



Operation
Wallacea
Conservation research through academic partnerships

Risk Assessment and Management
In Madagascar 2011

Contents

2011 – S1	Mariarano Village camp site	3
2011 – S2	Matsedroy Camp	5
2011 – S3	Ifotaka village camp	7
2011 – S4	Mahavelo camp	8
2011 – S5	Marodoka beach camp	10
2011 – G1	Survey work on foot	11
2011 – G2	Work on auxiliary boats and canoes	12
2011 – G3	Road travel	13
2011 – G4	Medical support	14
2011 – G5	Diving	15
2011 – G6	Snorkeling and swimming	17

Key: H=high; M=medium; L=low

2011 – S1 Mariarano Village camp site

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Attack by mammal	L	H	The only potentially dangerous mammals in Madagascar are the fossa and the wild boar. These will not pose a risk around the campsite because they are frightened of humans and will run away. However all volunteers to be briefed on how to react if faced by a potentially dangerous mammal either in the campsite or out in the field.
Attack or violence from local population	L	M	The villagers are incredibly friendly and welcoming so this risk is very low. Ensure positive relations remain between Operation Wallacea and the villagers through various methods including keeping the village Coba informed or involved in project decisions, conducting positive cultural interchanges such as education sessions at the local school, and ensuring the job-creating from the project is as evenly distributed as possible through the village. Ensure that the rented campsite area is patrolled during the evening so that only project-related personnel are on-site. Ensure that project staff do not consume alcohol outside of the camp.
Sting or bite from a scorpion or black spider	M	H	All volunteers are briefed on arrival on preventative measures to avoid being stung or bitten, such as checking your boots in the morning, checking any rock surfaces before you sit down, never walking around bare-foot, and keeping your tent closed to stop them getting in during the day. Should a sting or bite occur, a treatment kit with methyprednisolene is available at the sites.
Medical problem for volunteer or staff member	H	L	There are good medical and hospital facilities in Mahajanga, approximately 3 hours from the site, and there will be a medical officer on-site with an extensive medical kit.
Need for emergency evacuation	L	H	There will be vehicles available at the camp at all times for evacuation to the hospital by road (3 hrs approx). If Air Evacuation is required, the terrain is easily accessible for helicopters, and an emergency response unit can be deployed from Antananarivo (3 hrs).
Tripping or falling in the camp	M	H	All volunteers to be given a full safety briefing and tour of the camp on arrival which will include advise on taking care in slippery areas such as the shower, and always watching your footing around the camp, particularly at night.

Key: H=high; M=medium; L=low

Lack of hygiene increasing risk of disease	M	M	Camp Manager to ensure that kitchen is kept clean and that food types are prepared separately. The eating area and the toilets to have handwashing facilities immediately adjacent and all volunteers to be briefed on the importance of washing your hands.
Fire	L	H	Staff are aware of procedures in the event of a fire, and volunteers to be briefed on arrival. No smoking to be allowed other than in a designated area away from any building or tent with a sand bucket for extinguishing cigarettes. Fire extinguisher to be kept at the camp and wind break constructed around the fire.
Volunteer becoming lost in the forest and unable to find the camp	L	H	All volunteers to be briefed on safe trekking procedures on arrival (e.g. keeping the person in front and the person behind you in-sight at all times, what to do if you should lose the group, etc). All groups leaving camp to be accompanied by a guide and a radio, to sign out on the whiteboard, and to state destination and estimated return time. The Group Leader (designated Staff member) is responsible for ensuring that each group member has sufficient water.
Control measures not implemented	M	M	The Opwall coordinator to be responsible for auditing the control measures and camp procedures on a weekly basis (see relevant audit form). These audit reports including details of non compliances and corrective measures to be available for inspection on site

