

HACCP Plan

HACCP Step 1 – Activity Description

Activity Description	
Facility: Garrison Dam National Fish Hatchery	Site: Sturgeon Culture Building
Project Coordinator: Rob Holm, Project Leader	Activity: Pallid Sturgeon Recovery Propagation
Site Manager: Terry Freije, Fishery Biologist	
Address: Hatchery Road Riverdale, ND 58565	
Phone: 701-654-7451	

Project Description i.e. Who; What; Where; When; How; Why
<p>Pallid Sturgeon have been in decline in the upper Missouri River basin for the last several decades. Since 1993 these fish have been listed as an Endangered Species. Pallid Sturgeon are reared at Garrison Dam National Fish Hatchery (GDNFH) as part of a cooperative effort between several state and federal agencies to help recover pallid sturgeon. Pallid Sturgeon Iridovirus (PSIV) has been a road block to the use of the fish from GDNFH in the recovery effort. The rearing of fish that are negative for virus is of paramount concern. Techniques and methodologies are being used to insure that exposure and possible spread of the virus is kept to the absolute minimum. Adult broodstock collection begins in late April until mid-May. Broodstock are transported from capture sites and held in 20 foot diameter circular tanks until spawning. The fish are injected with hormone treatments to induce spawning. GDNFH receives eggs from onsite spawning as well as from other participating hatcheries. Eggs received are disinfected by iodophore treatment upon arrival. Once disinfected, the eggs are placed into modified McDonald hatching jars for incubation. The eggs are hatched using heated, filtered, and UV sterilized water. The fry are hatched into 30-inch diameter tanks and are held there until they start to feed. As the fish outgrow their fry tanks, they are redistributed to larger 3, 5, and 8 foot diameter tanks. The fish are started on Bio-Oregon Bio-Diet starter and fed progressively larger feeds until they are switched to Nelson’s Silvercup #2 and #3 salmon feed. The fish are fed using automatic feeders. To prevent possible disease spread among the tanks, each tank is assigned working tools for cleaning. There are several containers of mixed disinfectant at several locations through out the production floor. Anytime fish are moved, the equipment, the incoming tank, and if all fish are removed, the outgoing tank are disinfected. During production the fish receive heated, filtered, and UV sterilized water. In the event of a power failure, automatic valves close to prevent undisinfected water from reaching the fish until power is restored. Each family lot is tested for PSIV prior to stocking. Once the production lot is removed from the building, all water lines, tanks, and equipment are disinfected as well as the building itself to insure no cross contamination from one production lot to another. All production lots are stocked from the hatchery prior to arrival of the adult broodstock to prevent potential introduction of disease.</p>

