

Gulf Striped Bass HACCP Plan (Hazard Analysis Critical Control Point)

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1) Activity Description

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|--|--|
| Facility: Warm Springs National Fish Hatchery | Site: Warm Springs National Fish Hatchery |
| Project Coordinator: Carlos Echevarria | Activity: Gulf Striped Bass culture |
| Site Manager: Carlos Echevarria | |
| Address: 5308 Spring Street Warm Springs, GA 31830 | |
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Project Description

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

Gulf strain striped bass fry are received in late April and stocked into WSNFH ponds. Phase 1 Striped bass are harvested in late May via pond drawdown and seine and stocked into receiving waters, and Phase 2 Striped bass are harvested in late November via pond drawdown and seine and stocked into receiving waters.

2) Identify Potential Hazards

Hazards: Species which may potentially be moved/introduced

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|---|
| Vertebrates: <i>Gambusia holbrooki</i> , <i>Carassius auratus</i> (goldfish), tadpoles (various species) |
| Invertebrates: Crayfish (various species), zebra mussels, ferry shrimp, grass shrimp |
| Plants: Algae (various species) |
| Other Biologics: bacteria, parasites, protozoans, fungus |
| Others: None |

3) Flow Diagram

| | |
|----------------|---|
| Step 1 | April: ponds are filled with spring water from Cold Springs |
| Step 2 | Ponds are fertilized for plankton production, hardness is adjusted |
| Step 3 | STB fry (2-4 days old) are received in late April and stocked directly into WSNFH ponds |
| Step 4 | Spring water is continuously added to the ponds to offset leakage and evaporation |
| Step 5 | STB are harvested and moved to raceways in the holding house in late May, water and bass are drained directly into raceways |
| Step 6 | STB are held in flow through raceways, and sampled for shipping |
| Step 7 | Distribution truck filled with treated pond water, Phase 1 STB loaded by dip-net |
| Step 8 | Phase 1 STB are hauled to and stocked into receiving waters |
| Step 9 | Disinfect Holding House |
| Step 10 | Distribution truck returns to hatchery |
| Step 11 | Phase 2 STB are held in flow through raceways, pellet trained, stocked into WSNFH ponds in early June |
| Step 12 | Late November Phase 2 STB are harvested and moved to raceways in holding house |
| Step 13 | Bass are held in raceways for 24 hours, weighed for shipping |
| Step 14 | Distribution truck filled with treated pond water, STB are loaded by dip-net |
| Step 15 | STB are hauled to and stocked into receiving waters |
| Step 16 | Distribution truck returns to hatchery |

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 your 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) April: ponds filled with water from Cold Springs | Fish/other vert: none | No | No vertebrates in ponds | NA | No |
| | Invertebrates: ferry shrimp, grass shrimp | Yes | Dormant in pond substrate | Treat pond substrate with hydrated lime | No |
| | Plants: algae | Yes | Dormant in pond substrate | Treat pond with herbicides | No |
| | Other biologics: | Yes | ANS biologics dormant in pond substrate | Treat pond substrate with hydrated lime | No |
| (2) Ponds fertilized for plankton production, hardness is adjusted | Fish/other vert: none | No | No ANS in fertilizer | NA | No |
| | Invertebrates: none | No | No ANS in fertilizer | NA | No |
| | Plants: none | No | No ANS in fertilizer | NA | No |
| | Other biologics: none | No | No ANS in fertilizer | NA | No |
| (3) Gulf strain striped bass fry received in late April and stocked directly into ponds | Fish/other vert: various | Yes | ANS vertebrates possible in incoming fish bags | Inspect bags and remove ANS | Yes |
| | Invertebrates: various | Yes | ANS invertebrates possible in incoming fish bags | Inspect bags and remove ANS | Yes |
| | Plants: various | Yes | ANS plants possible in incoming fish bags | Inspect bags and remove ANS | Yes |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | ANS biologics possible in incoming fish bags | Inspect bags and remove ANS | Yes |
| (4) Springs water is continuously added to ponds to offset leakage and evaporation | Fish/other vert: various | No | Clean Spring water source | NA | No |
| | Invertebrates: various | No | Clean Spring water source | NA | No |
| | Plants: various | No | Clean Spring water source | NA | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | No | Clean Spring water source | NA | No |
| (5) STB are harvested and moved to raceways in holding house in late May | Fish/other vert: tadpoles, <i>G. holbrooki</i> | Yes | Various vertebrates harvested along with STB | Visually inspect seine for unwanted vertebrates | No |
| | Invertebrates: crayfish | Yes | Various crayfish species harvested along with STB | Visually inspect seine for unwanted invertebrates | No |
| | Plants: algae | Yes | Algae harvested along with STB | Visually inspect seine for unwanted plant material | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Other biologics harvested along with STB | Minimize water transfer from pond to holding house | No |