Key: H=high; M=medium; L=low

2011 – S2 Matsedroy Camp

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Attack by mammal	L	H	The only potentially dangerous terrestrial mammals in Madagascar are the fossa and the wild boar. These will not pose a risk around the campsite because they are frightened of humans and will run away. However all volunteers to be briefed on how to react if faced by a potentially dangerous mammal either in the campsite or out in the field.
Sting or bite from a scorpion or black spider	M	H	All volunteers are briefed on arrival on preventative measures to avoid being stung or bitten, such as checking your boots in the morning, checking any rock surfaces before you sit down, never walking around bare-foot, and keeping your tent closed to stop them getting in during the day. Should a sting or bite occur, a treatment kit with methyprednisolene is available at the sites.
Attack by crocodile	L	H	There are crocodiles in the lake a fair distance from Matsedroy Camp. The camp is situated >800m from the lake edge on high ground, and no swimming is allowed in the lake. The camp, including shower area, is inside a safety fence to prevent crocodiles from coming into this area. The camp is not situated between lakes, so it is highly unlikely that crocodiles will come through the camp at night. There will be a guard on duty at all times to patrol for crocodiles in the vicinity, and all persons in camp will only go to the toilet after dark (c 50m from the main fenced area) if escorted by the guard. All volunteers to be briefed on using their torches to look for crocodiles before leaving their tents at night, and what to do should you encounter a crocodile.
Medical problem for volunteer or staff member	H	L	There are good medical and hospital facilities in Mahajanga, approximately 7 hours from the site (3 hours walk to Mariarano and 4 hours by 4x4 vehicle), and there will be a medical officer on-site with an extensive medical kit.
Need for emergency evacuation	L	H	There will be vehicles available at Mariarano camp (3 hrs walk) at all times for evacuation to the hospital by road (4 hrs approx). If Air Evacuation is required, the terrain is easily accessible to helicopters, and an emergency response unit can be deployed from Antananarivo (3 hrs).

Key: H=high; M=medium; L=low

Tripping or falling in the camp	M	H	All incoming volunteers to be given a full safety briefing and tour of the camp on arrival which will include advice on taking care in slippery areas such as the shower, and always watching your footing around the camp, particularly at night.
Lack of hygiene increasing risk of disease	M	M	Camp Manager to ensure that kitchen is kept clean and that food types are prepared separately. All cooks to wash their hands with antibacterial soap before cooking. The eating area and the toilets to have handwashing facilities with antibacterial soap immediately adjacent, and all volunteers to be briefed on the importance of washing your hands before meals and after using the toilet.
Fire	L	H	Staff are aware of procedures in the event of a fire, and volunteers to be briefed on arrival. No smoking to be allowed other than in a designated area away from any building or tent with a sand bucket for extinguishing cigarettes. Fire extinguisher to be kept at the camp and wind break constructed around the fire.
Volunteer becoming lost in the forest and unable to find the camp	L	H	All volunteers to be briefed on safe trekking procedures on arrival (e.g. keeping the person in front and the person behind you in-sight at all times, what to do if you should lose the group, etc). All groups leaving camp to be accompanied by a guide and a radio, to sign out on the whiteboard, and to state destination and estimated return time. The Group Leader (designated Staff member) is responsible for ensuring that each group member has sufficient water.
Control measures not implemented	M	M	The Opwall coordinator to be responsible for auditing the control measures and camp procedures on a weekly basis (see relevant audit form). These audit reports including details of non compliances and corrective measures to be available for inspection on site

