

# Arcata Fish and Wildlife Office’s Hazard Analysis and Critical Control Point Planning for Juvenile Salmonid Snorkel Surveys

Last Revised 5/12/2020

## HACCP Step 1 – Activity Description

<b>Activity Description</b>	
Facility: AFWO	Site: Klamath Basin
Project Coordinator: Steve Gough	Activity: Juvenile salmonid snorkel surveys
Site Manager: Nick Hetrick	
Address: 1655 Heindon Rd Arcata, CA 95521	
Phone: 707-822-7201	

<b>Project Description</b> (i.e., Who, What, Where, When, How, Why)
<p>Who: Personnel from the Arcata Fish and Wildlife Office, Karuk Tribe, and Yurok Tribe</p> <p>What: Conduct juvenile salmonid snorkel surveys within the Klamath Basin.</p> <p>Where: Juvenile surveys are conducted annually on the mainstem Trinity River</p> <p>When: February–May</p> <p>How: Surveys are conducted with divers entering the water and working upstream through a study site (50-ft stream sections). Multiple sites are usually sampled each day</p> <p>Why: Habitat suitability information is collected from fish at each site. Sites are reached either by vehicle or raft.</p>

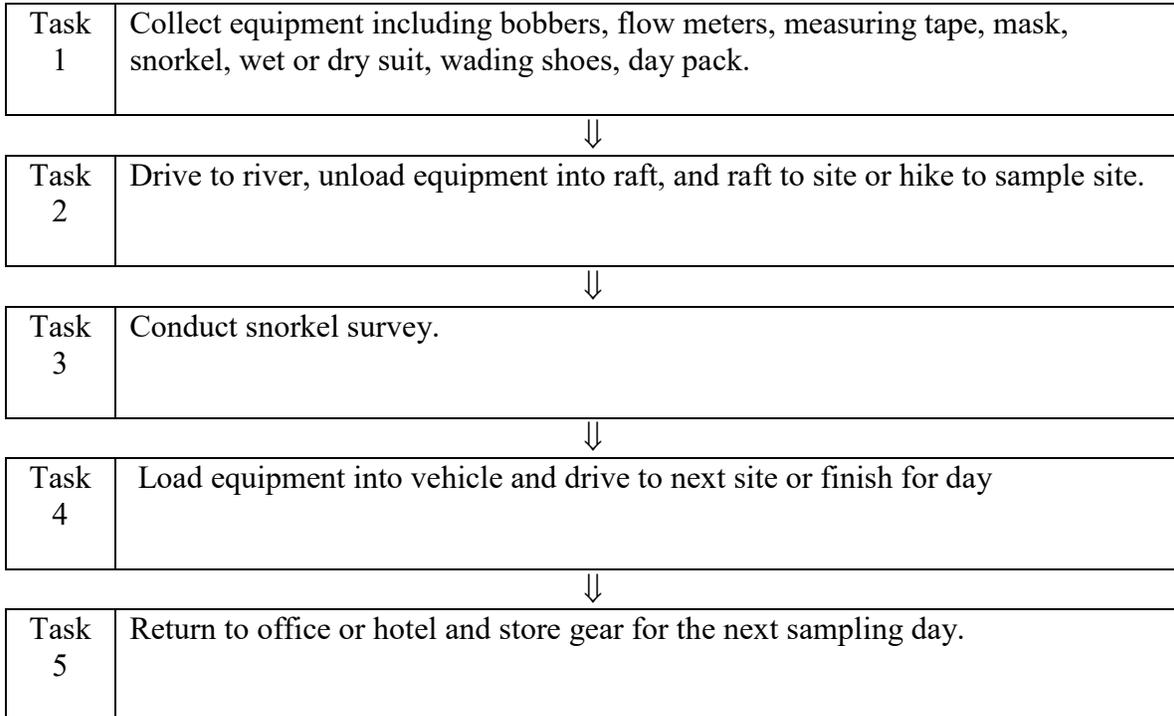
## HACCP Step 2 – Identify Potential Hazards

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

<b>Hazards: Species Which May Potentially Be Moved/Introduced</b>
Vertebrates: Non-indigenous fish (<20 species), amphibian [e.g., Bullfrogs ( <i>Rana catesbeiana</i> )] and reptile [e.g., Northern Water Snake ( <i>Nerodia sipedon</i> ), Red-Eared Slider Turtle ( <i>Trachemys scripta</i> )] species
Invertebrates: New Zealand Mudsail ( <i>Potamopyrgus antipodarum</i> ), Zebra Mussel ( <i>Dreissena polymorpha</i> ), Quagga Mussel ( <i>Dreissena bugensis</i> )
Plants: Watermilfoil ( <i>Myriophyllum aquaticum</i> ), Purple Loosestrife ( <i>Lythrum salicaria</i> ), Spotted Knapweed ( <i>Centaurea maculosa</i> )
Other Biologics (e.g., diseases, pathogens, parasites): <i>Ceratomyxa shasta</i> , <i>Parvicapsula minibicornis</i> , <i>Nanophyetus salmincola</i> , bacterial kidney disease ( <i>Renibacterium salmoninarum</i> metacercaria), Hematopoietic necrosis virus (IHNV), <i>Flavobacterium columnare</i>
Others (e.g., construction materials, etc.): Gasoline, engine oil, sample preservatives (formalin, Z-fix, etc.)