4) Hazard Analysis Worksheet cont'd

| | | | | | |
|---|--|-----|--|---|-----|
| (6) STB are held in flow through raceways, and sampled for shipping | Fish/other vert: tadpoles, <i>G. holbrooki</i> | Yes | Various vertebrates transported with STB to raceways | Remove vertebrates during cleaning, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Invertebrates: crayfish | Yes | Various invertebrates transported with STB to raceways | Remove invertebrates during cleaning, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Plants: algae | Yes | Plant material transported with STB to raceways | Remove plants by hand, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | STB may harbor biologics | 0.5% salt treatment | Yes |
| (7) Distribution truck filled with treated pond water, phase 1 bass loaded by dip-net | Fish/other vert: tadpoles, <i>G. holbrooki</i> | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Invertebrates: crayfish | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Plants: algae | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | No | Step 6 reduced hazard to an acceptable level | NA | No |
| (8) Phase 1 STB hauled to and stocked into receiving waters | Fish/other vert: tadpoles, <i>G. holbrooki</i> | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Invertebrates: crayfish | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Plants: algae | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | No | Step 6 reduced hazard to an acceptable level | NA | No |
| (9) Disinfect Holding House | Fish/other vert: tadpoles, <i>G. holbrooki</i> | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Invertebrates: crayfish | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Plants: algae | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Sterilize tanks before new shipment of fish are placed into raceways | Spray tanks with 300ppm chlorinated water | No |
| (10) Distribution truck returns to hatchery | Fish/other vert: none | No | Filter on intake pipes keeps risk to an acceptable level | NA | No |
| | Invertebrates: zebra mussels | Yes | Zebra mussels larvae not visible | Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Yes |
| | Plants: algae, Eurasian watermillfoil | Yes | Plant material may be caught on truck axle, bumpers, etc. | Plant material removed by hand and truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Yes |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Biologics may not be visible | Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Yes |

