15 MINIMISING ENVIRONMENTAL IMPACT

Nick Lewis and Paul Deegan

Why do wilderness areas and the routes to them continue to suffer so much ecological damage despite the ever-increasing level of environmental awareness? Given the broad range of information available these days, it seems hard to believe that expeditions can be organised without some prior knowledge of the potential impacts that they may cause. The very fact that so many expeditions are planned with little or no regard for the environment suggests that what is needed is a handful of simple tenets that all groups could adopt, regardless of their destination or activity.

This chapter outlines some of the things that can be done during an expedition to avoid causing more environmental impacts than are absolutely necessary. By combining a couple of fresh ideas with a common-sense approach, we have come up with "Five Golden Rules", which if followed will significantly help to reduce the environmental impacts generated by expeditions.

THE NOTION OF MINIMAL ENVIRONMENTAL IMPACT

The only expeditions that have no impact are those that exist only on paper and never leave home. It is impossible to go anywhere and not have an impact – the footprints we leave, the very air we exhale are the least impacts that we will have. It is therefore vital that we accept that we will cause a certain level of environmental impact. The trick is to minimise it. But what is a minimal level of impact and how do we measure it?

To attain a truly minimal impact, it is vital to take an integrated approach by looking beyond the expedition destination and the usual problems of litter and footpath erosion. We also have to consider our impact in the cities, towns and villages of our host country, places where the most far-reaching and destructive impacts of any expedition may be most keenly felt.

Many people reading this book are likely to consider themselves different from the

run-of-the-mill package holiday tourist. However, in many of the areas that we travel through on an expedition, we create exactly the same type of environmental impacts as every other visitor. This usually includes waste arising from servicing the expedition, such as from hotels, restaurants or guesthouses. This may seem to be a byproduct of any tourism, but that's the point – if your expedition is to have a minimal impact, it must take these factors into account and plan accordingly. In other words, don't think that, because you are an *expedition*, it absolves you from all the problems associated with normal tourism. Far from it; more care needs to be taken. Therefore, we need to consider all the activities associated with our proposed expedition and view all the potential impacts that may arise.

Rule 1: keep your expedition small

The impact of an expedition is closely related to its size. The more members it has, the more impacts it can potentially have. It's simple mathematics really – more airplane seats to carry you there and more vehicles needed for transport lead to greater fuel emissions; more loads to carry and more boots on paths result in increased soil erosion.

Minimising the number of team members will:

- reduce the cost of the expedition
- decrease the transportation requirements (resulting in a smaller demand for fuel)
- minimise the quantity of supplies that the expedition requires, whether it's the purchasing of scarce provisions in a village or the importing of food from the home country
- lower the number of local porters used (reducing sewage and firewood problems)
- decrease the amount of waste and sewage produced – waste is usually the most significant impact that expeditions leave behind.

Rule 2: appoint an environmental manager

Expedition planning consists of research into the objective: arranging permits, sorting out travel arrangements, raising finances, and organising gear and food. The environmental aspect of the expedition should also be addressed at this stage. Designating a team member to be the environmental manager is a positive first step.

As relatively few destinations request visitors to comply with environmental requirements or legislation, most expeditions need to educate themselves about the environmental issues in their chosen area. It is the job of the environmental manager to find out what these are. The list of subjects that could be researched include:

- Environmental regulations and permit requirements of the host country.

- Specific environmental concerns of the expedition area, such as path erosion, sensitive ecosystems and waste accumulation.
- Transport options to and from the destination. Can existing public transport be used rather than private vehicles to transfer the expedition to the roadhead?
- Accommodation options: try to use hotels or guesthouses that participate in local environmental initiatives.
- Environmental policies of expedition agencies (including guides, trekking companies and boat charters).
- Waste management options: investigate waste-handling structures available in the area. If there is none, consider repatriating your waste. (Waste management options are probably the single most important role that the environmental manager will cover.)

