

# Trout Culture

## HACCP Step 1 – Activity Description

<b>Activity Description</b>	
Facility: Wolf Creek National Fish Hatchery	Site: Wolf Creek National Fish Hatchery
Project Coordinator: Rick Nehrling	Activity: Trout Culture
Site Manager: James H. Gray	
Address: 50 Kendall Road Jamestown, KY 42629	
Phone: 270-343-3797	

<b>Project Description</b> i.e. Who; What; Where; When; How; Why
<p>Wolf Creek NFH produces rainbow trout and brown trout for Mitigation of federal water development projects. In addition, the hatchery also produces trout for the state of Kentucky through a MOA to enhance recreational fishing opportunities of non-mitigation waters. The hatchery's water supply is gravity fed from Lake Cumberland, a Corps of Engineers Cumberland River impoundment. Water flow rates vary from 12,000 to 15,000 gallons per minute. The hatchery consists of 20 concrete indoor hatching tanks, and 64 one hundred foot outside raceways. Trout eggs are received from four federal hatcheries and one state hatchery. These eggs are disinfected and placed in hatching units. Once hatching occurs, the fry are placed in indoor tanks. The fish are moved to outside rearing units as they grow. Excess sub-adult fish are transferred to other federal hatcheries, state hatcheries, and a tribal hatchery. Stocking sized fish are distributed by Wolf Creek and the Kentucky Department of Fish and Wildlife Resources. Wolf Creek National Fish Hatchery produces in excess of one million trout annually.</p>

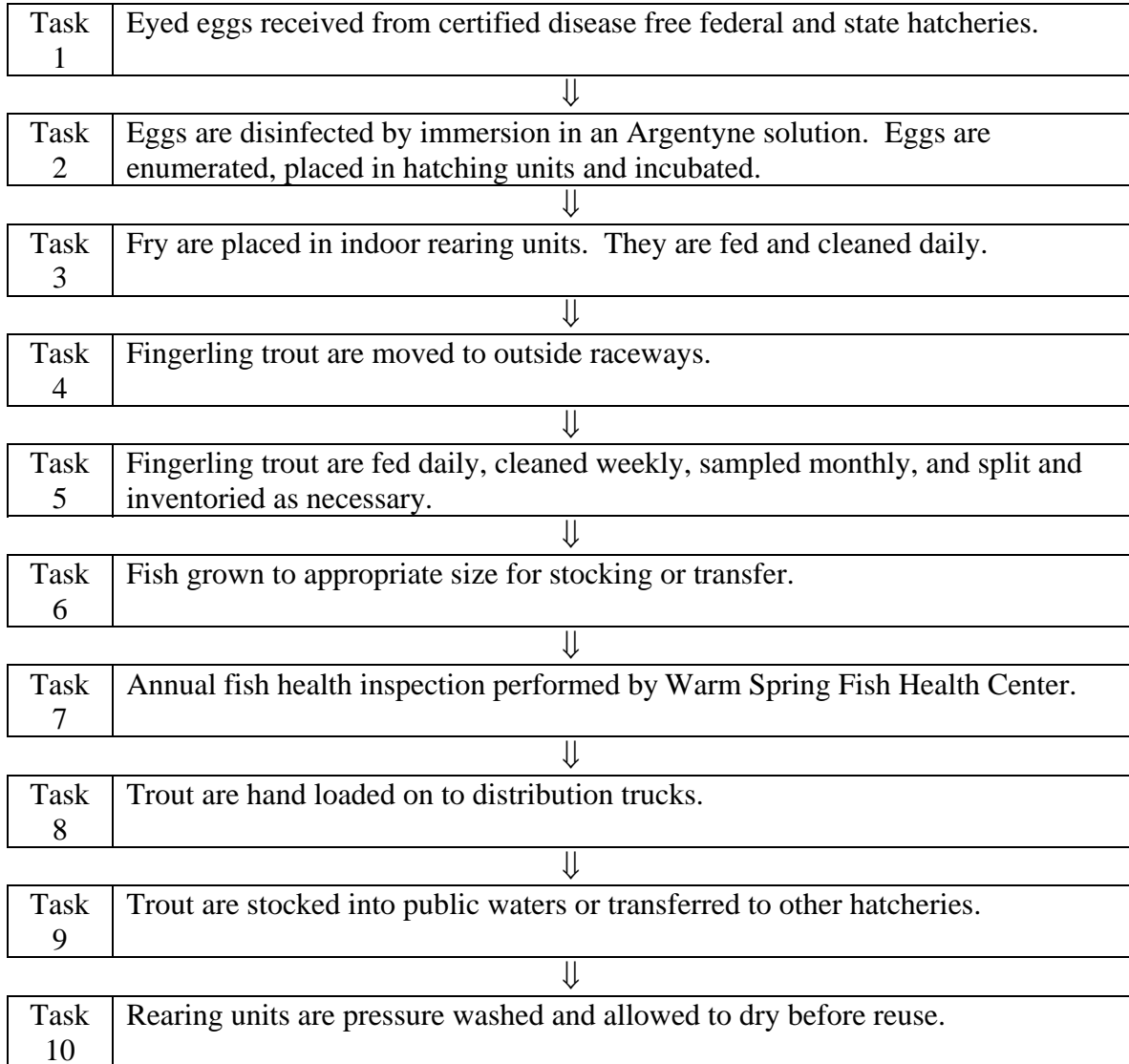
## HACCP Step 2 – Identify Potential Hazards