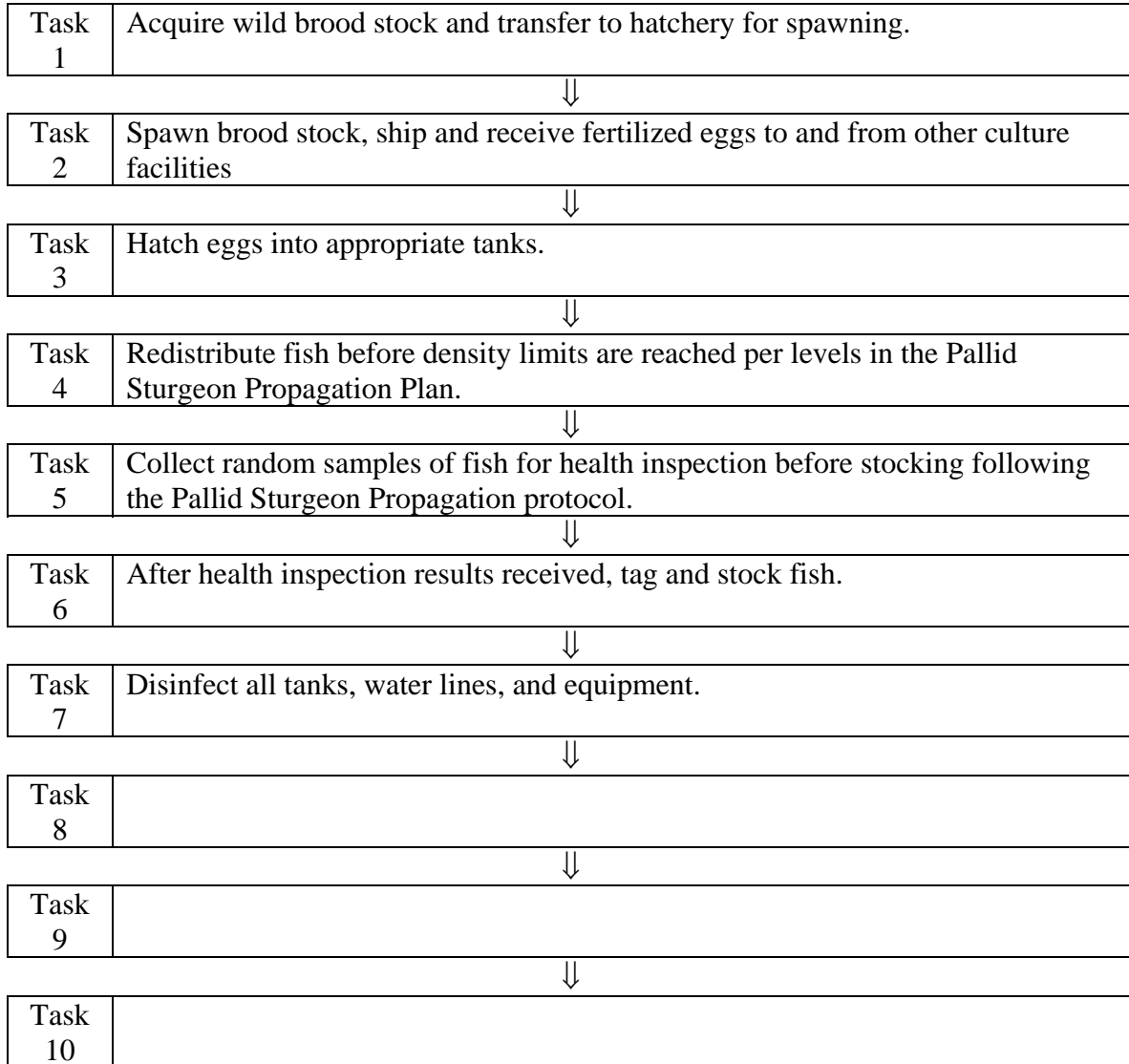
HACCP Step 2 – Identify Potential Hazards

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

Hazards: Species Which May Potentially Be Moved/Introduced
Vertebrates: Various fish and fish parts
Invertebrates: Zebra mussels, New Zealand mud snails, Asian clam
Plants: Curlyleaf Pondweed (<i>Potamogeton crispus</i>) , Eurasian water milfoil
Other Biologics (e.g. disease, pathogen, parasite): Pallid Sturgeon Iridovirus, <i>Costia</i> Protozoan infection, Gill Amoeba infection, <i>Flexibacter columnaris</i> (<i>Columnaris</i> disease), <i>Flavobacter psychrophilum</i> (Bacterial Coldwater Disease), <i>Renibacterium salmoninarum</i> (Bacterial Kidney Disease), <i>Yersinia ruckeri</i> (Enteric Redmouth disease), <i>Aeromonas salmonicida</i> (Frunculosis), <i>Myxobolus cerebralis</i> (Whirling Disease), VHSV (Viral Hemorrhagic Septicemia Virus), IHNV (Infectious Hematopoietic Necrosis Virus), IPNV (Infectious Pancreatic Necrosis Virus), Various other Parasites
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)
Task 1 Acquire wild brood stock and transfer to hatchery for spawning	<u>Vertebrates</u>	No	can be seen and removed prior to shipping		Yes
	<u>Invertebrates</u> Zebra mussels, New Zealand mudsnails, Asian clams	Yes	Can be in the water used for transport	Use secured water when possible and follow transportation protocol attached	
	<u>Plants</u>	No	can be seen and removed before transport		
	<u>Others</u> Fish pathogens esp. Pallid Sturgeon Iridovirus	Yes	Fish may be infected with parasites and other pathogens	prohibit contact with production fish , treat with KCl and formalin	
Task 2 Spawn brood stock, ship and receive fertilized eggs to and from other culture facilities	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		Yes
	<u>Invertebrates</u> Zebra mussels, New Zealand mudsnails, Asian clams	Yes	Can be in the water used for transport	Use secured water when spawning and ask culture facilities you are receiving eggs from to ship with secured water. Ask if they followed their HACCP plan?	
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Fish pathogens esp. Pallid Sturgeon Iridovirus	Yes	Fish may be infected with parasites and other pathogens	Disinfect eggs with iodophore and upon arrival from other hatcheries , treat eggs with formalin if needed	