The most effective environmental managers work closely with the other members of the expedition at the planning stage. To take just one example, there are many possible considerations to take into account when choosing food and kit. The diligent environmental manager will want to work alongside the person(s) responsible for provisions and group equipment in order to:

- buy food that has minimal packaging, and then remove any wrappers that are not necessary to preserve the food. All cooking instructions can be written on to a single sheet of paper;
- bag food into separate day packages. The day bag becomes a handy waste receptacle when the contents have been eaten;
- use a liquid fuel (such as gasoline or paraffin) for cooking. A pressurised stove that uses a liquid fuel burns hotter than bottled gas, and has no resulting empty cartridges requiring disposal;
- take comprehensive repair kits and learn how to use them, rather than carrying a number of expensive spare stoves and tents. Remember that poorly maintained products can result in damaged equipment being abandoned in-country. It is worth bearing in mind that less equipment results in less weight, with less to go wrong.

These are just some of the areas that the environmental manager can research; the job can be as focused or encompassing as one wishes it to be. For example, the environmental manager may decide to keep a constant record of possible environmental impacts. A simple account of the expedition's activities can then be incorporated into the final expedition report. A more comprehensive study may include a before-and-after photographic account of places visited, monitoring of waste products produced (types/volumes/weights), and a brief study of any waste-handling infrastructures present in the areas visited.

Rule 3: assess the environmental impacts

When the environmental manager has assembled all the available information, he or she will be in a position to identify and assess the:

- main environmental sensitivities and constraints of the expedition area (e.g. nearby wetlands, protected areas or species)
- environmental aspects of the project that may result in potential impacts (e.g. overland transport, anchoring of vessels, generation of waste).

Environmental impact assessments

Much has been written about the assessment of environmental impacts of expeditions and, unfortunately, much of it is either inaccurate or wrong. Expedition brochures are littered with jargon such as "preliminary study", "audit", "impact assessment", "baseline survey" and "initial evaluation". This problem is compounded by the fact that these phrases have different definitions depending on the context in which they are being used and the legislation of the country being visited.

So for the sake of simplicity, let's define here what an environmental impact assessment (EIA) should be for an expedition:

> *An assessment – conducted at the planning stage – of the potential environmental impacts that the expedition may cause throughout its course.*

The purpose of the EIA is to identify those key areas where the expedition may cause environmental damage. This then allows appropriate contingency plans to be drawn up before the expedition begins in order to prevent any damage being done. Assessments can be simple or elaborate, but, for an expedition, it's important to keep it straightforward.

A simple EIA can consist of a list of bullet points or numbers ranking the most likely impacts in order, with a simple contingency plan outlined for each. An example is presented in Figure 15.1.

This basic form of EIA may be all that is necessary for a small (two-person)

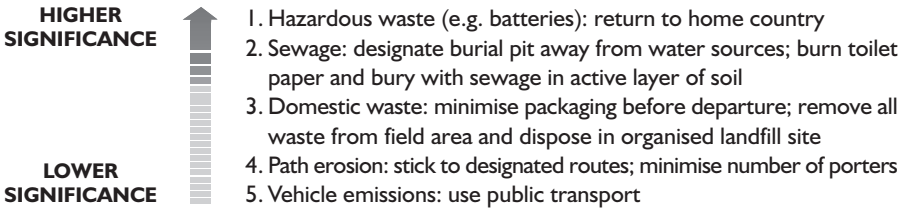

Figure 15.1 *Simple identification, ranking and mitigation of impacts*

expedition. Larger expeditions may need a more elaborate way of identifying and assessing their impacts. A more comprehensive EIA can be conducted by assessing the impacts qualitatively using the following criteria:

- Activity: describes the impacting activity.
- Duration: specifies the duration of the impacting activity.
- Output: names the specific aspect of the impacting activity, e.g. disposal of food waste is one of the outputs of cooking at base camp; fuel spillage is an output of refuelling stoves.
- Nature: identifies the type of impact caused by the activity, e.g. water contamination from poor waste disposal or fuel spillage.
- Scope: pinpoints the geographical area affected by the impact, be it local, regional or continental.
- Persistence: estimates the duration of the impact and whether it is likely to be short term (minutes/hours), medium term (days/weeks), long term (months/years), permanent or unknown.
- Intensity: classifies the overall severity of the impact in relative terms (low, medium or high).
- Probability: evaluates the likelihood of the impact occurring, in relative terms (low, medium or high).
- Significance: rates the overall importance of the impact, assessed in relative terms (low, medium or high). This depends on all the factors previously described plus additional variable factors such as the sensitivity of the environment.
- Type of effect: this assesses whether the impact will have a direct, indirect or cumulative effect. The effects of particular impacts may depend very much on later events.
- Mitigation: indicates possible contingency plans for minimising unavoidable impacts.