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

<b>Hazards: Species Which May Potentially Be Moved/Introduced</b>
<b>Vertebrates:</b> Common carp ( <i>Cyprinus carpio</i> )
<b>Invertebrates:</b> Asiatic Clam ( <i>Corbiculla fluminea</i> ) Zebra Mussel ( <i>Dressena polymorpha</i> ) Freshwater snail ( <i>Gastropoda</i> spp.) Freshwater Jellyfish ( <i>Craspodacusta sowerbyii</i> )
<b>Plants:</b> Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> ) Hydrilla ( <i>Hydrilla verticillata</i> )
<b>Other Biologics (e.g. disease, pathogen, parasite):</b> Fish Pathogens [specifically: Furunculosis ( <i>Aeromonas salmonicida</i> ), Ich ( <i>Ichthyophtherius multifilis</i> ), Gyros ( <i>Gyrodactylus salaris</i> ), LMBV ( Largemouth Bass Virus), Parasites/pathogens associated with cultured salmonids]
<b>Others (e.g. construction materials, etc.):</b> None

### 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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<b>Task 1</b>  Eyed eggs received from certified disease free federal and state hatcheries.	<u>Vertebrates</u> None	No	ANS could not survive the egg chemical treatments (i.e. formalin).	None	No
	<u>Invertebrates</u> None	No	ANS could not survive the egg chemical treatments (i.e. formalin).	None	No
	<u>Plants</u> None	No	ANS could not survive the egg chemical treatments (i.e. formalin).	None	No
	<u>Others</u> Fish Pathogens	Yes	Fish pathogens could be present in water supply or on egg surface.	None	No

<b>Task 2</b>  Eggs are disinfected by immersion in an Argentyne solution. Eggs are enumerated, placed in hatching units and incubated.	<u>Vertebrates</u> Common carp ( <i>Cyprinus carpio</i> )	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Invertebrates</u> Asiatic Clam ( <i>Corbicula fluminea</i> ) Zebra Mussel ( <i>Dreissena polymorpha</i> ) Freshwater snail ( <i>Gastropoda</i> spp.) Freshwater Jellyfish ( <i>Craspodacusta sowerbyii</i> )	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Plants</u> Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> ) Hydrilla ( <i>Hydrilla verticillata</i> )	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Others</u> Fish Pathogens	Yes	Organisms found in water supply.	Eggs are disinfected in a 1% Argentyne solution before introduction into hatchery and disposal of shipping containers.	Yes

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<b>Task 3</b>  Fry are placed in indoor rearing units. They are fed and cleaned daily.	<u>Vertebrates</u> Same as in Task 2	Yes	Organisms found in water supply..	Control not practical at this stage.	No
	<u>Invertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Plants</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Others</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No

<b>Task 4</b> Fingerling trout are moved to outside raceways.	<u>Vertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Invertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Plants</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Others</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No

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<b>Task 5</b>  Fingerling trout are fed daily, cleaned weekly, sampled monthly, and split and inventoried as necessary.	<u>Vertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Invertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Plants</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Others</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No

<b>Task 6</b> Fish grown to appropriate size for stocking or transfer.	<u>Vertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Invertebrates</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Plants</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No
	<u>Others</u> Same as in Task 2	Yes	Organisms found in water supply.	Control not practical at this stage.	No

### 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 7 Annual fish health inspection performed by Warm Spring Fish Health Center.	<u>Vertebrates</u> None	No	Fish are not examined for ANS species.	None	No
	<u>Invertebrates</u> None	No	Fish are not examined for ANS species.	None	No
	<u>Plants</u> None	No	Fish are not examined for ANS species.	None	No
	<u>Others</u> Fish Pathogens	Yes	Introducing a cultured salmonid pathogen into wild waters.	If a virulent pathogen is detected by the Warm Spring FHC, fish could be prophylactically treated (via FDA approved chemicals) prior to release, or if they do not respond to the treatment, destroyed.	Yes