Key: H=high; M=medium; L=low

2011 – S3 Ifotaka village camp

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Attack by mammal	L	H	The only potentially dangerous terrestrial mammals in Madagascar are the fossa and the wild boar. These will not pose a risk around the campsite because they are frightened of humans and will run away. However all volunteers to be briefed on how to react if faced by a potentially dangerous mammal either in the campsite or out in the field.
Sting or bite from a scorpion or black spider	M	H	All volunteers are briefed on arrival on preventative measures to avoid being stung or bitten, such as checking your boots in the morning, checking any rock surfaces before you sit down, never walking around bare-foot, and keeping your tent closed to stop them getting in during the day. Should a sting or bite occur, a treatment kit with methyprednisolene is available at the sites.
Medical problem for volunteer or staff member	H	L	There are medical facilities in Fort Dauphin, approximately 5 hours from the site, and there will be a medical officer on-site with an extensive medical kit.
Need for emergency evacuation	L	H	There will be vehicles available at Ifotaka village camp (2 hrs walk) at all times for evacuation to the hospital by road (3 hrs approx). If Air Evacuation is required, the terrain is easily accessible to helicopters, and an emergency response unit can be deployed from Antananarivo (3 hrs).
Tripping or falling in the camp	M	H	All incoming volunteers to be given a full safety briefing and tour of the camp on arrival which will include advise on taking care in slippery areas such as the shower, and always watching your footing around the camp, particularly at night.
Lack of hygiene increasing risk of disease	M	M	Camp Manager to ensure that kitchen is kept clean and that food types are prepared separately. The eating area and the toilets to have handwashing facilities immediately adjacent and all volunteers to be briefed on the importance of washing your hands.
Fire	L	H	Staff are aware of procedures in the event of a fire, and volunteers to be briefed on arrival. No smoking to be allowed other than in a designated area away from any building or tent with a sand bucket for extinguishing cigarettes.

Key: H=high; M=medium; L=low

Volunteer becoming lost in the forest and unable to find the camp	L	H	All volunteers to be briefed on safe trekking procedures on arrival (e.g. keeping the person in front and the person behind you in-sight at all times, what to do if you should lose the group, etc). All groups leaving camp to be accompanied by a guide and a radio, to sign out on the whiteboard, and to state destination and estimated return time. The Group Leader (designated Staff member) is responsible for ensuring that each group member has sufficient water.
Control measures not implemented	M	M	The Opwall coordinator to be responsible for auditing the control measures and camp procedures on a weekly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site

2011 – S4 Mahavelo camp

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Attack by mammal	L	H	The only potentially dangerous terrestrial mammals in Madagascar are the fossa and the wild boar. These will not pose a risk around the campsite because they are frightened of humans and will run away. However all volunteers to be briefed on how to react if faced by a potentially dangerous mammal either in the campsite or out in the field.
Sting or bite from a scorpion or black spider	M	H	All volunteers are briefed on arrival on preventative measures to avoid being stung or bitten, such as checking your boots in the morning, checking any rock surfaces before you sit down, never walking around bare-foot, and keeping your tent closed to stop them getting in during the day. Should a sting or bite occur, a treatment kit with methyprednisolene is available at the sites.
Medical problem for volunteer or staff member	H	L	There are medical facilities in Fort Dauphin, approximately 5 hours from the site, and there will be a medical officer on-site with an extensive medical kit.

Key: H=high; M=medium; L=low

Need for emergency evacuation	L	H	There will be vehicles available at Ifotaka village camp (2 hrs walk) at all times for evacuation to the hospital by road (3 hrs approx). If Air Evacuation is required, the terrain is easily accessible to helicopters, and an emergency response unit can be deployed from Antananarivo (3 hrs).
Tripping or falling in the camp	M	H	All incoming volunteers to be given a full safety briefing and tour of the camp on arrival which will include advise on taking care in slippery areas such as the shower, and always watching your footing around the camp, particularly at night.
Lack of hygiene increasing risk of disease	M	M	Camp Manager to ensure that kitchen is kept clean and that food types are prepared separately. The eating area and the toilets to have handwashing facilities immediately adjacent and all volunteers to be briefed on the importance of washing your hands.
Fire	L	H	Staff are aware of procedures in the event of a fire, and volunteers to be briefed on arrival. No smoking to be allowed other than in a designated area away from any building or tent with a sand bucket for extinguishing cigarettes.
Volunteer becoming lost in the forest and unable to find the camp	L	H	All volunteers to be briefed on safe trekking procedures on arrival (e.g. keeping the person in front and the person behind you in-sight at all times, what to do if you should lose the group, etc). All groups leaving camp to be accompanied by a guide and a radio, to sign out on the whiteboard, and to state destination and estimated return time. The Group Leader (designated Staff member) is responsible for ensuring that each group member has sufficient water.
Control measures not implemented	M	M	The Opwall coordinator to be responsible for auditing the control measures and camp procedures on a weekly basis (see relevant audit form). These audit reports including details of non compliances and corrective measures to be available for inspection on site

