

MFMAO Stream Incubation HACCP2006

HACCP Step 1 - Activity Description	
Facility: U.S. FWS - Montana Fish and Wildlife Service MAO	Site: Aquatic Habitats
Project Coordinator: Ron Skates	Project Description: Stream-Side Egg Incubation
Site Manager: Ron Skates	
Address: 4052 Bridger Canyon Road Bozeman, MT 59715	
Phone: 406-585-9010	

<p style="text-align: center;">Project Description (Who, What, Where, When, How & Why)</p>

MFMAO Stream Incubation HACCP2006

Setup

Egg incubation equipment consisting of: 5-gallon buckets, pvc piping, wooden platform, fenceposts, and a roll of fencing is transported from storage to several different stream locations. Systems are set up along a stream-bank prior to collection of eggs, with pvc pipe extended into the water as an inflow and outflow.

Sampling

The desired species of interest, in our case it is Arctic grayling, is collected by electroshocking a stream reach or by the use of fish traps. Mature adult grayling are spawned, with eggs being stripped and fertilized on site. Total number of eggs collected are divided into a known quantity. These fertilized grayling eggs are permitted to water harden while being transported to a stream location where they are placed in incubators.

Incubation

Incubated grayling eggs develop into fry that are allowed to emigrate out of the incubators independently. When all fry have departed incubators, setups are dismantled, loaded into a vehicle and taken to storage.

MFMAO Stream Incubation HACCP2006

HACCP Step 2 - Potential Hazard Identification

Vertebrates:

any fish species or other vertebrates (native or non-native) found in drainage basin

Invertebrates:

New Zealand Mud Snails, Zebra mussels.

Plants:

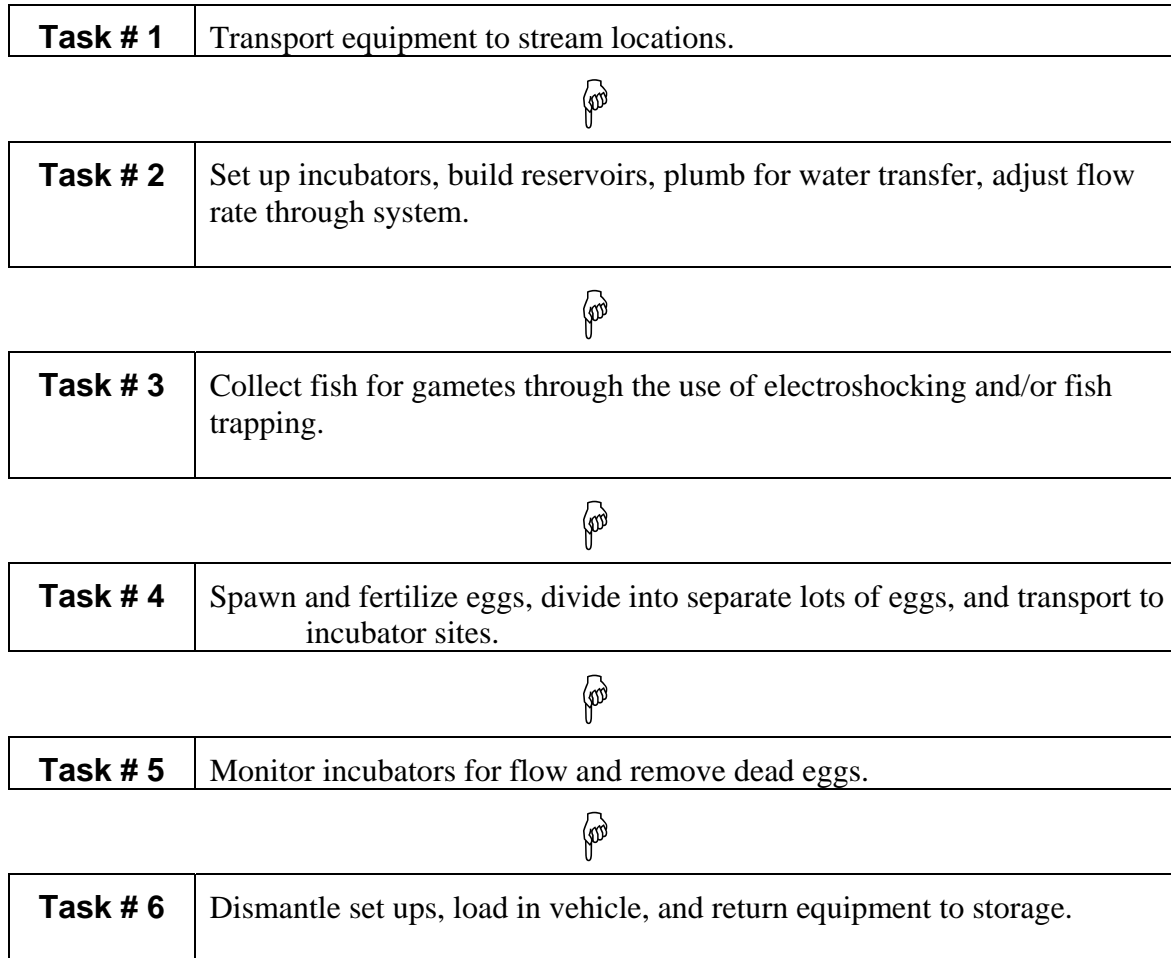
Native or non-native plants found in drainage basin.

