

Lake Sturgeon HACCP Plan

(Hazard Analysis and Critical Control Point)

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1) Activity Description

Facility: Warm Springs National Fish Hatchery	Site: Warm Springs National Fish Hatchery
Project Coordinator: Carlos Echevarria	Activity: Lake sturgeon culture
Site Manager: Carlos Echevarria	
Address: 5308 Spring Street Warm Springs, GA 31830	
Phone: (706) 655-3382	

Project Description

i.e. Who; What; Where; How; Why

Lake sturgeon are obtained from the Wolf and Wisconsin Rivers, WI. Fertilized eggs are shipped to WSNFH where they are hatched out and cultured. In November LST are stocked into the Tennessee River, TN.

2) Identify Potential Hazards

Hazards: Species which may potentially be moved/introduced
Vertebrates: None
Invertebrates: zebra mussels, spiny water fleas
Plants: Eurasian watermillfoil
Other Biologics: bacteria, parasites, protozoans, fungus
Others: None

3) Flow Diagram

Step 1	Spawning-Late April to early May
Step 2	Shipping via Federal Express and vehicle transport
Step 3	LST eggs disinfected with 100ppm iodine solution upon arrival at WSNFH, prior to incubation
Step 4	Fertilized eggs are measured volumetrically and placed in the recirculating hatching jar system within the quarantine room of the LST Isolation Building
Step 5	Vehicles, tanks, coolers and other implements utilized in egg transportation are disinfected with 300ppm chlorine in designated hatchery disinfection area
Step 6	At the time the animals arrive aquariums are tagged to identify the date and strain
Step 7	Hatching jar effluent disinfected in underground septic tank
Step 8	30 day quarantine for Iridovirus: animals are periodically inspected by Fish Health Center Personnel, and pending results approved for movement to other holding areas
Step 9	Hatching jars disinfected with 300ppm chlorine-contact time 30 minutes
Step 10	LST held in isolation for the duration of their stay at WSNFH. In isolation LST are graded and fed to achieve maximum growth
Step 11	November: all LST (longer than 5") are sampled (average weight/average length) and tagged via scute removal to indicate year class
Step 12	Prior to stocking LST will be given a diagnostic test by Fish Health Center Personnel, once LST receive a "clean fish health report" stocking can ensue
Step 13	Distribution truck filled with treated pond water
Step 14	LST dip-netted from raceways and loaded onto distribution truck
Step 15	Isolation building disinfected with 300ppm chlorine solution-contact time 30-60 minutes
Step 16	LST stocked into receiving waters
Step 17	Distribution truck returns to hatchery and disinfected

4) Hazard Analysis Worksheet

(1) Harvest or aquaculture step	(2) Identify potential ANS hazards introduced or controlled at this step (1)	(3) Are any potential ANS hazards significant? (Yes/No)	(4) Justify you decisions for column 3	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
(1) Spawning	Fish/other vert: none	No	Acceptable level of risk that an ANS vertebrate would be introduced during spawning	NA	No
	Invertebrates: zebra mussels	Yes	Zebra mussels could potentially be introduced	Minimize amount of water taken from river by using well water with 50ppm iodine	No
	Plants: Eurasian watermillfoil	No	Acceptable level of risk that ANS plants would be introduced during spawning	NA	No
	Other biologics: bacteria, protozoan, fungus, parasites	Yes	Biologics could be present in shipping water	Minimize amount of water taken from river by using well water with 50ppm iodine	No
(2) Shipping	Fish/other vert: none	No	Acceptable level of risk that an ANS vertebrate would be shipped with fertilized eggs	NA	No
	Invertebrates: zebra mussels	Yes	Zebra mussels could potentially be shipped with fertilized eggs	Minimize amount of water taken from river by using well water with 50ppm iodine	No
	Plants: Eurasian watermillfoil	No	Acceptable level of risk that ANS plants would be shipped with fertilized eggs	NA	No
	Other biologics: bacteria, protozoan, fungus, parasites	Yes	Biologics could be present in shipping water	Minimize amount of water taken from river by using well water with 50ppm iodine	No
(3) LST eggs disinfected with 100ppm iodine solution upon arrival at WSNFH-prior to incubation	Fish/other vert: none	No	Fish or verts would be visible in shipping bags, so level of risk is acceptable	NA	No
	Invertebrates: zebra mussels	Yes	ANS can be on eggs or in transport water	Disinfect eggs with 100ppm iodine solution. Disinfect transport water with 300ppm chlorine for 60 minutes	Yes
	Plants: Eurasian watermillfoil	No	Plant material would be visible in shipping bags, so level of risk is acceptable	NA	No
	Other biologics: bacteria, protozoan, fungus, parasites	Yes	ANS can be on eggs or in transport water	Disinfect eggs with 100ppm iodine solution. Disinfect transport water with 300ppm chlorine for 60 minutes	Yes
(4) Fertilized eggs are measured volumetrically and placed in the hatching jar system in LST isolation building	Fish/other vert: none	No	Potential ANS reduced to acceptable risk in step 3	NA	No
	Invertebrates: zebra mussels	No	Recirculating hatching jar system with UV sterilization.	Disinfect all implants used in 600ppm Roccal for 30 minutes	No
	Plants: none	No	Potential ANS reduced to acceptable risk in step 3	NA	No
	Other biologics: bacteria, protozoan, fungus, parasites	No	Recirculating hatching jar system with UV sterilization.	NA	No