Key: H=high; M=medium; L=low

2011 – S5

Marodoka beach camp

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Getting lost or swept out to sea during free time from the dive training or reef ecology courses	L	H	All volunteers are instructed that swimming and snorkelling is only allowed with a Dive Master in attendance.
Sting or bite from a scorpion or black spider	M	H	All volunteers are briefed on arrival on preventative measures to avoid being stung or bitten, such as checking your boots in the morning, checking any rock surfaces before you sit down, never walking around bare-foot, and keeping your tent closed to stop them getting in during the day. Should a sting or bite occur, a treatment kit with methyprednisolene is available at the sites.
Medical problem for volunteer or staff member	H	L	There are medical facilities in Hell-Ville, approximately 10 mins drive from the site, and there will be a medical officer on-site with an extensive medical kit.
Need for emergency evacuation	L	H	There will be vehicles available at the camp at all times. If Air Evacuation is required, the terrain is easily accessible to helicopters, and an emergency response unit can be deployed from Antananarivo (3 hrs).
Tripping or falling in the camp	M	L	All incoming volunteers to be given a full safety briefing and tour of the camp on arrival which will include advise on taking care in slippery areas such as the shower, and always watching your footing around the camp, particularly at night.
Lack of hygiene increasing risk of disease	M	M	Camp Manager to ensure that kitchen is kept clean and that food types are prepared separately. The eating area and the toilets to have handwashing facilities immediately adjacent and all volunteers to be briefed on the importance of washing your hands.

Key: H=high; M=medium; L=low

Fire	L	H	Staff are aware of procedures in the event of a fire, and volunteers to be briefed on arrival. No smoking to be allowed other than in a designated area away from any building or tent with a sand bucket for extinguishing cigarettes.
Control measures not implemented	M	M	The Opwall coordinator to be responsible for auditing the control measures and camp procedures on a weekly basis (see relevant audit form). These audit reports including details of non compliances and corrective measures to be available for inspection on site

2011 – G1 Survey work on foot

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Bite or sting from dangerous organism	L	H	All volunteers and staff in the bush are required to wear strong, close-toed footwear which protects the ankles as well as the feet, long baggy trousers and long sleeved shirts. All volunteers are told never to approach a scorpion or spider without alerting a guide first. All volunteers to be briefed on the dangerous flora and fauna as part of the training course.
A fall resulting in serious bleeding or a bone fracture	L	H	Ensure that all staff and volunteers have footwear with good grip and ankle support. Ensuring that a medical officer with a mobile First Aid kit is in radio contact with so that additional help can be summoned quickly. Ensure that an evacuation plan is in position for each location in which the staff and volunteers will be working. Ensure a hammock is available at the camp to be used as a stretcher if needed.
Dehydration	M	H	All volunteers to be briefed about the need to carry sufficient water supplies with them, the symptoms of dehydration, and the importance of fast action to combat it.
Becoming separated from the rest of the group	L	H	All volunteers to be briefed on safe trekking procedures on arrival (e.g. keeping the person in front and the person behind you in-sight at all times, what to do if you should lose the group, etc). Volunteers are also requested to carry a whistle to signal for attention if needed.
Control measures not implemented	M	M	Senior coordinator to be responsible for auditing the control measures and camp procedures on a fortnightly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site.