MFMAO Stream Incubation HACCP2006

Other Biologics: whirling disease
Others:

MFMAO Stream Incubation HACCP2006

HACCP Step 3 - Flow Diagram



MFMAO Stream Incubation HACCP2006

HACCP Step 4 - Hazard Analysis

Task	Hazard	Probable?	Justification	Control Measures	CCP?
1. Transport equipment to stream locations.	Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin	No	equipment is clean and free of hazards		No
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	No	equipment is clean and free of hazards		No
	Plant: Native or non-native plants found in drainage basin.	No	equipment is clean and free of hazards		No
	Other Biologic: whirling disease	No	equipment is clean and free of hazards		No
2. Set up incubators, build reservoirs, plumb for water transfer, adjust flow rate through system.	Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin	Yes	Could be present	controlled at subsequent steps	No
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	Yes	Could be present	controlled at subsequent steps	No
	Plant: Native or non-native plants found in drainage basin.	Yes	Could be present	controlled at subsequent steps	No
	Other Biologic: whirling disease	Yes	Could be present	controlled at subsequent steps	No
3. Collect fish for gametes through the	Vertebrate: any fish species or other vertebrates (native	Yes	some species are not present in all	Empty all live wells and wash gear and	Yes

MFMAO Stream Incubation HACCP2006

use of electroshocking and/or fish trapping.	or non-native) found in drainage basin		waters	equipment with disinfectant, allow to dry before using again	
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	Yes	some species are not present in all waters	wash gear and equipment with disinfectant, allow to dry before using again	Yes
	Plant: Native or non-native plants found in drainage basin.	Yes	some species are not present in all waters	wash gear and equipment with disinfectant, allow to dry before using again	Yes
	Other Biologic: whirling disease	Yes	some species are not present in all waters	wash gear and equipment with disinfectant, allow to dry before using again	Yes
4. Spawn and fertilize eggs, divide into separate lots of eggs, and transport to incubator sites.	Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin	Yes	Could be present	controlled at subsequent step	No
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	Yes	Could be present	controlled at subsequent step	No
	Plant: Native or non-native plants found in drainage basin.	Yes	Could be present	controlled at subsequent step	No

MFMAO Stream Incubation HACCP2006

	Other Biologic: whirling disease	Yes	Could be present	controlled at subsequent step	No
5. Monitor incubators for flow and remove dead eggs.	Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin	Yes	Could be present	controlled at subsequent step	No
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	Yes	Could be present	controlled at subsequent step	No
	Plant: Native or non-native plants found in drainage basin.	yes	Could be present	Hazard controlled at subsequent step	No
	Other Biologic: whirling disease	yes	Could be present	Hazard controlled at subsequent step	No
6. Dismantle set ups, load in vehicle, and return equipment to storage.	Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin	Yes	some species are not present in all waters	Empty incubators and dispose of fish and eggs	Yes
	Invertebrate: New Zealand Mud Snails, Zebra mussels.	Yes	some species are not present in all waters	Dispose of all organisms properly, wash gear and equipment with disinfectant, allow to dry before next use	Yes

