Arcata Fish and Wildlife Office's Hazard Analysis and Critical Control Point Planning for Back-Pack Electrofishing of Juvenile Fish

Last Revised 6-27-07

HACCP Step 1 – Activity Description

Activity Description	
Facility: AFWO	Site: Klamath Basin
Project Coordinator: Mike Long	Activity: Back-Pack Electrofishing
Site Manager: Nick Hetrick	
Address: 1655 Heindon Rd Arcata, CA 95521	
Phone: 707-822-7201	

Project Description i.e. Who; What; Where; When; How; Why
The Arcata Fish and Wildlife Office (AFWO), Karuk Tribe of California (KTOC) and Yurok Tribal Fisheries program conduct back-pack electrofishing at sampling locations on the mainstem Klamath and Trinity Rivers. Sampling occurs during spring months (February to July) on an annual basis. Approximately 15.2 m long sections of stream margin are electro-shocked from the stream bank to just past the shear zone (generally where low and high velocity water meet). Sampling locations are reached by truck or raft. Sampling locations are electro-fished to determine fry habitat preference, growth and abundance.

HACCP Step 2 – Identify Potential Hazards

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

Hazards: Species Which May Potentially Be Moved/Introduced
Vertebrates: Non-indigenous: fish, amphibians (e.g. Bull frogs), and reptiles- (Northern Water Snake (Nerodia sipedon), Red-eared Slider Turtle (Trachemys scripta)
Invertebrates: Non-indigenous species such as New Zealand Mud snail (Potamopyrgus antipodarum), Zebra Mussel (Dreissena polymorpha), Quagga mussel (Dreissena bugensis), etc.
Plants: Watermilfoil (Myriophyllum aquaticum), purple loosestrife (Lythrum salicaria), spotted knapweed (Centaurea maculosa).
Other Biologics (e.g. disease, pathogen, parasite): Ceratomyxa shasta, Parvicapsula minibicornis, Nanophyetus salminicola, Renibacterium salmoninarum metacercaria (BKD), Hematopoietic necrosis virus (IHNV), Flavobacterium columnare
Others (e.g. construction materials, etc.): Gasoline, engine oil, sample preservatives (formalin, Z-fix).

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)

Task 1	Collect equipment including back-pack electroshocker, wand, buckets, scale, dip nets, measuring board, waders and wading shoes
⇓	
Task 2	Drive to site, unload equipment and carry to sample location
⇓	
Task 3	Conduct sampling
⇓	
Task 4	Return to vehicle, clean and load equipment
⇓	
Task 5	Either sample another location or return to office or hotel and store equipment

HACCP Step 4 - Hazard Analysis Worksheet

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)
Task 1 Collect equipment and load into truck	Vertebrates Non-native: fish, amphibians, and reptiles	Yes	Vertebrate species such as bull frogs could survive night on equipment	Visually inspect equipment and remove hitchhiking vertebrates before going into the field.	Yes
	Invertebrates Non-native species	Yes	Invertebrate species can survive night on equipment	Visually inspect equipment and remove hitchhiking invertebrates before going into the field.	Yes
	Plants Non-native plants	Yes	Plants can survive night on equipment	Visually inspect equipment and remove hitchhiking plants before going into the field.	Yes
	Other Biologicals Pathogens, disease, parasites	Yes	Some Biologics can survive the night on equipment	Specific gear will be used for each watershed sampled or gear will be decontaminated	Yes
	Others Gasoline, engine oil, preservatives	No	Amounts of these chemicals are too small to be concerned with.		

Task 2 Drive to site, unload gear and hike to sampling site.	Vertebrates Non-native: fish, amphibians, and reptiles	No	Gear was cleaned prior to driving to site.		
	Invertebrates Non-native species	No	Gear was cleaned prior to driving to site.		
	Plants Non-native plants	No	Gear was cleaned prior to driving to site		
	Other Biologicals Pathogens, disease, parasites	No	Specific gear was only used in this watershed or was decontaminated before site was sampled.		
	Others Gasoline, engine oil, preservatives	No	Amounts of these chemicals are too small to be concerned with.		

