

# BESS Guide to Good Practice in the Field and Health and Safety

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## Introduction

Universities, research institutes and other organizations involved in the Biodiversity and Ecosystem Service Sustainability (BESS) Programme, with personnel working on field sites across the UK, will be responsible for ensuring that their students/researchers take into account appropriate Health and Safety considerations when undertaking fieldwork. In turn, those conducting fieldwork are responsible for ensuring that they do not endanger their own safety, that of their colleagues and that of members of the public.

The purpose of this note is to outline the procedures for accessing field sites safely and in a way that is respectful of the landowners and the ecological integrity of the sites. BESS seeks to foster good relations with all land owners involved in the programme.

The information provided is not exhaustive and is not meant to substitute for an institution's own guidelines and documents. Because of the varied nature of fieldwork it is not possible to cover every circumstance and those with management responsibility for students/ researchers must consult with their Departmental Safety Adviser with a view to ensuring that fieldwork is carried out safely.

We have compiled the following advice for the BESS network of researchers to supplement existing advice from the various institutions involved in the BESS network to further promote safety and good practices in the field.

## Site Coordinates, Access and Preservation

For each site the following should be logged and easily available to all field workers and their supervisors/line managers:

- (i) dGPS coordinates of each site e.g. Morecambe Bay, West Plain (SD 36669 73652);
- (ii) Name, email and office and mobile phone numbers for key staff at the site that must be contacted for authorised access;
- (iii) Site map of quadrats/sampling areas and details of access, outlining any particular safety information for the site – best paths to use etc
- (iv) Emergency contact details for those working in the field – preferably as a table giving name, institute, position (i.e. PhD etc) and office and mobile phone numbers. Plus, numbers for people to be contacted at host institutions in the event of an emergency and contact details and directions to local hospitals and coast guards etc as appropriate.
- (v) A time schedule for the work, including an estimated return time to base and an indication of emergency procedures to be followed overdue staff.

It may be necessary to draw up a Memorandum of Understanding (MoU) with site owners/managers to control potentially damaging activities. Such an agreement may contain actions required of field workers to restrict:

- disturbance of Schedule 1 nesting bird;
- removal of sediment and soil cores and other samples for analysis;
- removal of vegetation;
- disturbance of vegetation and soil;

- noise disturbance;
- destructive sampling of invertebrates;
- use of off-road vehicles.

## Health and Safety

Each BESS field worker will have to meet the health and safety requirements of their own institution by providing the necessary risk assessment as required by that institution (see for example Appendix 1). In addition, individual BESS consortia will also have their own procedures (e.g. see the CBESS Protocol Handbook for the Winter Campaign). As BESS field sites can be potentially dangerous locations, such as in the uplands, on tidal estuaries and near fast flowing rivers, the following general advice should also be read by all field workers.



*Weather conditions can change rapidly in the UK. Fieldworkers should be prepared for adverse weather conditions even during the Summer months. Additional precautions should be taken during Winter months.*

## Lone Working and Safe Systems of Work

- Fieldwork should be carried out in groups of at least two persons, **DO NOT** work alone, i.e. no more than 500 m from any other field worker. We recognise that there will be circumstances when members of the group are separated by a feature such as stream or bog, or by distance that they in effect become Lone Workers. In such circumstances, group members must agree an appropriate means of communication and rendezvous point in the event of emergency before setting out.

A Safe System of Work **MUST** be adopted by groups of all sizes to safeguard the health and safety of those working on the site. This should include:

- Notification of local offices or local contacts of the route, destination, nature of work and expected time of return;
- An agreed and appropriate means of communication between field workers and local support contact, taking into account the fact that mobile coverage can be patchy at most field sites. It is wise to check local coverage for your location before you set out. **Make sure your mobile phone is fully charged;**
- The action to be taken by the lone worker in the event of a perceived threat to their personal safety must be documented and read by the field worker before venturing out;

- The action to be taken by the lone worker when they have completed work for the day must be clearly stated.

### **Specific environmental dangers of working at BESS field sites**

Fieldwork in any upland, riverine or coastal area, particularly during inclement weather conditions, is potentially hazardous and requires an appreciation of the risks and dangers involved and the level of care to be exercised. Fieldworkers are strongly advised to obtain a weather forecast from a reliable source before setting off and should not hesitate to turn back if the weather deteriorates.