4) Hazard Analysis Worksheet cont'd

(5) Vehicles, tanks, coolers, and other implements utilized in egg transport disinfected	Fish/other vert: none	No	ANS verts not likely to be collected, so acceptable level of risk	NA	No
	Invertebrates: zebra mussels	Yes	Vehicles, tanks, coolers etc. could potentially carry invisible ANS	Disinfect vehicles, tanks, coolers etc. with 300ppm chlorine solution in designated hatchery disinfection area	Yes
	Plants: Eurasian water millfoil	No	ANS plants not likely to be collected, so acceptable level of risk	NA	No
	Other biologics: bacteria, protozoan, fungus, parasites	Yes	Vehicles, tanks, coolers etc. could potentially carry invisible ANS	Disinfect vehicles, tanks, coolers etc. with 300ppm chlorine solution in designated hatchery disinfection area	Yes
(6) At the time animals arrive tanks are tagged to identify date and strain	Fish/other vert: none	No	No ANS hazards introduced or controlled at this step	NA	No
	Invertebrates: none	No	No ANS hazards introduced or controlled at this step	NA	No
	Plants: none	No	No ANS hazards introduced or controlled at this step	NA	No
	Other biologics: none	No	No ANS hazards introduced or controlled at this step	NA	No
(7) Hatching jar effluent disinfected	Fish/other vert: lake sturgeon	Yes	Lake sturgeon are not native to drainage where WSNFH is located	Treat effluent with 300ppm chlorine and then de-chlorinate with sodium thiosulfate	Yes
	Invertebrates: none	No	Invertebrate ANS reduced to acceptable risk in step 3	NA	No
	Plants: none	No	No plant material introduced	NA	No
	Other biologics: none	No	Invertebrate ANS reduced to acceptable risk in step 3	NA	No
(8) 30 day quarantine for Iridovirus Animals periodically inspected by Fish Health Center personnel	Fish/other vert: none	No	No aquatic verts introduced into LST isolation building	NA	No
	Invertebrates: none	No	No aquatic invertebrates introduced into LST isolation building	NA	No
	Plants: none	No	No plant material introduced into LST isolation building	NA	No
	Other biologics: bacteria, fungus, parasites, protozoans	Yes	Recirculating hatching jar system with UV sterilization Fry shipped to other facilities must be "clean"	Fish inspected by Fish Health Center Personnel	Yes
(9) Hatching jars disinfected	Fish/other vert: none	No	No verts introduced into hatching jar system	NA	No
	Invertebrates: none	No	No invertebrates introduced into hatching jar system	NA	No
	Plants: none	No	No plant material introduced into hatching jars	NA	No
	Other biologics: bacteria, fungus, parasites, protozoans	Yes	Fungus may develop on unhatched eggs	Disinfect hatching jars with 300ppm chlorine solution for 30 minutes	No
(10) LST held in isolation for duration of stay at WSNFH, graded and fed	Fish/other vert: none	No	No aquatic verts introduced into LST isolation building	NA	No
	Invertebrates: none	No	No aquatic invertebrates introduced into LST isolation building	NA	No
	Plants: none	No	No aquatic plant material introduced into LST isolation building	NA	No
	Other biologics: bacteria, fungus, parasites, protozoans	Yes	Fry may develop disease problems	Periodic diagnostic tests, disinfect all nets, tubs etc. after use with 600ppm Roccal	No