Hazard Analysis Worksheet (continued)

1 Tasks (from HACCP Step 3 - Flow Diagram)	2 Potential hazards identified in HACCP Step 2	3 Are any potential hazards probable? (yes/no)	4 Justify evaluation for column 3	5 What control measures can be applied to prevent undesirable results?	6 Is this task a critical control point? (yes/no)

Task 3. Conduct electrofishing	Vertebrates Non-native: fish, amphibians, and reptiles (see step 2)	No	Gear was checked for hitchhikers in task 1 and 4		
	Invertebrates Non-native species (see step 2)	No	Gear was checked for hitchhikers in task 1 and 4		
	Plants Non-native plants (see step 2)	No	Gear was checked for hitchhikers in task 1 and 4		
	Other Biologicals Pathogens, disease, parasites (see step 2)	No	Specific gear was only used in this watershed and sampling was conducted from upstream to downstream sites or was previously decontaminated.		
	Others Gasoline, engine oil, preservatives (see step 2)	No	The amount of these chemicals are too small to be concerned with		

Task 4. Clean and load equipment into vehicle and either sample more sites or quit for the day.	Vertebrates Non-native: fish, amphibians, and reptiles (see step 2)	Yes	Vertebrates may be attached to gear	Visually inspect all sampling and associated gear and remove hitchhiking vertebrates prior to going to next site	Yes

	Invertebrates Non-native species (see step 2)	Yes	Invertebrates may be attach to gear	Visually inspect all sampling and associated gear and remove hitchhiking invertebrates prior to going to next site	Yes
	Plants Non-native plants (see step 2)	Yes	Plants may attach to gear	Visually inspect all sampling and associated gear and remove hitchhiking plants prior to going to next site	Yes
	Other Biologicals Pathogens, disease, parasites (see step 2)	Yes	Some biologics may attach to gear.	Specific gear is used for each watershed or gear was decontaminated prior to sampling.	Yes
	Others Gasoline, engine oil, preservatives (see step 2)	No	The amount of these chemicals are too small to be concerned with		

Task 5. Return to office and store gear for the next sampling day.	Vertebrates Non-native: fish, amphibians, and reptiles (see step 2)	No	Some species may have been overlooked in the field cleaning		
	Invertebrates Non-native species (see step 2)	Yes	Some species may have been overlooked in the field cleaning		

	Plants Non-native plants (see step 2)	Yes	Some species may have been overlooked in the field cleaning		
	Other Biologicals Pathogens, disease, parasites (see step 2)	No	Specific gear is used for each watershed and sampling is conducted working downstream.		
	Others Gasoline, engine oil, preservatives (see step 2)	No	The amount of these chemicals are too small to be concerned with		

HACCP Step 5 – HACCP Plan Form

HACCP Plan Form (all CCP's or "yes's" from column 6 of HACCP Step 4 – Hazard Analysis Worksheet)								
			Monitoring					
Critical Control Point (CCP)	**Significant Hazard(s)**	**Limits for each Control Measure**	**What**	**How**	**Frequency**	**Who**	**Evaluation & Corrective Action(s) (if needed)**	**Supporting Documentation (if any)**
Task 1. Collect and load equipment into vehicle	Invertebrates and plants and other biologicals	Equipment is free of visible debris or was decontaminated.	Electro-shocker, gloves, buckets, dip nets, scale, measuring board, waders, wading shoes	Visually inspect all equipment and remove all non-targets	Once before sampling begins	Assigned field crew	Reinspect and remove any visible plant or animal Specific gear may be used for each watershed.	
Task 4. Clean sampling and associated equipment and drive to next site or quit for day	Invertebrates, plants and other biologicals	Equipment is free of visible debris or was decontaminated.	Electro-shocker, gloves, buckets, dip nets, scale, measuring board, Waders, wading shoes	Visually inspect all equipment and remove all non-targets	Before loading equipment into vehicle and driving to next site or quitting for the day	Assigned field crew	Reinspect and remove any visible plant or animal Specific gear may be used for each watershed.	

Facility: AFWO	**Activity/ Management Objective:** Electrofishing of juvenile fishes within the Klamath Basin.
Address: **1655 Heindon Rd** **Arcata, CA 95521**	
Signature: **HACCP Plan was followed.**	**Date:**