### HACCP Step 3 – Flow Diagram

Flow Diagram Outlining Sequential Tasks to Complete Activity/Project  
Described in HACCP Step 1 – Activity Description  
(to be transferred to column 1 of the HACCP Step 4 – Hazard Analysis Worksheet)



### HACCP Step 4 - Hazard Analysis Worksheet

<b>1</b> <b>Tasks</b> <b>(from HACCP</b> <b>Step 3 - Flow</b> <b>Diagram)</b>	<b>2</b> <b>Potential hazards</b> <b>identified in</b> <b>HACCP Step 2</b>	<b>3</b> <b>Are any potential</b> <b>hazards</b> <b>probable? (yes/no)</b>	<b>4</b> <b>Justify evaluation</b> <b>for column 3</b>	<b>5</b> <b>What control measures</b> <b>can be applied to</b> <b>prevent undesirable</b> <b>results?</b>	<b>6</b> <b>Is this task a</b> <b>critical control</b> <b>point? (yes/no)</b>
Task 1. Collect equipment and load into truck	Vertebrates: Fish and Bullfrogs	No	Vertebrate species were cleaned off equipment in step 4.	N/A	No
	Invertebrates: Exotic non-target species, see Step 2.	Yes	Invertebrate species can survive night in net.	Visually inspect equipment for hitchhiking invertebrates before going into field. Remove individuals.	Yes
	Plants: Non-target species, see Step 2.	Yes	Plant species can survive night in net.	Visually inspect equipment for hitchhiking plants before going into field. Remove individuals.	Yes
	Others Biologics: See Step 2.	Yes	Some Biologics can survive the night on equipment.	Use equipment that is specific to a particular watershed or decontaminate	Yes
	Others: See Step 2.	No	Amounts of these chemicals are too small to be of concern.	N/A	No

### Hazard Analysis Worksheet (continued)

<b>1</b> <b>Tasks</b> <b>(from HACCP</b> <b>Step 3 - Flow</b> <b>Diagram)</b>	<b>2</b> <b>Potential hazards</b> <b>identified in</b> <b>HACCP Step 2</b>	<b>3</b> <b>Are any potential</b> <b>hazards</b> <b>probable? (yes/no)</b>	<b>4</b> <b>Justify evaluation</b> <b>for column 3</b>	<b>5</b> <b>What control</b> <b>measures can be</b> <b>applied to prevent</b> <b>undesirable</b> <b>results?</b>	<b>6</b> <b>Is this task a</b> <b>critical control</b> <b>point? (yes/no)</b>
Task 2. Drive to the river and either load gear into raft and raft to site or hike to site from vehicle.	Vertebrates: Fish and Bullfrogs	No	Cleaned gear in Step 4.		
	Invertebrates: Exotic non-target species, see Step 2.	No	Cleaned gear prior to driving to site.		
	Plants: Exotic non-target species, see Step 2.	No	Cleaned gear prior to driving to site.		
	Other Biologics: See Step 2.	No	Specific gear will be used in each watershed and sample sites will be sampled working downstream.		
	Others: See Step 2.	No	Amounts of these chemicals are too small to be of concern.		

Task 3. Conduct dive survey at site.	Vertebrates: Fish and Bullfrogs	No	Gear and equipment has been checked for hitchhikers in Task 4.		
	Invertebrates: Exotic non-target species, see Step 2.	No	Gear and equipment has been checked for hitchhikers in Tasks 1 and 4.		
	Plants: Exotic non-target species, see Step 2.	No	Gear and equipment has been checked for hitchhikers in Tasks 1 and 4.		
	Other Biologics: See Step 2.	No	Biologics are specific to each watershed and these surveys stay within a particular watershed. Sites will be sampled working downstream.		
	Others: See Step 2.	No	Amounts of these chemicals are too small to be of concern.		