All these criteria can be integrated into a simple table to assess the expedition. An example is presented in Table 15.1.

Although this comprehensive approach requires some attention to detail, it is important not to make it unnecessarily complicated. Whatever method you choose to use, the most important point is that the task gets done. Remember, it is very difficult to prevent impacts from occurring unless you know what they are.

It may be difficult or even impossible to foresee what environmental damage will occur in an area in future years. Consequently many impacts tend to have direct, indirect and cumulative effects, e.g. fuel spillage into a watercourse will have a direct toxic effect on the aquatic ecosystem; this water may in turn indirectly pollute food sources for humans and animals if used for irrigation sources. Long-term spillages

TABLE 15.1 **EXAMPLE LAYOUT FOR ENVIRONMENTAL IMPACT ASSESSMENT TABLE**

Activity	*Overland journey from port of entry to roadhead and return*	*Journey to base camp and return*	*General expedition tasks*
Duration	8 days (total)	10 days (total)	45 days (duration of expedition)
Output	Engine emissions	Walking	Waste head torch batteries
Nature of impact	Air pollution; dust	Erosion of footpaths	Contamination of soil and groundwater resources
Scope	Local–regional	Local	Local–regional
Persistence	Long term	Long term to persistent	Long term to persistent
Intensity	Medium	Low	High
Probability	Medium–high	High	Low
Significance	Medium–high	Low–medium	High
Type of effect	Direct, cumulative	Direct, indirect, cumulative	Direct, indirect, cumulative
Mitigation	Use public transport; use well-maintained hire vehicles; stick to designated routes and speed limits.	Reduce number of journeys to minimum; stick to designated routes	All waste batteries to return home with expedition for proper disposal

may have a cumulative effect whereby the affected ecosystem diminishes.

Rule 4: draw up and use an environmental management plan

On the basis of your assessment, an environmental management plan (EMP) can now be drawn up for the expedition. The EMP should detail how the mitigation measures outlined in the EIA are going to take place. The EMP will include:

- The expedition's environmental statement – what is it you are trying to do from an environmental point of view or, perhaps more importantly, what are you trying to avoid doing?

TABLE 15.2 **EXPEDITION MANAGEMENT PLAN FOR DRAVOT–CARNEHAN KAFIRISTAN EXPEDITION, PAGE 1** (MEMBERS: D. DRAVOT, P. CARNEHAN, B. FISH)

Activity or action causing potential environmental impact	*Impacts*	*Mitigation*	*Responsible party*	*Monitoring*	*Timing*
Overland journey to and from Jagdallak (gateway town)	Air pollution from engine emissions	Use public transport. If hiring, use only well-maintained vehicles	Dan	Observation, preliminary check	Journey to and from roadhead
Stay in Jagdallak to and from base camp	Waste production in Jagdallak	Minimise time spent in town; use of non-packaged goods	Dan	Check with suppliers	6 days
Walk-in from Jagdallak to base camp	Soil erosion	Stick to designated route; minimise loads and number of porters	Dan	Verbal reminder and observation	Walk-in
	Destruction of wood resources	Use of petrol stoves; provide porters with adequate clothing	Bill	Observation and liaise with head porter	Walk-in
General base camp activities	Destruction of wood resources	Use of petrol stoves	Bill	Observation and liaise with cook	Duration of stay at base camp
	Soil erosion and visual impacts from tent platforms	Stick to designated route; replace stones upon departure from base camp	Dan	Check before departure	Duration of stay at base camp
	Contamination of soils, groundwater by fuel spills	Proper fuel storage and refuelling practices, use of spill mats and drip trays	Bill	Regular checks	Duration of stay at base camp
	Contamination of soils, groundwater by sewage	Stored in blue chemical barrels and removed to Jagdallak for disposal	Peachey	Regular checks	Duration of stay at base camp

