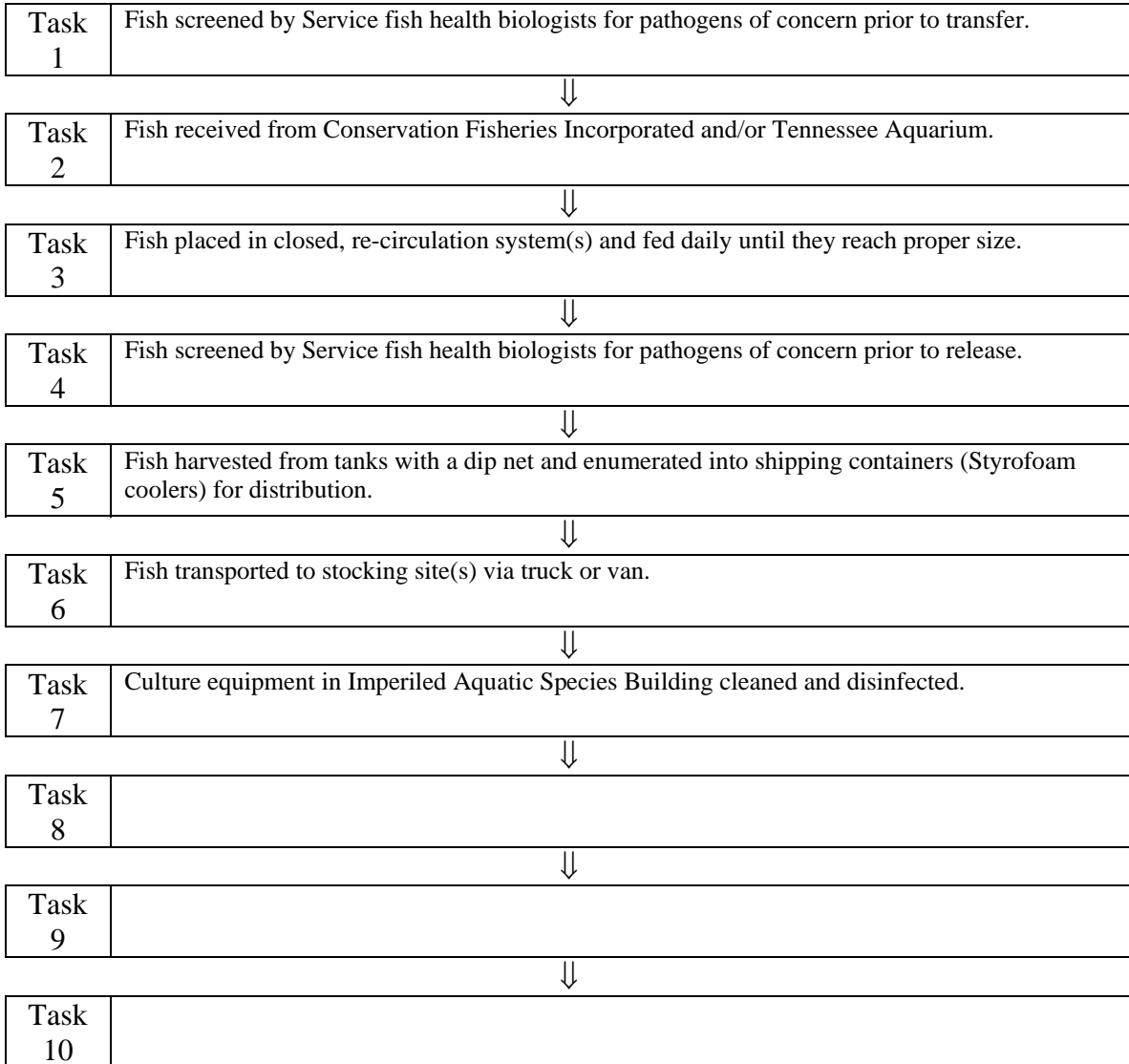
HACCP Step 2 – Identify Potential Hazards

(to be transferred to column 2 of HACCP Step 4 – Hazard Analysis Worksheet)

Hazards: Species Which May Potentially Be Moved/Introduced
Vertebrates: None
Invertebrates: Zebra mussel (<i>Dreissena polymorpha</i>) Freshwater snails (<i>Gastropoda</i> spp.) Asian clam (<i>Corbicula fluminea</i>) New Zealand mud snail (<i>Polamopyrgus antipodarum</i>)
Plants: Eurasian watermilfoil (<i>Myriophyllum spicatum</i>) Hydrilla (<i>Hydrilla verticillata</i>)
Other Biologics (e.g. disease, pathogen, parasite): Fish pathogens.
Others (e.g. construction materials, etc.):

