

HACCP (Hazard Analysis and Critical Control Point) Plan

San Marcos salamander *Eurycea nana*

Modified on 16-Sep-03

1. Product Description
2. Flow Diagram
3. Potential Hazards
4. Hazard Analysis Worksheet
5. HACCP Plan Form

1. Product Description

Firm Name:	San Marcos National Fish Hatchery and Technology Center
Firm Address:	500 East McCarty Lane San Marcos, Texas 78666
Species:	San Marcos salamander (<i>Eurycea nana</i>)
Cultured, wild-harvested, or both:	wild-harvested
Harvest method:	dipnet and netting over 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	San Marcos salamanders are collected as needed from San Marcos River headwaters
Step 2	salamanders are transported in a container, filled with San Marcos River or Edwards Aquifer water, to the Test-Pad at NFHTC
Step 3	salamanders are placed in flow-through quarantine tanks, are fed "clean" food, and are examined for ANS at least every 3 days
Step 4	after at least 2 weeks of quarantine, salamanders 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?
San Marcos salamanders are collected as needed from San Marcos River headwaters	vertebrates	armored catfishes, mosquitofish, various aquarium-trade fishes, tadpoles	yes	ANS are present in the San Marcos River	manually remove ANS from collection at site	yes
	invertebrates	Melanoides tuberculata, Thiara granifera, crayfish, various parasites	yes	ANS are present in the San Marcos River	manually remove ANS from collection at site	yes
	plants	Hydrilla, Hygrophila, water hyacinth	yes	ANS are present in the San Marcos River	manually remove ANS from collection at site	yes
salamanders are transported in a container, filled with San Marcos 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
salamanders are placed in flow-through quarantine tanks, are fed "clean" food, 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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after at least 2 weeks of quarantine, salamanders 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					