Contamination of soils, groundwater by fuel spills	Proper fuel storage and refuelling practices, use of spill mats and drip trays	Bill	Regular checks	Duration of stay at base camp
Contamination of soils, groundwater by sewage	Stored in blue chemical barrels and removed to Jagdallak for disposal in municipal sewerage system	Peachey	Regular checks	Duration of stay at base camp
Visual impact, soil and groundwater pollution from garbage	Non-combustible material separated and returned to UK for disposal, combustible material burnt under controlled conditions in Jagdallak	Peachey	Regular checks	Duration of stay at base camp
Contamination of soils, groundwater and wildlife by hazardous wastes (batteries, waste fuel, explosive materials)	No disposal in expedition area – all hazardous wastes separated from other wastes and returned to UK for proper disposal	Peachey	Regular checks	Duration of stay at base camp

- A summary of the environmental problems that may be already present in the expedition area, as well as those that may be generated by your visit.
- The type of environmental permits or applications required.
- The mitigation measures to be conducted.
- The waste management options that you have in place.
- The arrangements for local employment.
- The monitoring programmes to be conducted.
- The reporting requirements on your return.
- Who is responsible for implementing the various measures?

The EMP should be short, succinct and easy to understand; try fitting it on one side of A4 paper and make sure that it is followed! An example is shown in Table 15.2.

Rule 5: consider the environmental impact on gateways

Expeditions are about going to wild places, but we have to go through a lot of urban places to get there. Almost every expedition uses a settlement as a springboard in order to enter the wild place that it intends to visit. This town or village is likely to be the place where multiple expeditions pick up supplies, sort out transport and maybe hire porters. At the end of the expedition, team members may return to this settlement in order to relax and sort things out before starting the long journey home. Unfortunately these settlements are often the places where expeditions choose to deposit their waste products.

As they act as essential access points to and from our destination, let's call them "gateway" towns. Popular gateways include:

- Huaraz and Cuzco in Peru
- Pokhara and Lukla in Nepal
- Skardu and Gilgit in Pakistan
- Leh and Manali in India
- Talkeetna in Alaska
- Tasiilaq in Greenland
- Chalten and Calafate in Patagonia.

Many gateways are in remote locations and suffer from poor transport infrastructures. This leaves remote communities extremely vulnerable to many impacts, e.g. it might not be possible to remove waste products. This forces poor waste disposal in the gateway towns and can lead to soil and groundwater contamination.

What can be done to minimise our impacts on gateways?

Pragmatically speaking, waste needs to be transported to somewhere where it can be dealt with properly. So it is important to determine the location of effective waste-

handling structures along the route that your expedition is taking. If such structures do not exist, repatriation of your waste back to your home country may be the only viable solution. Depending on what wastes you decide to ship home with you, this need not be a burdensome task or one that generates endless amounts of bureaucracy and paperwork. Waste materials such as food packaging, paper, plastic and depleted batteries can be returned easily, especially if you took these items with you at the start of the expedition.

Shipping hazardous wastes (such as fuel or sewage) will require compliance with international regulations. However, many small expeditions have been successful in achieving this. By doing so, they have proved that expeditions can leave only a minimal impact.

CONCLUSION

Remember, it is vital that expeditions consider every aspect of their activities to identify the potential environmental impacts that they may cause. The "Five Golden Rules" highlighted in this chapter are designed to help you to achieve this:

Rule 1: Keep your expedition small
Rule 2: Appoint an environmental manager
Rule 3: Assess the environmental impacts
Rule 4: Draw up and use an environmental management plan
Rule 5: Consider the environmental impact on gateways.

Taking responsibility for environmental matters on expeditions is often regarded as a thankless task. Nevertheless, it's the one legacy that not only affects the wilderness and the local community, but also all future expeditions who travel into the region. Who knows, that next expedition may be yours!

FURTHER INFORMATION

Useful web addresses

Conservation of Arctic Fauna and Flora (CAFF): www.caff.is
Leave No Trace: www.lnt.org
Tourism Concern: www.tourismconcern.org.uk
Green Globe: www.greenglobe21.com
International Porter Protection Group: www.ippg.net
Mountain Tourism Guidelines: www.thebmc.co.uk/world.htm
UNEP World Conservation Monitoring Centre: www.unep-wcmc.org