Key: H=high; M=medium; L=low

2011 – G2 Work on auxiliary boats and canoes

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Boat overturning or staff/volunteer falling overboard	L	M	All volunteers and staff to be accompanied by a guide. All volunteers should wear life vests when travelling in auxiliary boats. Life vests should be put on before embarking in the boats and removed when fully disembarked. The number of volunteers must never exceed the maximum capacity. All participants must enter and exit the boats one at a time.
Sunburns	H	M	All participants should wear sun block and hats if they have sensitive skin.
Dehydration	H	M	All participants should bring 1-2 litres of drinking water on the aquatic transects.
Injury from engine	L	M	Participants should not enter the engine area of the boat.
Cold	H	L	All participants ensure their clothing is warm enough when undertaking early morning point counts. All participants should bring rain gear with them on the aquatic transects.

Key: H=high; M=medium; L=low

2011 – G3 Road travel

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
RTA or other vehicle related incident	L	H	All buses and 4x4 vehicles are checked before use for meeting health and safety standards, and have drivers with a full driving license. Drivers to be assessed and selected as suitable by DBCAM/Island Quest staff prior to expedition, and to sign a code of conduct regarding suitable driving standards. All vehicles are subject to pre-departure checks for each journey. Each vehicle on a road journey to have a staff member and mobile phone, the necessary equipment for changing the wheels and to carry a torch and sufficient water for the journey in case of breakdown.
Pedestrian accident	L	H	The volunteers will only be near public highways after the first and last hours of their expedition after the start in Mahajanga, but will be briefed on road safety on arrival in case the vehicles break down during this period and they have to get out.
Control measures not implemented	M	M	Senior coordinator to be responsible for auditing the control measures and camp procedures on a fortnightly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site.

Key: H=high; M=medium; L=low

2011 – G4 Medical support

Risk	Likelihood of occurrence during expedition	Severity of occurrence	Control Measures
Stomach upsets	M	M	Ensure that personal hygiene issues are emphasised in briefings to avoid spread of infectious diseases amongst a group of people living in close proximity. Ensure that all drinking water is treated with iodine prior to use. Ensure that good standards of hygiene are adhered to in the kitchen, including the cooks washing their hands before preparing food, and that any salad or raw vegetables are washed in treated water prior to serving.
Malaria	L	M	Ensure that all volunteers are advised to visit their local travel clinic or physician prior to travel in order to obtain the correct Malaria prophylaxis. Ensure all volunteers are advised to cover exposed skin during the evenings to avoid bites, and that the fly sheet on the tents is always kept zipped up.
Heat stroke and sunburn	M	M	Ensure that all volunteers and staff are aware of the need to drink adequate water each day, and of the symptoms and treatment for dehydration. All volunteers and staff to be told of significant risk of sunburn and heat exhaustion from the survey work, and to have come adequately prepared with high factor sun block for the duration of their stay.
Wounds	M	M	Ensure all cuts, however insignificant, are cleaned with clean water and antiseptic is applied. All volunteers and staff to be made aware that there is a greatly increased risk of secondary infections. Assess daily and if the wound appears to becoming infected then report it to the medical staff.
Lack of medical advice	M	M	Detailed medical questionnaires to be completed by all staff and volunteers before joining the expeditions. These questionnaires to be reviewed by an Expedition Medic prior to the start of the expeditions and any staff or volunteers that appear to have medical conditions that might affect their ability to participate in the expeditions, informed so that additional medical advice can be obtained. Medical advice and hospital facilities are within 4 hours of the site. There are evacuation plans for different levels of emergency (Emergency, high, medium) in position at each site: these procedures will have been tested by the staff prior to the start of the season.

Key: H=high; M=medium; L=low

No feedback system to reduce accidents and illnesses	M	M	The local Op Wall site Co-ordinator to record the number of accidents, near misses and illnesses at their camp into 7 categories of seriousness and to hold bi-monthly meetings to discuss how these incidents could be further reduced.
Control measures not implemented	M	M	Senior coordinator to be responsible for auditing the control measures and camp procedures on a fortnightly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site.