Task 4. Clean gear then load into raft or truck move to next site. Repeat from Task 2 until finished sampling for day.	Vertebrates: Fish and Bullfrogs	Yes	Fish and Bullfrogs can hitchhike on sample gear and equipment from one site to the next.	Check gear and equipment for possible hitchhiking vertebrates prior to going to next site.	Yes
	Invertebrates: Exotic non-target species, see Step 2.	Yes	Invertebrates can hitchhike on sample gear and equipment from one site to the next.	Check gear and equipment for possible hitchhiking invertebrates prior to going to next site.	Yes
	Plants: Exotic non-target species, see Step 2.	Yes	Plants can hitchhike on sample gear and equipment from one site to the next.	Check gear and equipment for possible hitchhiking plants prior to going to next site.	Yes
	Other Biologics: See Step 2.	Yes	Other biologics can hitchhike on sample gear and equipment from one site to the next.	Specific gear will be used in each watershed and sites will be sampled working downstream.	Yes
	Others: See Step 2.	No	Amounts of these chemicals are too small to be of concern.		

Task 5. Return to office and store gear for the next sampling day.	Vertebrates: Exotic non-target species, see Step 2.	Yes	Some species may have been overlooked in the field cleaning.		
	Invertebrates: Exotic non-target species, see Step 2.	Yes	Some species may have been overlooked in the field cleaning.		
	Plants: Exotic non-target species, see Step 2.	Yes	Some species may have been overlooked in the field cleaning.		
	Others Biologics: See Step 2.	Yes	Some species may be on gear if not decontaminated in step 4. Need to clearly mark gear for a particular watershed or decontaminate.		
	Others: See Step 2.	No	Amounts of these chemicals are too small to be of concern.		

## HACCP Step 5 – Non-Target Risk Action Plan (NTRAP)

(Use this form for any "Yes" from Column 6 of HACCP Step 4 - Non-Target Analysis Worksheet) One page for each Critical Control Point			
<b>Management Objective</b> From Step 1		Snorkel surveys of juvenile fishes within the Klamath Basin without transferring invasive and non-target species.	
<b>Critical Control Point: Task #</b>		<b>1</b>	<b>Title:</b> Collect equipment and personal gear and load into vehicle.
<b>Significant Non-Target(s)</b> (Step 4, Column 3)		Vertebrates: frogs and fish	
<b>Control Measure(s)</b> (Step 4, Column 5)		Visually inspect and clean gear or decontaminate.	
<b>Prescribed ranges, limits, or criteria for control measure(s):</b> (PRLC)		Equipment and gear is free of visible debris. Specific gear will be used for different watersheds.	
<b>Monitoring the Control Measure(s)</b>		<b>Who?</b> Assigned field crew	
		<b>How?</b> Visually inspect all equipment and remove non-targets.	
		<b>Where?</b> At vehicle	
		<b>How often?</b> Once before leaving office or station each day.	
<b>Corrective Action(s) if Control Measures Fail</b> (or PRLC cannot be met)		Re-inspect and remove any visible plant or animal and decontaminate if moving to different watershed and specific gear is not available.	
<b>Supporting Documents</b> (For example, Management Plan, Checklist, Decontamination Techniques, SOPs, Scientific Journal Articles, etc.) AFWO Decontamination Protocol 6-17-13			
<b>Development Team Members</b>		Steve Gough, Vina Frye	
<b>Date Developed:</b>	7/20/2010	<b>Date(s) Reviewed:</b>	5/12/2020

\* all gray fields are required

## HACCP Step 5 – Non-Target Risk Action Plan (NTRAP)

(Use this form for any "Yes" from Column 6 of HACCP Step 4 - Non-Target Analysis Worksheet) One page for each Critical Control Point			
<b>Management Objective</b> From Step 1		Dive surveys of juvenile fishes within the Klamath Basin without transferring invasive and non-target species.	
<b>Critical Control Point:</b>	<b>4</b>	<b>Title:</b>	Clean gear and load into vehicle or boat and go to next site or finish survey for day.
<b>Task #</b>			
<b>Significant Non-Target(s)</b> (Step 4, Column 3)		Vertebrates: frogs and fish	
<b>Control Measure(s)</b> (Step 4, Column 5)		Visually inspect and clean gear or decontaminate	
<b>Prescribed ranges, limits, or criteria for control measure(s):</b> (PRLC)		Equipment and gear is free of visible debris. Specific gear will be used for different watersheds.	
<b>Monitoring the Control Measure(s)</b>		<b>Who?</b> Assigned field crew	
		<b>How?</b> Visually inspect all equipment and remove non targets and decontaminate	
		<b>Where?</b> At vehicle	
		<b>How often?</b> After each new site is sampled and before sampling in different watershed.	
<b>Corrective Action(s) if Control Measures Fail</b> (or PRLC cannot be met)		Re-inspect and remove any visible plant or animal and decontaminate if moving to different watershed and specific gear is not available.	
<b>Supporting Documents</b> (For example, Management Plan, Checklist, Decontamination Techniques, SOPs, Scientific Journal Articles, etc.)			
AFWO Decontamination Protocol 6-17-13			
<b>Development Team Members</b>		Steve Gough, Vina Frye	
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