

STANDARD OPERATING PROCEDURES FOR FIELD WORKERS VOLUNTEERING FOR THE AUSTRALIAN CRAYFISH PROJECT

**This SOP is designed to protect field workers surveying
aquatic environments, the aquatic environments and the
animals within the aquatic environments**

ISSUED MARCH 2014

All volunteers for the Australian Crayfish Project will be issued with this document prior to commencing field work. You will need to read these Standard Operating Procedures, then sign and return the form at the base of the document, indicating you have read, agree with, and will conform to this SOP. Your co-workers will appreciate knowing that they can expect the same concern about safety, caring for the environment and the humane treatment of animals from you, that you expect from them.

Robert B McCormack



AUSTRALIAN CRAYFISH PROJECT
“Conservation & Research”

Table of Contents

STANDARD OPERATING PROCEDURES FOR FIELD WORKERS VOLUNTEERING FOR THE AUSTRALIAN CRAYFISH PROJECT.....	1
FIELD PERSONNEL:	3
INTRODUCTION.....	3
A. Safety Clothing and Equipment.....	4
1. Footwear.	4
2. Clothing	4
3. UV Radiation	4
4. Water.	4
5. First Aid.	4
6. Emergency.....	4
B. Collection Equipment & Procedures	4
1. Hand collection	4
2. Box traps.	4
3. Opera House Traps.	4
4. Witches Hat Traps.	5
5. Cast net.	5
C. Collected Specimen Procedures	5
1. Freshwater Crayfish.	5
2. Other crustaceans.....	5
3. Crayfish anaesthetized.	5
4. Freshwater fish anaesthetized.....	5
D. Euthanasia Procedures	5
1. Crayfish.....	5
2. Fish.	6
3. Chemicals and dosage rates.....	6
4. Fish euthanasia.	6
E. Hygiene Procedures	6
1. Equipment.....	6
2. Sterilisation bath.	6
3. Traps.....	6
4. Hands	6
5. Scoop Nets.	6
6. Footwear.	6
7. Vehicles	6
Please detach and return:	7

FIELD PERSONNEL:

These Field Safety rules are meant to ensure your safety and well-being as well as that of your co-workers. Please make any suggestions for their improvement to the Team Leader.

This SOP (March 2014) is subject to periodic review and modification.

1. Only approved volunteers are allowed to assist with fieldwork. Friends, pets, and children are prohibited from accompanying field teams but are welcome at base camps. Employees of local, state or federal agencies on official business connected with the ACP may accompany volunteers working in the field after completing their own risk assessment.

2. Researchers and other colleagues from other institutions are generally allowed to accompany field volunteers with prior permission. However, always get approval from your Team Leader if you are uncertain regarding someone's eligibility to accompany you in the field.

INTRODUCTION

Risks to Health, Safety, Environment, or Community Relations may arise whenever there is exposure to activities in the field. Reference should be made to this SOP prior to the commencement of field activities, and this assessment should be used in conjunction with any particular project Risk Assessment. The application of SOP is required on activities that are conducted as part of the Australian Crayfish Project (ACP) or the Australian Aquatic Biodiversity Survey (AABS).

Volunteers working in the field on as part of the Australian Crayfish Project also have the potential to impact the environment. The SOP precautionary procedures listed here are designed to reduce the risk of pathogens being transferred between catchments. Pathogens come in all forms and can occur in both freshwater, marine and terrestrial environments, they may be marine diseases like QX disease that affect oysters to freshwater/terrestrial disease like fungus that affects frogs. Regardless of the disease, the protocols listed are designed to reduce the risk of transmission from infected areas to non-infected areas.

Additionally, there is also the potential to transfer weed or noxious aquatic plants from one region to another and this also is addressed in this SOP.

Field workers surveying aquatic environments will be capturing and handling aquatic fauna. The SOP precautionary procedures listed here are designed to ensure that the welfare of aquatic and terrestrial animals are always considered and to provide procedures for the ethical and humane euthanasia of voucher specimens.