MFMAO Stream Incubation HACCP2006

HACCP Step 5 - HACCP Plan

Critical Control Point #1:

Task # 3: Collect fish for gametes through the use of electroshocking and/or fish trapping.

Significant Hazards:

Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin, New Zealand Mud Snails, Zebra mussels, native or non-native plants living in the drainage and whirling disease

Control Measures:

empty all live wells and dispose of fish properly

Limits for Control Measures:

wash gear and equipment with disinfectant, allow to dry before using again

Monitoring: What?

equipment

Monitoring: How?

visually

Monitoring: Frequency?

each time equipment is used

Monitoring: Who?

Field supervisor

Evaluation & Corrective Actions:

re-wash equipment

Supporting Documentation:

Critical Control Point #1:

Task # 6: Dismantle set ups, load in vehicle, and return equipment to storage.

Significant Hazards:

Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin, New Zealand Mud Snails, Zebra mussels, native or non-native plants living in the drainage and whirling disease

Control Measures:

empty all live wells and dispose of fish properly

Limits for Control Measures:

wash gear and equipment with disinfectant, allow to dry before using again

Monitoring: What?

equipment

Monitoring: How?

visually

Monitoring: Frequency?

each time equipment is used

MFMAO Stream Incubation HACCP2006

Monitoring: Who? Field supervisor	
Evaluation & Corrective Actions: re-wash equipment	
Supporting Documentation:	
Facility: U.S. FWS - Montana Fish and Wildlife Service MAO	Activity: Fish Trapping (permanent or portable weirs and trap boxes)
Address: 4052 Bridger Canyon Road Bozeman, MT 59715	
Signature:	Date:

MFMAO Stream Incubation HACCP2006

HACCP Checklist:

Netting: nets (gill, trammel, hoop, seine, trap, etc)

Facility U.S. FWS - Montana Fish and Wildlife Service MAO
Site Aquatic Habitats
Coordinator Ron Skates
Manager Ron Skates
Address 4052 Bridger Canyon Road, Bozeman, MT 59715

- Task # 1:** Transport equipment to stream locations.
- Task # 2:** Set up incubators, build reservoirs, plumb for water transfer, adjust flow rate through system.
- Task # 3:** Collect fish for gametes through the use of electroshocking and/or fish trapping.

CRITICAL CONTROL POINT

- Hazards were contained
Hazards: Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Invertebrate: New Zealand Mud Snails, Zebra mussels.
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant,

MFMAO Stream Incubation HACCP2006

allow to dry before using again

- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Plant: Native or non-native plants found in drainage basin.
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Other Biologic: whirling disease
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Task # 4:** Spawn and fertilize eggs, divide into separate lots of eggs, and transport to incubator sites
- Task # 5:** Monitor incubators for flow and remove dead eggs.

- Task # 6:** Dismantle set ups, load in vehicle, and return equipment to storage.
CRITICAL CONTROL POINT
- Hazards were contained
Hazards: Vertebrate: any fish species or other vertebrates (native or non-native) found in drainage basin
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again

MFMAO Stream Incubation HACCP2006

- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Invertebrate: New Zealand Mud Snails, Zebra mussels.
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Plant: Native or non-native plants found in drainage basin.
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again
- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment

- Hazards were contained
Hazards: Other Biologic: whirling disease
- Control measures were implemented
Control Measures: wash gear and equipment with disinfectant, allow to dry before using again
- Control limits were maintained
Control Limits: wash gear and equipment with disinfectant, allow to dry before using again

MFMAO Stream Incubation HACCP2006

- Corrective actions were (performed if necessary)
Corrective Actions: re-wash equipment