Fieldworkers are advised to wear boots (not shoes, Wellingtons or trainers, unless demanded by the environment, e.g. tidal mudflats) and to have plenty of warm clothing (including spare dry clothing) and rain-proof outer garments (including over-trousers). They should receive training in navigation and how to raise the alarm in the event of an accident prior to undertaking fieldwork and will be issued with Ordnance Survey maps, compasses and GPS units for use in the field. They should also carry a first aid kit and an emergency supply of high energy food. As a general rule of thumb 'always prepare for the worst'. For example, CBESS prescribe that each team needs to have the following safety kit for working in coastal areas in the field at all times:

- A safety kit, which contains in addition to normal first-aid elements (bandages, bruise and burn creams, disinfectant...);
- At least one thermal blanket;
- Freshwater against dehydration;
- Cereal bars or glucose tablets against hypoglycaemia;

In Morecambe Bay, the local contact will also provide the following kit available for the entire team:

- Hand held VHF radio;
- Flare (orange smoke);
- Sighting compass (90° gets you back to land if visibility is poor);
- Life jacket;
- Throw-line (for sinking sand);
- Hand held GPS;
- Mobile phone.

### *Coastal Areas*

Do not walk into a rising tide: each field worker needs to have at hand the time for low tide of each day in the field and the time limit from when to leave the shore.

### *Hypothermia*

Hypothermia is a potentially life threatening condition caused by the exposure of the body to progressive cooling as a result of severe weather conditions and can be heightened by individual factors such as insufficient or inadequate clothing, exhaustion and illness/injury. Fieldworkers should receive training as appropriate on how to spot the symptoms of hypothermia and actions to be taken if hypothermia is suspected. Our own experience when working in intertidal environments is that a Typhoon-type of dry suit provides excellent protection from all kinds of hazards, including hypothermia, even when caught out by a rising tide. However, you need to decide what works best for you.

### *Effects of heat*

Fieldworkers are advised to carry adequate water supplies and should carry extra reserves during hot weather or when undertaking strenuous physical exercise. Sources of salt may also be useful to counteract substantial salt losses resulting from prolonged sweating whilst hats and sun cream should be used to protect against sun burn.

### *Crossing streams*

No attempt should be made to cross a river or stream without the security of a rope unless it is evident that the consequences of a slip are likely to be no more than a soaking. Even under low water

conditions fieldworkers should exercise caution as rocks and vegetation at the edge of the channel or in the channel itself may be slippery.

#### *Crossing bogs*

No attempt should be made to cross sphagnum flushes, reed beds or un-vegetated area unless it is unavoidable. If it is essential to cross such an area, fieldworkers should try to keep to the drier upstanding parts, preferably to any tussocks of grassy plants.

#### *Poor visibility*

Poor visibility caused by heavy rain and/or thick cloud can easily lead to disorientation. Fieldworkers should be exercise care in when visibility is poor and make frequent location fixes using GPS and compass.

#### *Electrical storms*

Electrical storms do not occur frequently. Fieldworkers are advised to keep below ridges, summits and other high points where there is greatest risk of lightning strike if they suspect that an electrical storm is imminent. In the event of being caught in an electrical storm it is recommended that they should sit with knees drawn up and feet together on dry clean rock or an insulating material.

### **Biological hazards & notification of prior medical conditions**

The risks to human health of hazards associated with, bracken, toxic blue-green algae and certain zoonotic infections (e.g. Leptospirosis and Lyme Disease) should be ascertained for your study area.

All fieldworkers are responsible for ensuring that anti-tetanus injections/boosters or other necessary vaccinations are up to date and that they disclose medical conditions which might affect their ability to carry out fieldwork or the treatment they might need in an emergency to an appropriate named individual.

### **Specific fieldwork hazards**

There is a low risk of fieldworkers sustaining needlestick injuries when using hypodermic syringes to collect nutrient or gas samples from equipment or sediments. Training should be provided on safe use of hypodermic needles and the disposal of used needles for the safety of the researcher as well as the general public.