4) Hazard Analysis Worksheet cont'd

(11) Prior to stocking LST will be given a diagnostic evaluation by Fish Health Center personnel	Fish/other vert: none	No	Sand filtration, so no aquatic verts introduced into LST isolation building	NA	No
	Invertebrates: bacteria, fungus, parasites, protozoans	No	Sand filtration, so no aquatic inverts introduced into LST isolation building	NA	No
	Plants: none	No	Sand Filtration, so no aquatic plant material introduced into LST isolation building	NA	No
	Other biologics: bacteria, fungus, parasites, protozoans	Yes	LST must receive a clean fish health report prior to stocking	Diagnostic evaluation by Fish Health	Yes
(12) Distribution truck filled with treated pond water	Fish/other vert: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Invertebrates: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Plants: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Other biologics: none	No	Previous steps reduced hazards to an acceptable level	NA	No
(13) LST dipped from raceways and loaded onto distribution truck	Fish/other vert: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Invertebrates: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Plants: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Other biologics: none	No	Previous steps reduced hazards to an acceptable level	NA	No
(14) Isolation building disinfected	Fish/other vert: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Invertebrates: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Plants: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Other biologics: none	No	Previous steps reduced hazards to an acceptable level	NA	No
(15) LST stocked into receiving waters	Fish/other vert: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Invertebrates: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Plants: none	No	Previous steps reduced hazards to an acceptable level	NA	No
	Other biologics: none	No	Previous steps reduced hazards to an acceptable level	NA	No

4) Hazard Analysis Worksheet cont'd

(16) Distribution truck returns to hatchery and disinfected	Fish/other vert: none	No	Verts not likely to pass through pump and filter on truck intake pipes	NA	No
	Invertebrates: none	No	Invertebrates not likely to pass through pump and filter on truck intake pipes	NA	No
	Plants: Eurasian watermillfoil	Yes	Plant material may be caught on truck axle etc.	Plant material removed by hand and truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area	Yes
	Other biologics: bacteria, fungus, parasites, protozoans	Yes	Biologics may not be visible and transported back to hatchery	Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area	Yes

5) ANS-HACCP Plan Form

(1) Critical Control Point (CCP)	(2) Significant Hazard(s)	(3) Limits for each control measure	Monitoring				(8) Evaluation and Corrective Action(s) (if needed)	(9) Supporting Documentation (if any)
			(4) What	(5) How	(6) Frequency	(7) Who		
(3) LST eggs disinfected upon arrival at WSNFH	Zebra mussels Bacteria, Fungus Parasites, Protozoans	Eggs disinfected with 100ppm iodine solution	Iodine solution [] and time	[iodine]	Each time a new shipment of eggs arrives	Assistant hatchery manager	Increase concentration of iodine or increase time eggs in iodine solution	Record [iodine] solution and length of disinfection time in LST daily records
(5) Transport vehicles, tanks, coolers etc. disinfected	Zebra mussels Bacteria, Fungus Parasites, Protozoans	Transport vehicles, tanks, coolers etc. disinfected with 300ppm chlorine solution for 30 minutes in designated hatchery disinfection area	Chlorine Solution []	Measure volume chlorine	Each time equipment is used	Hatchery employee	Increase ppm chlorine, or increase contact time	Record [iodine] solution and length of disinfection time in LST daily records
(7) Effluent from hatching jar system disinfected	Lake sturgeon	Effluent disinfected with 300ppm chlorine solution for 30 minutes followed by de-chlorination with sodium thiosulfate	Chlorine and sodium thiosulfate [] and time	Time and volume of chlorine and sodium thiosulfate	Daily	Hatchery employee	Increase chlorine contact time	Record effluent disinfection process in LST daily records
(8) Animals periodically inspected by Fish Health personnel prior to movement to other facilities	Bacteria, Fungus Parasites, Protozoans	LST given a diagnostic evaluation by Fish Health personnel	Fish Health	Diagnostic evaluation	Prior to any transfers to other facilities	Fish Health personnel	Treat identified problem with proper therapeutic agents	Record any identified problems in WSNFH disease history records and in LST daily records
(16) Distribution truck returns to hatchery	Zebra mussels Bacteria, Fungus Parasites, Protozoans, Eurasian watermillfoil and other plant and invertebrates	Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area	Truck disinfection process	Visually inspect truck for foreign material	Before departing stocking site and during disinfection process	Truck driver	More thorough disinfection and inspection process	Record in truck maintenance and inspection handbook
Facility: Warm Springs National Fish Hatchery						Activity: Lake sturgeon (<i>Acipenser fulvescens</i>) culture for restoration in the Upper Tennessee River		
Address: 5308 Spring Street Warm Springs, GA 31830								
Signature:						Date:		
HACCP Plan Was Followed								