HACCP Step 3 – Flow Diagram

Flow Diagram Outlining Sequential Tasks to Complete Activity/Project
Described in HACCP Step 1 – Activity Description



HACCP Step 4 - Hazard Analysis Worksheet

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
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Task 1 Fish screened by Service fish health biologists for pathogens of concern prior to transfer.	<u>Vertebrates</u> None	No	No ANS vertebrates included with sample fish.	NA	No
	<u>Invertebrates</u> None	No	No ANS invertebrates included with sample fish.	NA	No
	<u>Plants</u> None	No	No ANS plants included with sample fish.	NA	No
	<u>Others</u> Fish pathogens.	Yes	Pathogens of concern can be brought into the culture facility if the fish are not properly screened.	If pathogens are detected that are not present at the various stocking sites or pose an unwarranted risk to hatchery programs, the fish will not be transferred to Dale Hollow NFH for grow-out	Yes

Task 2 Fish received from Conservation Fisheries Incorporated and/or Tennessee Aquarium.	<u>Vertebrates</u> None	No	Fish are sorted at Conservation Fisheries Incorporated and Tennessee Aquarium prior to shipment. Only Barrens topminnows are shipped. No vertebrate ANS are contained in the shipments.	NA	No
	<u>Invertebrates</u> Zebra mussel, freshwater snail, Asian clam, New Zealand mud snail	Yes	Zebra mussels, freshwater snails, Asian clams, and New Zealand mud snails could be transported into the hatchery in a fish shipment.	Dip fish from shipping bags into culture tanks. Discard any gravel or other extraneous materials contained in the shipping bag.	Yes
	<u>Plants</u> Eurasian watermilfoil Hydrilla	Yes	Pieces of plant material (i.e., Eurasian watermilfoil and Hydrilla) could be transported into the hatchery in a fish shipment.	Dip fish from shipping bags into culture tanks. Discard any gravel or other extraneous materials contained in the shipping bag.	Yes
	<u>Others</u> Fish pathogens	Yes	Pathogens of concern might not be detected during the screening process.	Conduct another disease screening prior to release (Step 4).	No

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Task 3 Fish placed in closed, re-circulation system(s) and fed daily until they reach proper size.	<u>Vertebrates</u> None	No	Vertebrate ANS excluded in Task 2.	NA	No
	<u>Invertebrates</u> Zebra mussel, freshwater snail, Asian clam, New Zealand mud snail	Yes	Zebra mussels, freshwater snails, Asian clams, and New Zealand mud snails could be contained in the culture system(s).	No effective way to remove all snails from the culture system(s) without harming the cultured fish and system nitrifying bacteria. Individual snails can be removed and destroyed.	No
	<u>Plants</u> Eurasian watermilfoil Hydrilla	Yes	Small pieces of plant material could be contained in the culture system(s).	No effective way to remove all plant material from the culture system(s) without harming the cultured fish and system nitrifying bacteria. Visible plant material can be removed and destroyed.	No
	<u>Others</u> Fish pathogens.	Yes	Pathogens of concern might be contained in the culture system(s).	No effective way to remove all pathogens of concern from the culture system(s) without harming the cultured fish and system nitrifying bacteria.	No

Task 4 Fish screened by Service fish health biologists for pathogens of concern prior to release.	<u>Vertebrates</u> None	No	No ANS vertebrates included with sample fish.	NA	No
	<u>Invertebrates</u> None	No	No ANS invertebrates included with sample fish.	NA	No
	<u>Plants</u> None	No	No ANS plants included with sample fish.	NA	No
	<u>Others</u> Fish pathogens.	Yes	Pathogens of concern can be introduced into the wild if the fish are not properly screened.	If pathogens are detected that are not present at the various stocking sites and pose a risk to wild fish, the cultured fish will not be released.	Yes

HACCP Step 4 - Hazard Analysis Worksheet

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Task 5 Fish harvested from tanks with a dip net and enumerated into shipping containers (Styrofoam coolers) for distribution.	<u>Vertebrates</u> None	No	Vertebrate ANS excluded in Task 2.	NA	No
	<u>Invertebrates</u> Zebra mussel, freshwater snail, Asian clam, New Zealand mud snail.	Yes	Zebra mussels, freshwater snails, Asian clams, and New Zealand mud snails could be placed into the shipping container(s) with the fish.	Extreme care must be taken not to place any gravel or other extraneous materials into the shipping container(s) with the fish.	Yes
	<u>Plants</u> Eurasian watermilfoil Hydrilla	Yes	Pieces of plant material could be placed into the shipping container(s) with the fish.	Extreme care must be taken not to place any gravel or other extraneous materials into the shipping container(s) with the fish.	Yes
	<u>Others</u> None	No	Fish pathogens excluded in Task 4	NA	No