2011 – G5 Diving

Risk	Likelihood of occurrence	Severity of occurrence	Control Measures
Injuries during kitting up process.	L	M	All volunteers are instructed to lay tanks down onto dive benches at all times when they are not holding the tank and to make sure that they turn on cylinder valves slowly and face the gauge away from them.
Falling out of the dive boat whilst launching, or travelling to dive sites	L	H	Boat launches are in shallow water with very little surf or current, and diving and snorkeling takes place in an area with similarly low levels of agitation. All volunteers are instructed to sit evenly on each side of the boat and to stay seated until they reach the dive site.
Decompression sickness	L	H	Dives are limited to 2 per day with a minimum 3 hour surface interval between dives, a, maximum depth 18m. Maximum dive time of 50 minutes with a 5 minute stop at 5m before surfacing are mandatory. All boats carry oxygen supplies and there are sufficient oxygen supplies at the camp to continue treating the patient throughout the period of the evacuation to the recompression chamber in Richards Bay. There is a qualified staff member who can administer oxygen and evacuation plans are in position for getting the patient to recompression facilities.

Key: H=high; M=medium; L=low

Being hit by boat on surfacing	L	H	Surface slowly with arm raised and slowly turning to check for hazards. Very few boats use the area where diving will take place.
Being left in water at the end of a dive	L	H	Ensure all dive leaders operate the Roster system for each dive.
Becoming separated from buddy	L	H	Ensure that all staff and volunteers are trained in the lost diver procedure.
Being carried away by currents or to greater depths by down currents	L	H	Ensure that risk assessments are completed for each dive site and used by all staff in dive planning. Ensure that the Dive Leader checks the conditions on the day before the group enter the water.
Barotraumas	L	H	All staff and volunteers informed of risk of barotraumas when diving and the safe equalisation procedure, which includes aborting the dive if equalisation is not possible. All staff and volunteers to be informed that they should not dive with an upper respiratory tract infection. All staff and volunteers to be informed of the dangers of using decongestants when diving.
Coming into contact with dangerous sea animals.	L	M	Before any students are allowed to enter the water they have a lecture on possible dangerous organisms they might encounter and how to reduce the risks from them. All volunteers swimming, snorkeling or paddling must wear foot protection. Wetsuits are also to be used to protect against stinging nematocysts. If dangerous species are noted in the area, all diving and snorkeling to be aborted. All volunteers and staff to be told never to touch the reef when diving or snorkeling.
Shark Attack	L	H	The majority of sharks encountered will be small reef sharks and harmless although bull and tiger sharks may be in the area. Any sightings of these large dangerous sharks result in all water activities being suspended until the shark has moved.
Control measures not implemented	M	M	Senior coordinator to be responsible for auditing the control measures and camp procedures on a fortnightly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site.

Key: H=high; M=medium; L=low

2011 – G6 Snorkeling and swimming

Risk	Likelihood of occurrence	Severity of occurrence	Control Measures
Being hit by a boat whilst snorkeling	L	H	A Dive Master with an SMB must accompany all snorkellers. All snorkellers to be required to wear inflated BCD's whilst snorkelling. All snorkellers and swimmers are instructed to stop every 2 minutes and check around them for any nearby boats
Being swept out to sea by offshore currents	L	H	If the currents are strong the Dive Master to bring the group back to shore. No swimming unless accompanied by a Dive Master to be allowed.
Being stung when wading at the start and end of the snorkel.	M	M	All volunteers are told that they should wear full foot fins or boots and fins with straps and enter and exit the water walking backwards when snorkelling. If swimming all volunteers are advised to wear footwear at all times.
Being stung when swimming or snorkelling or badly sunburned	M	M	All staff and volunteers are advised to wear wetsuit or other cover up to protect against stings and excessive sun. All volunteers have to complete training in Dangerous Marine Organisms before swimming or snorkelling and instructed never to touch any part of the reef.
Control measures not implemented	M	M	Senior coordinator to be responsible for auditing the control measures and camp procedures on a fortnightly basis (see relevant audit form). These audit reports including details of non-compliances and corrective measures to be available for inspection on site.