A. Safety Clothing and Equipment	Comments
1. Footwear. Field volunteers will wear sturdy boots that provide firm ankle support and traction. Bare feet, flat shoes, sneakers, thongs are not allowed. Gum boot and waders are acceptable.	
2. Clothing. Field volunteers should wear sturdy clothing for protection from leaches, ticks and mosquitos that are common around aquatic environments. The appropriate clothing is trousers and long sleeve shirts.	Insect repellent is available from the Team Leader
3. UV Radiation. When working in the sun, you should always wear a hat and a pair of sunglasses to protect yourself from harmful ultraviolet rays. Preferably a wide brimmed hat not a cap. You should also use sunscreen lotion on exposed skin.	30+ Sunscreen is available from the Team Leader
4. Water. Field staff will carry enough water with them in canteens or other suitable containers to sustain them for the duration of the survey.	Water sterilization tablets are available from the team leader
5. First Aid. The Team Leader will carry a personal First Aid kit while in the field that includes EpiPen auto injector. Additionally, each vehicle should carry a fully stocked First Aid kit.	
6. Emergency. The team leader will take an (Emergency Locator Transmitter) or EPIRB (Emergency Position-Indicating Radio Beacon), into the field.	

B. Collection Equipment & Procedures	Comments
1. Hand collection. Specimens collected by hand should be done so with the assistance of shovel/trowel and at least one hand should have a rubber clove. Re hole digging or rock turning – Fill holes and turn back rocks – leave the site as you found it. Dispose of gloves after use in one catchment. Spray spades between sites.	Ansell – Super Gloves recommended
2. Box traps. Bait with fresh fish. Leave for a minimum of 2 hours for crayfish to enter. Ensure all traps are securely tied to the bank so they cannot be dragged or washed away. Mark each trap consecutively with the numbered tags supplied. Record locations and tag numbers. Ensure all traps set are retrieved. Set traps with one corner or edge above the water to allow any water beetles or tadpoles that enter to breath in the trap. If a population area, use some grass or foliage to camouflage the trap and reduce visibility. Only use in the one drainage and sterilize before use in another.	
3. Opera House Traps. Bait with fresh fish. Leave for a minimum of 2 hours for crayfish to enter. Ensure all traps are securely tied to the bank so they cannot be dragged or washed away. Mark each trap consecutively with the numbered tags supplied. Record locations and tag numbers. Ensure all traps set are retrieved. Set traps with one corner or edge above the water to allow any water beetles or tadpoles that enter	

to breath in the trap. If surveying in high population areas use some grass or foliage to camouflage the trap and reduce visibility. Only use in the one drainage and sterilize before use in another.	
4. Witches Hat Traps. Bait the centre ring with fresh fish. Leave for a minimum of 30 minutes for crayfish to enter. Ensure all traps are securely tied to the bank so they cannot be dragged or washed away. Mark each trap consecutively with the numbered tags supplied. Record locations and tag numbers. Ensure all traps set are retrieved. Set traps in shallows with the float buoyant on the surface so if a bird, etc becomes entangled it can reach the surface to breath until released. Only use in the one drainage and sterilize before use in another.	
5. Cast net. Only use in areas relatively free of snags. Only use in the one drainage and sterilize before use in another.	

<i>C. Collected Specimen Procedures</i>	<i>Comments</i>
1. Freshwater Crayfish. Specimens will be preliminary identified onsite. Selected specimens if retained will be measured (OCL occipital carapace length) weighed in a small plastic takeaway container and information recorded on the site location sheet. Each site/specimen is numbered and the number written in permanent marker on the container lid. The container is deposited into the freezer.	
2. Other crustaceans, macroinvertebrates, molluscs and gastropods if retained will also be placed in small plastic takeaway containers and the container numbered with the site number.	
3. Crayfish anaesthetized. Crayfish, other crustaceans, macroinvertebrates, molluscs and gastropods will be terminally anesthetized. They should show no reaction to any stimuli, and be unmoving. The container is deposited into the freezer.	
4. Freshwater fish anaesthetized. Unwanted specimens should be immediately returned to the water. Wanted specimens should be added to a bucket of anaesthetizing water.	

