HACCP (Hazard Analysis and Critical Control Point) Plan

Comal Springs riffle beetle *Heterelmis comalensis*
Modified on 4-Feb-04

1. Product Description

Firm Name:	San Marcos National Fish Hatchery and Technology Center
Firm Address:	500 East McCarty Lane San Marcos, Texas 78666
Species:	Comal Springs riffle beetle (Heterelmis comalensis)
Cultured, wild-harvested, or both:	wild-harvested
Harvest method:	dipnet near spring openings
Method of storage:	flow-through units supplied with water directly from the Edward's Aquifer
Intended use and consumer:	refugium

2. Flow Diagram

Step 1	Comal Springs riffle beetles are collected as needed from Comal headwaters
Step 2	Comal Springs riffle beetles are transported in a container, filled with Comal River or Edwards Aquifer water, to the Test-Pad at NFHTC
Step 3	Comal Springs riffle beetles are placed in flow-through quarantine tanks, are fed food from a terrestrial source, and are examined for ANS at least every 3 days
Step 4	after at least 2 weeks of quarantine, Comal Springs riffle beetles are moved into the refugium systems
Step 5	
Step 6	

3. Potential Aquatic Nuisance Species (ANS) Hazards

List aquatic species here that are found in hatchery water supply or local waters that could potentially hitchhike to receiving waters and cause ecological harm.

Vertebrates armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles

Invertebrates *Melanoides tuberculata* , *Thiara granifera* , crayfish, various parasites

Plants *Hydrilla* , *Hygrophila* , water hyacinth

4. Hazard Analysis Worksheet

(1) Harvest or Aquaculture Step	(2) Identify potential ANS hazards introduced or controlled		(3) Are any hazards significant?	(4) Justify your decisions for column 3	(5) What control measures can be applied to prevent the hazards?	(6) Is this step a critical control point?
Comal Springs riffle beetles are collected as needed from Comal headwaters	vertebrates	armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles	yes	ANS are present in the Comal River	manually remove ANS from collection at site	yes
	invertebrates	Melanoides tuberculata, Thiara granifera, crayfish, various parasites	yes	ANS are present in the Comal River	manually remove ANS from collection at site	yes
	plants	Hydrilla, Hygrophila, water hyacinth	yes	ANS are present in the Comal River	manually remove ANS from collection at site	yes
Comal Springs riffle beetles are transported in a container, filled with Comal River or Edwards Aquifer water, to the Test-Pad at NFHTC	vertebrates	armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles	no	ANS not present	not needed	no
	invertebrates	Melanoides tuberculata, Thiara granifera, crayfish, various parasites	yes	ANS may be transferred from net into quarantine tank	frequent observation during quarantine and removal of ANS	yes
	plants	Hydrilla, Hygrophila, water hyacinth	yes	ANS may be transferred from net into quarantine tank	frequent observation during quarantine and removal of ANS	yes
Comal Springs riffle beetles are placed in flow-through quarantine tanks, are fed food from a terrestrial source, and are examined for ANS at least every 3 days	vertebrates	armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles	no	ANS not present	ANS becomes more noticeable as develop and are removed during quarantine process	no
	invertebrates	Melanoides tuberculata, Thiara granifera, crayfish, various parasites	yes	ANS may be transferred from net into quarantine tank	ANS becomes more noticeable as develop and are removed during quarantine process	yes
	plants	Hydrilla, Hygrophila, water hyacinth	yes	ANS may be transferred from net into quarantine tank	ANS becomes more noticeable as develop and are removed during quarantine process	yes

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(1) Harvest or Aquaculture Step	(2) Identify potential ANS hazards introduced or controlled		(3) Are any hazards significant?	(4) Justify your decisions for column 3	(5) What control measures can be applied to prevent the hazards?	(6) Is this step a critical control point?
after at least 2 weeks of quarantine, Comal Springs riffle beetles are moved into the refugium systems	vertebrates	armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles	no	Control of ANS hazard completed	Not needed	no
	invertebrates	Melanoides tuberculata, Thiara granifera, crayfish, various parasites	no	Control of ANS hazard completed	Not needed	no
	plants	Hydrilla, Hygrophila, water hyacinth	no	Control of ANS hazard completed	Not needed	no
	vertebrates					
	invertebrates					
	plants					
	vertebrates					
	invertebrates					
	plants					

5. ANS-HACCP Plan Form

(1) Critical Control Point (CCP)	(2) Significant Hazard(s)	(3) Control Measures	Monitoring				(8) Corrective Measures	(9) Records	(10) Verification
			(4) What	(5) How	(6) Frequency	(7) Who			
dip nets, ice chests, and other equipment are removed from the river	vertebrates invertebrates plants	pick out ANS hazards by hand and dip all equipment in 600 mg/L Roccal solution	presence of ANS hazards	visual inspection of equipment	before, during, and after use of equipment	hatchery and field personnel	remove ANS by hand	record day of inspection, observations, and actions	records to be reviewed by hatchery manager to verify that ANS control measures are being done
Comal Springs riffle beetles are transported in a container, filled with Comal River or Edwards Aquifer water, to the Test-Pad at NFHTC	vertebrates invertebrates plants	pick out ANS hazards by hand and dip all equipment in 600 mg/L Roccal solution	presence of ANS hazards	visual inspection of equipment	before, during, and after use of equipment	hatchery employee	remove ANS by hand	record day of inspection, observations, and actions	records to be reviewed by hatchery manager to verify that ANS control measures are being done
quarantine tank(s) is/are checked every 3 days for presence of ANS for at least 2 weeks	vertebrates invertebrates plants	pick out ANS hazards	presence of ANS hazards	visual inspection of quarantine tank	every 3 days	hatchery employee	if ANS are frequently noticed, then extend quarantine until ANS completely removed	record presence of ANS and final day of quarantine	records to be reviewed by hatchery manager to verify that ANS control measures are being done