4) Hazard Analysis Worksheet cont'd

| | | | | | |
|--|--|-----|--|--|-----|
| (11) Phase 2 STB held in flow through raceways, pellet trained, stocked into WSNFH hatchery ponds in early June | Fish/other vert: none | No | Step 6 reduced hazard to an acceptable level, fish not leaving WSNFH | NA | No |
| | Invertebrates: none | No | Step 6 reduced hazard to an acceptable level, fish not leaving WSNFH | NA | No |
| | Plants: none | No | Step 6 reduced hazard to an acceptable level, fish not leaving WSNFH | NA | No |
| | Other biologics: none | No | Step 6 reduced hazard to an acceptable level, fish not leaving WSNFH | NA | No |
| (12) Late November: Phase 2 STB harvested and moved to raceways in holding house, water and STB drained directly into raceways | Fish/other vert: tadpoles, <i>G. holbrooki</i> | Yes | Various vertebrates harvested along with bass | Visually inspect seine for unwanted vertebrates | No |
| | Invertebrates: crayfish | Yes | Various crayfish species harvested along with bass | Visually inspect seine for unwanted invertebrates | No |
| | Plants: algae | Yes | Algae harvested along with bass | Visually inspect seine for unwanted plant material | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Other biologics harvested along with bass | Minimize water transfer from pond to holding house | No |
| (13) STB held in flow through raceways for 24 hours, weighed for shipping | Fish/other vert: tadpoles, <i>G. holbrooki</i> | Yes | Various vertebrates transported with bass to raceways | Remove vertebrates during cleaning, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Invertebrates: crayfish | Yes | Various invertebrates transported with bass to raceways | Remove invertebrates during cleaning, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Plants: algae | Yes | Plant material transported with bass to raceways | Remove plants by hand, keep fish on flow through for 24 hours prior to shipping | Yes |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | STB may harbor biologics | 0.5% salt treatment | Yes |
| (14) Distribution truck filled with treated pond water, bass loaded by dip-net | Fish/other vert: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Invertebrates: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Plants: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Other biologics: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| (15) Phase 2 STB hauled to and stocked into receiving waters | Fish/other vert: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Invertebrates: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Plants: none | No | Step 12 reduces hazard to an acceptable level | NA | No |
| | Other biologics: none | No | Step 12 reduces hazard to an acceptable level | NA | No |

4) Hazard Analysis Worksheet cont'd

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|---|--|-----|--|---|-----|
| (16) Disinfect Holding House | Fish/other vert: tadpoles, <i>G. holbrooki</i> | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Invertebrates: crayfish | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Plants: algae | No | Step 6 reduced hazard to an acceptable level | NA | No |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Sterilize tanks before new shipment of fish are placed into raceways | Spray tanks with 300ppm chlorinated water | No |
| (17) Distribution truck returns to hatchery and disinfected | Fish/other vert: none | No | Filter on intake pipes keeps risk to an acceptable level | NA | No |
| | Invertebrates: zebra mussels | Yes | Zebra mussels larvae not visible | Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Yes |
| | Plants: algae, Eurasian watermillfoil | Yes | Plant material may be caught on truck axle, bumpers, etc. | Plant material removed by hand and truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Yes |
| | Other biologics: bacteria, protozoans, parasites, fungus | Yes | Biologics may not be visible | 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) | (9) Supporting Documentation (if any) |
|--|---|--|----------------------|--|---------------------------------------|---|---|--|
| | | | (4) What | (5) How | (6) Frequency | (7) Who | | |
| (3) Gulf striped bass fry are received in late April and stocked directly into ponds | Non-native plants, non-native fish, non-native invertebrates, other biologics | Visually inspect shipping bags for ANS | Plants, animals | Visual inspection | Once | Hatchery employee | Minimize water transfer from shipping bags to ponds | NA |
| (6,13) Phase 1 and 2 STB are held in flow through raceways, and sampled for shipping | Tadpoles, <i>G. holbrooki</i> , <i>C. auratus</i> , crayfish, protozoans, parasites, fungus, bacteria | Hold fish in flow through raceways for at least 18 hours prior | Time, flow rate | Time, visual inspection | Each raceway of STB prior to shipping | Hatchery employee | Increase water flow, manually remove all unwanted organisms | NA |
| (10,17) Distribution truck returns to hatchery and disinfected | Zebra mussels, E. milfoil, other invertebrates, other plants and other biologics | Truck disinfected with 300ppm chlorine solution in designated hatchery disinfection area | Disinfection process | Monitor ppm chlorine, visually inspect truck | Once after truck returns to hatchery | Truck driver | More thorough disinfection and inspection process | NA |
| Facility: Warm Springs National Fish Hatchery | | | | | | Activity: Gulf Striped Bass culture: Harvesting phase 1 and phase 2 Gulf strain striped bass for restoration | | |
| Address: 5308 Spring Street Warm Springs, GA 31830 | | | | | | | | |
| Signature: | | | | | | Date: | | |
| HACCP Plan Was Followed | | | | | | | | |