Task 8 Trout are hand loaded on to distribution trucks.	<u>Vertebrates</u> Common carp ( <i>Cyprinus carpio</i> )	Yes	Organisms found in water supply.	Raceways are screened. Large vertebrates would be removed and smaller ones eaten by the trout.	Yes
	<u>Invertebrates</u> Asiatic Clam ( <i>Corbicula fluminea</i> ) Zebra Mussel ( <i>Dreissena polymorpha</i> ) Freshwater snail ( <i>Gastropoda</i> spp.) Freshwater Jellyfish ( <i>Craspodacusta sowerbyii</i> )	Yes	Organisms found in water supply.	Raceways are screened. Larger invertebrates would be caught in head box, and smaller ones destroyed by fish. Filtration bag (20 micron) placed over distribution truck filling pipe. A 20 micron mesh size is sufficient to catch glochida or juvenile mussels. Bag is frequently changed and disinfected.	Yes
	<u>Plants</u> Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> ) Hydrilla ( <i>Hydrilla verticillata</i> )	Yes	Organisms found in water supply.	Raceways are cleaned weekly, and macrophytes removed. Filtration bag (20 micron) placed over distribution truck filling pipe. Bag is frequently changed and disinfected.	Yes
	<u>Others</u> Fish Pathogens	Yes	Distribution trucks could bring a pathogen onto the hatchery.	Distribution trucks are disinfected with a 1.5 percent solution of disinfectant.	Yes

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<b>Task 9</b>  Trout are stocked into public waters or transferred to other hatcheries.	<u>Vertebrates</u> None	No	Vertebrates could not survive distribution run attached to truck.	NA	No
	<u>Invertebrates</u> Asiatic Clam ( <i>Corbicula fluminea</i> ) Zebra Mussel ( <i>Dreissena polymorpha</i> ) Freshwater snail ( <i>Gastropoda</i> spp.) Freshwater Jellyfish ( <i>Craspodacusta sowerbyii</i> )	Yes	ANS species could be brought back to hatchery on distribution truck.	Avoid contact with receiving waters or hatcheries, Disinfect truck when returning to hatchery.	Yes
	<u>Plants</u> Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> ) Hydrilla ( <i>Hydrilla verticillata</i> )	Yes	ANS species could be brought back to hatchery on distribution truck.	Avoid contact with receiving waters or hatcheries, Disinfect truck when returning to hatchery.	Yes
	<u>Others</u> Fish pathogens	Yes	ANS species could be brought back to hatchery on distribution truck.	Avoid contact with receiving waters or hatcheries, Disinfect truck when returning to hatchery.	Yes

<b>Task 10</b>  Rearing units are pressure washed and allowed to dry before reuse.	<u>Vertebrates</u> None	No	ANS species could not survive cleaning process.	NA	No
	<u>Invertebrates</u> Zebra mussel, freshwater snail, Asian clam, New Zealand mud snail	Yes	Pressure washing will remove any invertebrates adhered to surfaces, and the dry process will kill any that survived it..	None	No
	<u>Plants</u> None	No	ANS species could not survive cleaning process	NA	No
	<u>Others</u> None	No	ANS species could not survive cleaning process	NA	No

### HACCP Step 5 – HACCP Plan Form

Significant Hazard(s)	Limits for each Control Measure	Monitoring				Evaluation & Corrective Action(s) (if needed)	Supporting Documentation (if any)
		What	How	Frequency	Who		
(2) Spread of fish pathogens into hatchery and water supply.	Immersion in a one percent Argentyne solution for ten minutes. Pathogens found inside egg are not affected; however this possibility should be eliminated by fish health inspection.	Disinfection protocol.	Timed immersion	Every egg shipment	Hatchery Staff.	Project Leader or assigned designee responsible for following protocol.	Chemical usage records
(7) Spread of pathogens into the wild or other culture facilities.	A very small possibility of not detecting existing pathogens of concern during the fish health inspection does exist.	Fish Pathogens.	Visual and microscopic inspection.	Annually.	Warm Springs Fish Health Center, GA	Detection of virulent fish pathogens would prevent transfer or stocking of fish. In some cases, a therapeutic chemical will be used to control a less virulent pathogen.	Fish Health Inspection Report
(9) Spread of invertebrate, plant, and fish pathogen ANS into the wild or other culture facilities.	A minimum of five minute contact between disinfectant and surfaces. Damage in the filtration bag could allow an ANS species into distribution truck.	Disinfection and mechanical removal.	Timed and visual inspection of filtration bag.	Prior to filling distribution truck with water.	Hatchery staff	Project Leader or assigned designee responsible for following protocol.	Chemical usage records Daily log maintained by Project Leader. Distribution Records
(10) Spread of ANS species from distribution trips.	All surfaces sprayed with disinfectant, with a minimum of five minutes contact.	Disinfection protocol	Disinfectant sprayer with 1.5 percent solution.	When distribution truck return to hatchery.	Hatchery staff	Assigned designee responsible for following protocol.	Records in chemical use log book.

<b>Facility:</b>	Wolf Creek National Fish Hatchery	<b>Activity:</b>	Trout Culture
<b>Address:</b>	50 Kendall Road Jamestown, KY 42629		
<b>Signature:</b>		<b>Date:</b>	
<b>HACCP Plan was followed.</b>			