<i>D. Euthanasia Procedures</i>	<i>Comments</i>
1. Crayfish. Crayfish and other crustaceans, macroinvertebrates, molluscs and gastropods will be terminally anesthetized. They are placed into the freezer at -19°C. These are cold blooded animals, being dark and quiet within the freezer helps calm the animals, as it gets cold they become less and less active till they shut down completely never to wake. This loss of consciousness until death occurs humanely euthanizes the animals. Animals are left in the freezer all day/overnight. The specimens are removed from the freezer each morning and vouchered in 100% ethanol. Only use 100% ethanol to better preserve tissue for genetic analysis.	Takeaway containers plus 70 ml, 120 ml and 250 ml specimen containers are available from Team leader.

2. Fish. Fish will be terminally anaesthetized. They should show no reaction to any stimuli, operculum spread (gills open) and unmoving, no equilibrium control (belly up) and finally cardiac arrest. .	
3. Chemicals and dosage rates. Aqui-S is available commercially. The active ingredient is iso Eugenol. This drug is recognized as a suitable anaesthetic for fish. Aqui-S is water soluble, stock solution is prepared by diluting concentrated Aqui-S to 100 mg/L water. Alternatively: Clove oil (80% plus) is also used as a traditional anaesthetic, its active ingredient is eugenol. Clove oil is soluble in water and high concentrations of 20-30 mg/L of water is an effective anaesthetic.	Preferred anaesthetic rather than MS 222 (suspected carcinogen) or benzocaine , a drug.
4. Fish euthanasia. Fish are left in the anaesthetic for the 5-10 minutes whilst the site details are written up. After this time they will be unmoving, unbreathing with loss of consciousness until death occurs. They then can be vouchered directly into 100% ethanol. Only use 100% ethanol to better preserve tissue for genetic analysis.	70 ml, 120 ml and 250 ml specimen containers are available from Team leader

<i>E. Hygiene Procedures</i>	<i>Comments</i>
1. Equipment. All equipment requires sterilization between uses.	
2. Sterilisation bath. For hand nets, buckets and other equipment used in field sampling. Immerse all items in a chlorine bath. Chlorine (200 mg/L) for nets, buckets, boots or any assorted equipment is an effective method to sterilize. After sterilization all equipment needs to be rinsed thoroughly as chlorine will degrade nets.	
3. Traps. Traps are only to be used once, then sterilised in chlorinated water, rinsed and sun dried for several days before reuse. Use different traps for different sites.	
4. Hands. Hands can be cleaned with antibacterial hand gel. Hand gels are available in the door compartments of the survey vehicles. Hand gels do not require water (active ingredient ethanol 60% w/w), just apply a dollop to your hand and rub hands together working over fingers and wrists.	Team leaders are responsible to ensure the small 70ml bottles of gel are available
5. Scoop Nets. Hand scoop nets are to be spraying with 'toilet duck' (active ingredient benzalkonium chloride) between sampling sites.	
6. Footwear. It is essential to disinfect footwear between catchments. Each team leader will be responsible for footwear disinfection of all survey participants. It is essential that all team members make the effort to use the disinfection kit every time without fail. Footwear needs to be sprayed at the start of all survey activities and then sprayed again between sites. Spray footwear with 'toilet duck' (active ingredient benzalkonium chloride) will disinfect all footwear. This readily available chemical provides hospital grade germ kill and disinfectant ensuring your footwear is hygienically clean.	Spray bottles of toilet duck are available in the survey vehicle
7. Vehicles. Tyres should be sprayed with Toilet Duck in areas known to contain pathogens. Using Duck's formula provides hospital grade germ kill and disinfectant ensuring your tyres are hygienically clean without damage to the tyres or vehicle.	

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Please detach and return:

I have read pages 1-6 and fully understand the ACP Standard Operating Procedures (March 2014) for Aquatic Field Surveys.

I have read and fully understand them. I agree to comply with these procedures at all times. Furthermore, I understand that if I fail to follow these procedures, I will be subject to disciplinary action, including the possibility of dismissal from the Project.

Volunteers Name (Please print)

Volunteers Signature Date

Team Leaders Signature Date

Please keep a copy for your records