### **Road traffic accidents**

This is an easy risk to underestimate, but is possibly the one of the highest for field workers travelling to and from their sites. One is often very tired at the end of a long day's field work and many sites will be a long way from base, often involving many hours driving. Whilst it may be tempting to jump in the vehicle to get back to domestic bliss or to ensure that samples are in the deep freeze so they do not deteriorate, it might be more sensible and safer for all, including other public you might meet on the way home, to put up somewhere overnight and start home the next day. In any event, always share the driving and set yourself rest breaks and change overs every couple of hours, more frequently if you spent a very long time in the field. Researchers and students who act as drivers must have necessary driving experience, an appropriate driving licence and approval from their University/Institute to drive any vehicle hired or owned by that University/Institute. Only those with B+E entitlement shall tow trailers. It is the responsibility of the driver to ensure that they have adequate insurance cover (and that their insurance company is aware that the vehicle will be used for fieldwork) before using their personal vehicles for fieldwork.

Drivers should make sure that all materials and equipment carried are stowed in a safe fashion for both routine transport and in an emergency. Under no circumstances should the vehicle be overloaded. All goods should be packed in a safe and secure fashion.



*Access roads into field sites are often narrow and windy. Care should be taken to avoid livestock, walkers and cyclists. After strong winds fallen trees may present an additional hazard. During the winter months some roads may become impassable even with a 4x4 vehicle.*

### **Off-road driving**

The use of 4x4 vehicles shall be restricted to tracks of low to moderate gradient. Drivers must have adequate experience of handling vehicles off-road before venturing off tarmac. It is the responsibility of potential drivers to seek appropriate training if they do not believe that they are sufficiently experienced BEFORE driving off-road. It is the experience of the Directorate that it may be better not to provide 4x4 vehicles at all if the group is inexperienced in off-roading. Such staff can be overconfident about going off-road into challenging landscapes like saltmarsh, sandflats, peat moorlands and snow. We can provide locations of submerged landrovers at a range of coastal sites if object lessons are needed. Recovering stranded vehicles can entail significant damage to field sites and will not ingratiate you with land owners.

The use of 8x8 vehicles, such as Agrocats and forestry vehicles, shall be restricted to Authorised Users who have completed a training course and have demonstrated that they are competent to drive on the designated safe routes. Seatbelts MUST be worn by all passengers. Use approved techniques to recover bogged vehicles.



*The majority of access tracks are passable with care under good conditions in 4x4 vehicles. 8x8 vehicles may become bogged and should be recovered using approved techniques to prevent injury.*

## Appendix 1: Risk Assessment Example

A summary of hazards identified and the type of risk assessment that should be conducted is given in Table 1 (below).

| Hazard                                  | Probability (1-5) | Worst Outcome (1-5) | Risk Assessment | Control Measures                                                                                                | Revised risk (1-25) |
|-----------------------------------------|-------------------|---------------------|-----------------|-----------------------------------------------------------------------------------------------------------------|---------------------|
| Accident whilst lone working            | 2                 | 4                   | 8               | Avoid lone working where possible and abide safe system of work                                                 | 4                   |
| Road traffic accidents                  | 1                 | 5                   | 5               | Drivers must have necessary driving experience and use road worthy vehicles                                     | 5                   |
| Driving of 4x4 and 8x8 vehicles offroad | 2                 | 5                   | 10              | 4x4 drivers must have necessary driving experience. 8x8 drivers must be on list of Authorised Users             | 5                   |
| Environmental hazards                   | 2                 | 4                   | 8               | Obtain weather forecast prior to commencing fieldwork, Carry and wear appropriate clothing and safety equipment | 4                   |
| Biological hazards                      | 2                 | 4                   | 8               | Ensuring that vaccinations are up to date and that periodic checks for ticks are performed                      | 4                   |
| Specific fieldwork hazards              | 2                 | 1                   | 2               | Confirm safe use of fieldwork equipment prior to commencing work                                                | 1                   |

**Table 1:** Summary of fieldwork hazards and risk assessment.

**Probability:** 1 = Highly improbable; 2 = Less than even chance; 3 = Even chance; 4 = Probable; 5 = Almost certain.

**Worst outcome:** 1 = Minor injury; 2 = 3 Day injury; 3 = Incapacity / Amputation; 4 = Fatality; 5 = Multiple fatality.