Task 6 Fish transported to stocking site(s) via truck or van.	<u>Vertebrates</u> None	No	Vertebrate ANS excluded in Task 2.	NA	No
	<u>Invertebrates</u> None	No	Invertebrate ANS excluded in Task 5.	NA	No
	<u>Plants</u> None	No	Plant ANS excluded in Task 5.	NA	No
	<u>Others</u> None	No	Fish pathogens excluded in Task 4	NA	No

HACCP Step 4 - Hazard Analysis Worksheet

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Task 7 Culture equipment in Imperiled Aquatic Species Building cleaned and disinfected.	<u>Vertebrates</u> None	No	Vertebrate ANS excluded in Task 2.	NA	No
	<u>Invertebrates</u> Zebra mussel, freshwater snail, Asian clam, New Zealand mud snail	Yes	Zebra mussels, freshwater snails, Asian clams, and New Zealand mud snails could remain in the culture system and pose a hazard to the next lot of fish cultured.	Clean and disinfect culture system(s) with 200 mg/L chlorine.	Yes
	<u>Plants</u> Eurasian watermilfoil Hydrilla	Yes	ANS plants could remain in the culture system and pose a hazard to the next lot of fish cultured.	Clean and disinfect culture system(s) with 200 mg/L chlorine.	Yes
	<u>Others</u> None	No	Fish pathogens excluded in Task 4	NA	No

HACCP Step 5 – HACCP Plan Form

HACCP Plan Form								
Critical Control Point (CCP)	Significant Hazard(s)	Limits for each Control Measure	Monitoring				Evaluation & Corrective Action(s) (if needed)	Supporting Documentation (if any)
			What	How	Frequency	Who		
(1) Fish screened by Service fish health biologists for pathogens of concern prior to transfer.	Unintentional spread of pathogens of concern into the hatchery and into the wild.	Small number of fish in sample due to the imperiled status of the species.	Presence of pathogens of concern.	Visual and microscopic inspection.	Prior to fish being shipped from propagation facility to the hatchery.	Warm Springs Fish Health Center, GA	Presence of pathogens of concern that are not present at the stocking site(s) and which pose an unwarranted risk to hatchery programs would preclude shipping fish to the hatchery.	Fish Health Inspection Report Records in daily log book.
(2) Fish received from Conservation Fisheries Incorporated and/or Tennessee Aquarium.	Unintentional spread of Zebra mussels, freshwater snails, Asian clams, and New Zealand mud snails into the hatchery and into the wild.	Small invertebrate ANS and their glochidia or eggs are hard to detect.	Presence of invertebrate ANS.	Visual	Each time fish are received at the hatchery from one of the propagation facilities.	Hatchery personnel receiving the fish.	Hatchery personnel responsible for maintaining fish in an isolated culture system at all times and for following protocol.	Records in daily log book.
(4) Fish screened by Service fish health biologists for pathogens of concern prior to release.	Unintentional spread of pathogens of concern into the wild.	Small number of fish in sample due to the imperiled status of the species.	Presence of pathogens of concern.	Visual and microscopic inspection.	Prior to fish being shipped from the hatchery to the stocking site(s).	Warm Springs Fish Health Center, GA	Presence of pathogens of concern that are not present at the stocking site(s) would preclude shipping fish from the hatchery to the wild.	Fish Health Inspection Report Records in daily log book.
(5) Fish harvested from tanks with a dip net and enumerated into shipping containers (Styrofoam coolers) for distribution.	Unintentional spread of Zebra mussels, freshwater snails, Asian clams, New Zealand mud snails, Eurasian watermilfoil, and Hydrilla into the wild.	Small invertebrate ANS and their glochidia or eggs and pieces of plant material are hard to detect.	Presence of freshwater snails and Eurasian watermilfoil	Visual	Each time fish are removed from culture system(s) for distribution.	Hatchery personnel harvesting fish.	Hatchery personnel responsible for maintaining fish in an isolated culture system at all times and for following protocol.	Records in daily log book.
(7) Culture equipment in Imperiled Aquatic Species Building cleaned and disinfected.	Unintentional spread of Zebra mussels, freshwater snails, Asian clams, New Zealand mud snails, Eurasian watermilfoil, and Hydrilla.	Adequate contact between ANS and chlorine required for effective disinfection of equipment.	Disinfection protocol	Monitor disinfection process.	Whenever culture equipment is cleaned and disinfected.	Hatchery personnel taking part in cleaning and disinfection activities.	Hatchery site supervisor responsible for following protocol.	Records in daily log book.

Facility:	Dale Hollow National Fish Hatchery	Activity:	Barrens Topminnow Restoration in South-Central Tennessee
Address:	145 Fish Hatchery Road Celina, TN 38551		
Signature:		Date:	
HACCP Plan was followed.			