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)
Task 3 Hatch eggs into appropriate tanks	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		No
	<u>Invertebrates</u>	No			
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Pallid Sturgeon Iridovirus or other pathogens	Yes	Fish maybe infected with virus or rearing water may be positive for virus or other pathogens	Water must be filtered and Ultra-Violet Light sterilized before coming in contact with fish	
Task 4 Redistribute fish before density limits are reached per levels in the Pallid Sturgeon Propagation Plan.	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		No
	<u>Invertebrates</u>	No			
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Pallid Sturgeon Iridovirus, <i>Costia</i> Protozoan infection, Gill Amoeba infection	Yes	Fish maybe infected with pathogens or rearing water may be positive	Water must be filtered and UV sterilized before coming in contact with fish. Rearing units cleaned daily, fish are redistributed to prevent overcrowding	

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 5 Collect random samples of fish for health inspection before stocking following the Pallid Sturgeon Propagation protocol	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		No
	<u>Invertebrates</u>	No			
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Pallid Sturgeon Iridovirus	No			

Task 6 After health inspection results received, tag and stock fish	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		Yes
	<u>Invertebrates</u>	No			
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Pallid Sturgeon Iridovirus	Yes	If fish test positive, they are stocked in areas accepting only virus positive fish	Only stock fish in areas accepting virus positive fish	

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 Disinfect all tanks, water lines, and equipment	<u>Vertebrates</u>	No	Water is filtered so fish and fish parts are removed		Yes
	<u>Invertebrates</u> Zebra mussels, New Zealand mudsnails, Asian clams	yes	May be on stocking equipment	Desiccate equipment for at least 48 hours in the sun	
	<u>Plants</u>	No	Water is filtered and sterilized to remove plant material		
	<u>Others</u> Pallid Sturgeon Iridovirus, <i>Costia</i> , Gill Amoeba and other parasitic organisms	Yes	May be on stocking equipment or in fish rearing facility	Equipment and tanks are disinfected before new brood stock are brought to the hatchery eliminating carry over to next production cycle	

Task 8	<u>Vertebrates</u>				
	<u>Invertebrates</u>				
	<u>Plants</u>				
	<u>Others</u>				

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		
Task 1	Zebra mussels, New Zealand mudsnails, Asian clams, iridovirus and other fish pathogens	Quality of water source and treatment procedures	Behavior and tissue samples	Observation and testing for viral presence	upon arrival	Project Leader, Site Manager	Health sampling of fish, removal of contaminated fish, proper disposal of fish tissue and water	Documentation from Fish Health Lab
Task 2	Zebra mussels, New Zealand mudsnails, Asian clams, iridovirus and other fish pathogens	Quality of water source and treatment procedures	Proper disinfection protocols followed	Observation of correct procedures	upon arrival	Project Leader, Site Manager	Proper protocols are followed	Upper Missouri River Propagation Plan, Site plan
Task 6	Pallid Sturgeon Iridovirus	No viral or other infection presence preferred, but if present stock in approved areas for virus positive fish.	Presence of Pallid Sturgeon Iridovirus	Observation and fish health samples taken	Two months prior to stocking	Project Leader, Site Manager	Distribute fish to an area that allows stocking if they show positive test results	Upper Missouri River Propagation Plan, Site plan
Task 7	Zebra mussels, New Zealand mudsnails, Asian clams, Pallid Sturgeon Iridovirus, <i>Costia</i> , Gill Amoeba and other parasitic organisms	100% disinfection required	Equipment and rearing units	visually	After disinfection	Project Leader, Site Manager	Reclean equipment and disinfect if visual inspection fails. Allow desiccation to occur for at least 48 hours	Upper Missouri River Propagation Plan, Site plan, and documentation from fish health lab

Facility: Garrison Dam National Fish Hatchery	Activity: Pallid Sturgeon Recovery Propagation
Address: Hatchery Road Riverdale, ND 58565	
Signature: HACCP Plan was followed.	Date: