Charles Darwin Foundation

Field Work Safety Protocol

Reviewed 2021

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1. Purpose

The following document acts as a guide for CDF personnel, visiting scientists and associates to conduct field work, particularly in remote areas, in a manner that minimizes threats to personal safety. In it are details on mandatory documents that have to be provided and instructions on how to complete additional information that is required so as to undertake field work in conjunction with the CDF.

2. Scope

This procedure details appropriate remote area field practices ranging from preparation to working in the field including travel and site access, campsite considerations, training requirements, communication and emergency response.

Authorization for field trip will not be granted if adequate information is not provided for approval by the CDF safety officer.

3. Policies

The following has been prepared to aid in the avoidance of hazards. It must be understood that it is not feasible to describe all potential circumstances pertaining to hazards and hazardous situations. Each field trip is unique and therefore has to be approved by the Safety Officer and the Field Trip Authorization must include a Risk Assessment for each field trip. Precaution should be taken at all times regarding the avoidance of any situation posing risk to personnel, environment and equipment. Rules provided here within must be understood prior to engaging in activities concerning the Charles Darwin Foundation. Further questions may be obtained from your supervisor, the Charles Darwin Foundation Safety Officer or Science Program Coordinator, in addition to rules and/or tasks not covered here within. Failure to follow safety rules and/or practices will result in disciplinary action, up to and including termination of relationship with the Charles Darwin Foundation.

4. Safety Objective

- To describe the requirements that must be adhered to when working in remote areas including training, communication and emergency response to ensure the safety of personnel.

- To ensure that the requirements detailed in this procedure are consistent with other CDF and Galapagos National Park procedures and manuals.

5. Roles and Responsibilities

The person responsible for the field trip is responsible for the health and well being of all participants and the implementation of a Safety Plan. They must ensure that all personnel have at least the minimum training and or experience necessary to undertake a field trip and that all participants understand the conditions and requirements.

Field trip participants must understand and abide by the regulations and requirements.

Responsibilities of Charles Darwin Foundation staff:

- Science Program Coordinator: Send and receive all necessary administrative forms and documentation to CDF personnel, visiting scientists and associates and insure visitors are aware of what is required to undertake a field trip in association with the Charles Darwin Foundation. Maintain up to date records of information pertaining to CDF personnel undertaking field trips.
- Visiting Scientists Coordinator: Send and receive all necessary administrative forms and documentation to visiting scientists and associates and insure visitors are aware of what is required to undertake a field trip in association with the Charles Darwin Foundation. Maintain up to date records of information pertaining to visitors undertaking field trips.
- Volunteer Program Coordinator: Coordinate and assist volunteers in assuring all relevant forms are filled out, information provided and are aware of the working conditions. Maintain up to date records of information pertaining to volunteers participating in field trips.
- Director of Science has final decision to authorize trip but in straightforward cases authorization will be made by safety officer
- Safety Officer: Insure that all field trip participants are aware of the environment that they are going into and the risks involved and that all personnel have participated in and successfully completed the minimum requirements. Inform the Director of Sciences that requirements have been met for the relevant field trip and request authorization. Maintain up to date records of information pertaining to CDF personnel undertaking field trips. Centralized data base, together with info about field trips from visiting scientists and adjuncts.
- Logistics/Operations: In conjunction with Visiting Scientists Coordinator, Science Program Coordinator and Safety Officer assist with organizing logistics for field trips.
- Human Resources Manager: In conjunction with Visiting Scientists Coordinator, Science Program Coordinator and Safety Officer assist with

obtaining insurance and other relevant paperwork for personnel participating in field trips.

6. Required Experience

In order to participate in remote area fieldwork the person responsible for the fieldtrip has to assure that the participants have successfully completed the following:

- Any experience or training related to the fieldwork.
- Risk assessment analysis (a document to be completed)
- Basic First Aid

Safety Officer is required to fulfill safety training sufficient to convey the correct procedures to field participants.

7. Health and Safety

It is your right not to participate in an activity if you are uncomfortable with the conditions or feel that it is unsafe. It is your responsibility to exercise this right. IF YOU ARE NOT COMFORTABLE WITH DOING THE ACTION, DON'T DO IT.

8. Field Trip Approval

Any field work in the Galapagos to be undertaken with or through the Charles Darwin Foundation has to be approved by the Safety Officer and authorized by the Director of Science or the delegated personnel. For permission to undertake a field trip the information has to be submitted for analysis a minimum of 5 working days prior to a meeting held with the Safety Officer. The field trip will not be approved unless this meeting is held and the Safety Officer is satisfied with the preparation for the field trip and the awareness of the participants.

The completion of the "Field Trip Authorization Request and Safety Plan" and subsequent communication with the safety officer is mandatory for all CDF personnel and visitors receiving support from CDF.

Field trip participants that have not signed the Safety are not permitted to go on field trip.

For further queries or submission of the “Field Trip Authorization Request and Safety Plan” please contact Nicolas Padilla:

Email: Nicolas.padilla@fcdarwin.org
Charles Darwin Foundation, Puerto Ayora Galapagos, Ecuador

9. Field Trip Authorization Request and Safety Plan (Appendix 1)

Trips by CDF staff or visitors:
All trips including day trips undertaken by CDF staff or CDF visitors require that a Safety Plan be submitted to the CDF Safety Officer a minimum of five working days prior to each field trip. On confirmation of receipt and approval of the field trip safety plan the field trip can proceed. A single Field Trip Safety Analysis or Risk Assessment can be submitted in the case of numerous day trips from populated areas over a defined period. The Safety Plan shall include the following:

1) Administrative Forms and Documents
2) Risk Assessment and Field Trip Safety Precautions
3) Travel Plan
4) First Aid
5) Safety Plan

9.1 General Information and Administrative Forms and Documents

A variety of administrative forms and information is required to be provided before field work can be undertaken. The forms required are listed as follows:

a) Copies of identification documents and or passports (for participants that are not CDF staff, students or assistants)
b) Copies or details of medical and life insurance contracts and policies (for participants that are not CDF staff, students or assistants)
c) Charles Darwin Foundation Field Trip Authorization Request and Safety Plan (Appendix 1)
d) Personal, Medical and Contact Information (Appendix 2)
e) Galapagos National Park responsibility and quarantine forms

9.2 Risk Assessment and Field Trip Safety Precautions

A formal Field Trip Safety Analysis or Risk Assessment must be performed before every field trip and it must be discussed with all field trip participants prior to the presentation to the CDF Safety Officer. This is the most important criteria for approval of a field trip. Approval will not be granted unless sufficient detail is provided.

A detailed description of activities to be performed during the field trip, safety precautions to be taken, detailing sites to be visited (coordinates required) and or the working area (perimeter of area demarcated on a map) need to be made. Several key hazards are present in the Galapagos: 1) dehydration, 2) heat stress, 3) falls and abrasions, and 4) getting lost. How these hazards will be mitigated must be explained in each plan. A list of water and food quantities are required to demonstrate that there is sufficient for total the team and for the duration of the trip.

General Safety Precautions:

- Driving a vehicle represents a high risk activity as potential outcome is death. To minimize this only authorized personnel (i.e. have taken a driving proficiency test, hold a drivers license) may drive the CDF vehicles.
- Only authorized personnel (i.e. have taken a boat driving proficiency test, hold a license) may drive the boats.
- Only those holding a valid Ecuadorian firearms license may handle firearms.
- Safety precautions for any toxic chemical to be used during field trips must be included in the Safety Plan, these can obtained from the website: www.msds.com.
- Appropriate Personal Protective Equipment (such as gloves, hats, hard hats, safety glasses) should be included where necessary.
- Make sure you tell someone where you are going and when you will return.
- Watch for signs of heat stress, that is, if someone starts to behave strangely or complain of tiredness.
- Drink water at least once an hour even if not thirsty.
- Check the color of your urine. A light colour means you are drinking enough water, a dark color means you need to drink more.
- Get in the shade when resting.
- Do not take off your shirt in the sun.

9.3 Travel Plan

A Travel Plan must be submitted that includes:

1) Means of transport required
2) Name of the person helping coordinate transport
3) Date and time of starting/loading .

4) Date and time of return.
5) Name of the Contact person that is following the trip from a populated area and is aware of the return date and time
6) Other important information relevant to the trip.
7) Total number of participants/passengers

9.4 First Aid

Safety Officer is required to fulfill safety training sufficient to convey the correct procedures to field participants. Adequate language skills to communicate in English and Spanish are also required.

At least one participant of the field trip must have sufficient knowledge and experience to administer first aid.

It is mandatory to take a basic First Aid Kit on all field trips. The composition of the First Aid Kit has to take into account the conditions and the risks posed during the field trip. The checklist of the contents of the First Aid Kit should include a description and use of each item therein.

9.5 Safety Plan (Communication and Emergency Plans)

Communication plans are to be completed and adhered too. A means of communicating with a populated area has to exist on every field trip. In the event of an emergency these plans will be the basis of action. If applicable a map of the area concerned with GPS waypoints indicated, should be attached to the Field Trip Application.

Safety plan must be compiled and distributed to those involved and concerned before departure. At a minimum it must detail:

- Who is the principle scientist/s
- Who is responsible for the field trip, including which organization
- Who are the participants
- When will the field trip commence
- When will the field trip end
- What means of communication will be used (including a backup where necessary).
- Who is following the field trip (i.e. monitoring and receiving the calls in a populated area)
- What are the responsibilities of Charles Darwin Research Station contacts?

- If the field trip is comprised of various groups in the same area specify the communication time with the person responsible for the field trip. The time between communications should not exceed 24 hours.
- If a communication plan exists with a person in a populated area the schedule and responsibilities should be described in detail.

Advice can be sought to develop the communication plan from the Safety Officer or his designated replacement.

All team members must demonstrate proficiency to the Safety Officer in the use of the communications equipment before departure, and be in possession of the necessary emergency contact numbers.

Emergency Action Plan

In the event of an injury, certain protocols must be followed to ensure fast and efficient response times.

1) Minor injury
    a) Perform proper First-Aid to clean and stabilize injury.
    b) Report the injury to your supervisor.
    c) Refer to action checklist located in the First-Aid booklet.

2) Major injury
    a) After surveying the scene to make sure further danger does not exist, assess the situation, and administer first aid if possible (stabilize victim and injury).
    b) If it is deemed to be an emergent situation and an evacuation or transport to a hospital is required, contact the Charles Darwin Foundation Safety Officer.
    c) If calling from satellite phone use speed dial directory provided or dial the number as indicated when a CDF satellite phone is used.
    d) Refer to the information cards available from the Safety Officer or the Science Program Coordinator that include the important numbers and emergency procedures.
        i. Tell them you are in an emergency situation.
        ii. Tell them the phone number you are calling from, in case disconnected.
        iii. Tell them your name, type of emergency, and cause of incident and in the case of an injury tell them the name and details of the person / people injured.
        iv. Tell them your location: island, region & coordinates xxoyy' N, xxoyy' W
        v. Request necessary assistance. If necessary request evacuation to the nearest, suitable medical facility

e) Once the medical evacuation or transportation has been initiated, stay with the person and administer first aid and general comfort. Stay with the person until they are delivered to medical care.
f) Once the person is receiving medical attention, inform Charles Darwin Foundation Safety Officer of the incident: he will advise you to the proper paperwork to fill out if any.

In any emergency, a log of events must be kept at all times until the emergency has been given the all clear. Details of times, events and actions must be entered into the log as soon as practicable.

Emergency Contact Numbers
Charles Darwin Foundation
Office: (593)5 2526 146/7 ext.101
Fax: (593)5 2526 146/7 ext.102

Please note: Home and cell / mobile phone numbers are for emergencies only. Please call the CDF office first.

Charles Darwin Foundation

Nicolas Padilla	Responsible de Logística	(593) 5 2526 146 ext. 105	099 199 1675
2. Julio Delgado	Coordinador de operaciones	(593) 5 2526 146 ext. 168/148	099 568 8571
3. Marta Romoleroux	Coordinadora Científicos Visitantes	(593) 5 2526 146 ext.105	099 497 4222
4. María José Barragán	Directora de Ciencias	(593) 5 2526 146 ext.104	098 164 7412
5. Johanna Carrion	Relaciones interinstitucionales	(593) 5 2526 146 ext.130	099 271 1982

10. Reporting Incidents

All non conformances, incidents and general observations are to be recorded and information circulated through the CDF Safety Officer. An incident data base should be maintained with all available information from both CDF and PNG incidents.

11. Implementation and Testing of Procedures

This procedure is tested every time personnel work in remote areas. Information is circulated through meetings in the Charles Darwin Foundation.

12. Health and Safety Considerations

a) Lava Rock, Cliffs and Caves

Lava rocks, cliff and caves are highly erosive and rock outcrops are NOT ALWAYS STABLE FOR CLIMBING/SCRAMBLING. When working on loose ground or near cliff edges/cliffs:

1. DO NOT trust that hand/foot holds are solid.
2. DO NOT work alone.
3. Use good judgment about what is safe and what is not.
4. Use the appropriate clothing and equipment.

b) Heat casualties

At times, you may be working in the sun and physically exerting yourself. Drink water, wear a wide-brimmed hat, take shade breaks, and be conscious of how you feel and the condition of those around you. Your chances of becoming a heat casualty are great in the Galapagos environment. If you suspect heat exhaustion, find the most convenient way to cool down, treat for shock, and take/give water slowly. If untreated, heat exhaustion can lead to heat stroke, a very serious illness that can be fatal. Following are the major types of heat casualties and their treatment when little water and no medical help are available.

i. Sunburn

While working in the field you may experience days with intense sun exposure. Wear sun-block, a wide-brimmed hat, and protective clothing to avoid sunburn. Preferably wear light colored clothing.

ii. Heat Cramps

The loss of salt due to excessive sweating causes heat cramps. Symptoms are moderate to severe muscle cramps in legs, arms, or abdomen. These symptoms may start as a mild muscular discomfort. You should stop all activity, get in the shade, and drink water. If you fail to recognize the early symptoms and continue your physical activity, you will have severe muscle cramps and pain. Treat as for heat exhaustion below. If these are in your feet, DON'T take off your shoes. If you are in the beach, DON'T go into the sea to swim.

iii. Heat Exhaustion

A large loss of body water and salt causes heat exhaustion. Symptoms are headache, mental confusion, irritability, excessive sweating, weakness, dizziness, cramps, and pale, moist, cold (clammy) skin. Immediately get under shade. Loosen clothing. Sprinkle water over clothing and skin and fan. Drink small amounts of water every 3 minutes. It is very important to stay quiet and rest. If you are on the beach, DON'T go into the sea to swim.

iv. Heat Stroke

A severe heat injury caused by extreme loss of water and salt and the body's inability to cool itself. A person may die if not cooled immediately. Symptoms are the lack of sweat, hot and dry skin, headache, dizziness, fast pulse, nausea and vomiting, and mental confusion leading to unconsciousness. Immediately get under shade. Loosen clothing. Pour water over clothing and skin (it does not matter if the water is polluted or brackish) and fan. Massage arms, legs, and body. If the person is conscious let him drink small amounts of water every 3 minutes. Seek immediate medical attention.

c) Excessive cold

Field participants are likely to be exposed to cold water and/or sudden changes in weather. Adequate clothing must be worn or carried. Prolonged exposure to cold temperatures can lead to hypothermia.

Hypothermia

Defined as the body's failure to maintain a temperature of 36 °C (97 degrees F). Exposure to cool or cold temperature over a short or long time can cause hypothermia. Dehydration and lack of food and rest predispose a person to hypothermia.

Unlike heatstroke, a person with hypothermia must be gradually warmed. (e.g. lay beside the person maximizing body contact). Replace wet clothing for dry. Wrap the person in warm clothing or blankets (emergency blankets found generally found in the First Aid Kit are useful in these cases). Replace lost fluids. Seek immediate medical attention.

d) Dehydration

It is important to stay hydrated in any outdoor working situation. Keeping your body hydrated will prevent many heat-related illnesses. Each fieldworker should carry sufficient water (i.e. minimum of 4 liters per person per day) or other non-alcoholic drinks and drink regularly to ensure they do not become dehydrated.

e) Water Safety (diving)

Requirements to dive with the CDF

Employees:

1. Have an accredited rescue level or similar diver's license. Provide copy.
2. Have a minimum of 50 registered immersions (at least 50% with the similar conditions to that in Galapagos – 7mm wetsuit, currents, waves and poor visibility)
3. Perform check dive, supervised by the Dive Master (DM), where performance is demonstrated to basic abilities such as:
   - Regulator recovery
   - Clearing mask
   - Buoyancy control
   - Recover weights
   - Sharing air
   - Emergency accents
   - Assist unconscious diver
   - Other criteria that the DM considers
   - Have a basic current insurance policy that covers diving. Provide copy.
4. Undertake an annual physical exam.
5. Posses dive and safety equipment (whistle, visual signal, knife, etc.) that are in optimal conditions.
6. Fill in and sign the "Personal information" form.
7. Fill in and sign in duplicate the "Release of responsibilities" form.
8. Have, understood and comply with the different regulations described in the Dive safety manual.

Volunteers and students

1. Have an accredited level or similar diver's license. Provide copy.
2. Have a minimum of 20 registered immersions (at least 50% with the similar conditions to that in Galapagos – 7mm wetsuit, currents, waves and poor visibility)
3. Perform check dive, supervised by the Dive Master (DM), where performance is demonstrated in basic abilities such as:
   - Recover regulator

- Clear mask
- Control buoyancy
- Recover weights
- Share air
- Emergency accents
- Assist unconscious diver
- Other criteria that the SO considers pertinent to activities that the diver may be involved in, in the future

4. Have a basic insurance policy that covers diving. Provide copy.
5. Fill in and sign in duplicate the “Release of responsibilities” form.
6. Fill in and sign the “Personal information” form.
7. Undertake an annual physical aptitude exam.
8. Posses dive and safety equipment (whistle, visual signal, knife, etc.) that are in optimal conditions.
9. Have, understood and comply with the different regulations described in the “Safety Manual” (Dive safety manual).
10. Always dive with a dive buddy with more experience.

Visiting scientists and assistants

1. Have an accredited diver’s license. Provide copy.
2. Have an insurance policy that covers diving. Provide copy.
3. Fill in and sign in duplicate the “Release of responsibilities” form.
4. Fill in and sign the “Personal information” form.
5. Posses dive and safety equipment (whistle, visual signal, knife, etc.) that are in optimal conditions.
6. Understand and comply with the different regulations described in the “Safety Manual” (Dive safety manual).

f) Plants

Poisonous plants in Galapagos

Don’t eat any fruit.

i. Poison Apple. Should you come in contact with poison apple (manzanillo), wash clothes and skin with soap and water as soon as possible. Also available in pharmacies are creams that help sooth your skin.

g) Wildlife

Follow the Galapagos National Park regulations concerning interactions with animals.

i. Rats and Mice

Prevent rodent bites by wearing protective gloves and following proper handling instructions. In the event of a bite, follow proper first-aid procedures.

All staff handling mice, rats and their carcasses must wear plastic latex gloves.

ii. Birds

Wash your hands or disinfect with alcohol after handling birds to prevent infection with possible disease.

iii. Ticks

Wear protective clothing and accessories and do tick checks as needed.

iv. Predators (e.g. sea lions, sharks, dogs, cats, etc.)

- Proper Personal Protective Equipment must be worn to reduce the risk of disease transfer and/or injury. Exercise extreme caution if the handling of such animals is required.
- Safety protocols will be provided on a case by case basis. These protocols have to be detailed in safety plans for these projects.

h) Disease

Disease risks in Galapagos:

i. Tetanus

The spores of this disease-producing organism can enter the body through puncture wounds, lacerations, or burns that become contaminated with soil or excrement, not necessarily only from rusted metal. All fieldworkers should have current tetanus shots.

ii. Diarrhea

A common, debilitating ailment caused by drinking contaminated water, eating spoiled food, becoming fatigued, and using dirty dishes. You can avoid most of these causes by practicing basic sanitary measurements and preventive medicine. If you get diarrhea treat it accordingly from supplies in the First Aid Kit, which must include antidiarrheal medicine. Drink plenty of rehydration liquids and/or water.

i) Exposure to Toxic Chemicals / Dangerous Materials

Safety precautions for any toxic chemical to be used during field trips must be included in the Safety Plan, these can obtained from the website: www.msds.com.

All field trip participants must read and understand the proper handling and use restrictions prior to use, including but not limited to storage, disposal, application restrictions, and Personal Protective Equipment.

All individuals handling toxic chemicals must comply with the regulations stated in the Safety Plan.

i. Herbicides are most often used during the control and or eradication projects of introduced plants. Common products are Roundup (Glyphosate 747 and Glyphosate 390) and Combo (Picloram plus metsulfuron methyl).
ii. Rodenticides are most often used during rodent eradication projects. The most common of these are the anti-coagulants brodifacoum and diphacenone.
iii. Pesticides are most often used during the control and or eradication projects of introduced animals. Common products used by the GNP are Brodifacoum and 1080 (sodium fluoroacetate) and should only be administered by fully trained personnel. There are no specific antidotes for 1080, vitamin K is the antidote for Brodifacoum, but has to be administered by a medical doctor.

Herbicides, Rodenticides and Pesticides may be harmful or fatal if swallowed or absorbed through skin. Follow the safety precautions provided on/in the container and manufacturing instructions.

j) Dangerous Equipment

i. Machetes

Machetes must be used with caution at all times. Field participants are required to demonstrate their proficiency to the person responsible for the field trip and or CDF Safety Officer.

ii. Firearms

- Only authorized personnel (i.e. have taken a firearm proficiency test, hold a fire arm license) may handle firearms.
- Firearms shall be stored within a locked protective case. Weapons must remain unloaded when not in use. Ammunition is recommended to be stored in a fire/moisture proof container located in a separate location away from firearms when possible. Additional Personal Protective Equipment including hearing and eye protection should be provided on all projects involving firearms.
- Firearms will be transported in a safe manner and as prescribed by local statute, and/or appropriate program directive.
- Misuse, irresponsible actions or behavior concerning firearms will not be tolerated and immediate termination of the relationship with the CDF and or legal action.

iii. Flares

Only experienced personnel may maintain the flares and flare guns.

k) Driving

Only authorized personnel (i.e. have taken a driving proficiency test, hold a drivers license) may drive the CDF vehicles. Operators will be made aware of their responsibilities and the extent of their authorization prior to usage. All authorized drivers must have read the Ecuadorian 'Ley de Transito' and understood all contents therein.

l) Boating

Only authorized personnel (i.e. have taken a boat driving proficiency test, hold a license) may drive the boats. Operators will be made aware of their responsibilities and the extent of their authorization prior to boating situations. At no time should passengers impose influence on the boat operator or interfere with the operation and/or actions concerning the float plan. Designated boat operators are responsible for passenger safety, assuring there are enough life jackets for each person on the boat, as well as performing a boat check.

When embarking or disembarking from a boat and when using fast boats (Fibras), inflatables or zodiacs, boats; a lifejacket and closed shoes should be worn at all times. A rope at least 30m in length should be at hand at all times in case a person falls into the water and gets into difficulty.

IF YOU ARE NOT COMFORTABLE WITH DOING THE ACTION, DON'T DO IT.

m) Walking / Hiking

All participants must adhere and not stray from predetermined routes/area. All hikers must advice on their intended routes to the Safety Officer and carry a radio and / or satellite phone / mobile phone at all time. Any deviation from original plans must be clearly explained and justified upon return. Provide possible alternative routes that may be taking. The Safety Plan must be adhered to at all times.

n) Getting Lost

Make sure you have some basic survival gear with you at all time when in the field and tell someone where you are going and when you will return.

Basic survival gear should include:

- Radio VHF / Telephone satellite and/or celphone
- GPS with spare batteries and or Compass
- At least 4 liters of water
- Sun block
- Hat
- Whistle
- Flashlight
- Flagging tape or brightly colored material
- Swiss army knife or multi tool
- Roll of thin string

If you get lost REMAIN WHERE YOU are and create a visible signal. Searchers will always concentrate intended routes- if you stray a long way from this route it becomes difficult to locate you.

13. Appendixes

1. Field Trip Authorization Request and Safety Plan
2. Personal , Medical And Contact Information
3. First Aid Advice.

TP / RP