



Operation  
Wallacea

Conservation research through academic partnerships

Risk Assessment and Management  
In Honduras 2011

2011 - 01	San Pedro Sula .....	2
2011 - 02	Coach transfers.....	2
2011 - 03	Transfers from Cofradia to Base Camp.....	3
2011 - 04	Cofradia and surveys at Manacal .....	4
2011 - 05	Base Camp and field surveys.....	5
2011 - 06	Eastern field camps and survey work .....	6
2011 - 07	Buenos Aires, Las Piñitas and village based survey work .....	7
2011 - 08	Santo Tomas and western camps.....	8
2011 - 09	Trekking and wildlife interactions .....	9
2011 - 10	Camp Building and Maintenance .....	10
2011 - 11	Canopy work.....	11
2011 - 12	Jungle Training.....	12
2011 - 13	Night trekking and survey work .....	13
2011 - 14	Rio Esteban and boat transfers to Cayo Menor .....	14
2011 - 15	Cayo Menor and dive sites.....	15
2011 - 16	Chachahuate and East End.....	17
2011 - 17	Utila and dive sites.....	18
2011 - 18	Diving and snorkelling.....	20
2011 - 19	Hurricane and severe weather risks .....	21

**2011 - 01 San Pedro Sula**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Theft	L	L	Ensure all participants are met at the airport by Maya Temple Tours and briefed by their staff on how to reduce the risk of being pickpocketed.
Uneven pavements	M	M	The sidewalks in San Pedro Sula are uneven and have examples of open drops into drainage channels or tunnels. All participants to be briefed on the risks of walking around the city and to be instructed to take torches if walking after dark.
Being injured from traffic	L	H	Ensure all staff and volunteers are told of the dangers of the lack of concern by vehicle users.
Mugging or violence	L	H	All participants to be instructed not to walk in the more remote parts of the town after dark and not to frequent known trouble spots such as the snooker halls.
Stomach problems	L	M	Ensure only bottled water is drunk. Do not clean teeth in tap water.

**2011 - 02 Coach transfers**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
RTA or other vehicle related incident	L	H	All drivers used by OpWall for San Pedro Sula to the marine camps to be provided by Maya Temple Tours and they are responsible for ensuring that all drivers are told to drive slowly and carefully at all times and that there is an English speaking staff member on board each coach. All vehicles to be vetted for mechanical errors, ensuring that the vehicle is suitable for the journey and in good working order. Each bus to have a mobile phone and radio, the necessary equipment for changing the wheels and to carry a torch and sufficient water for the journey in case of breakdown. ESAC are responsible for all the transfers between the eastern and western camps and implement the same measures.
Vehicles attacked	L	H	Not likely as these incidents tend to be experienced by non-tourists as the Honduran government is extremely intolerant of attacks on tourists. All transport between the airport, La Ceiba, Cofradia and the western camps is on main roads and during daylight. The transfers from Rio Esteban to La Ceiba are also done in daylight. There is always an OpWall staff member on each coach and they have phone contact with emergency numbers. Departure time, progress reports and ETA to be phoned through to the OpWall Transfers Coordinator during all the transfers.

**2011 - 03 Transfers from Cofradia to Base Camp**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
RTA or other vehicle related incident	L	H	All drivers used by ESAC to be vetted for sobriety and relevant experience and told to drive slowly and carefully at all times. All vehicles to be vetted for mechanical errors, ensuring that the vehicle is suitable for the journey and in good working order. All passengers to sit down inside the back of the vehicle and not sit on the edge or stand whilst the vehicle is moving. Journeys up and down the mountain should be avoided where possible at night. Each vehicle to have a mobile phone and radio, the necessary equipment for changing the wheels and to carry a torch and sufficient water for the journey in case of breakdown.
Passengers becoming sunburned or soaked during the journey	M	M	All passengers sitting outside in the back of the trucks to be told to use sunblock. When raining all passengers to be given tarpaulin covers or umbrellas
Vehicles attacked	L	H	A guard to travel with all volunteer movements on mountain trails to the eastern side of the Park. A cellphone to be carried at all times and the OpWall Transfers Coordinator to be informed of start times, progress and estimated arrival times throughout the transfers.

**2011 - 04 Cofradia and surveys at Manacal**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Students attacked at night in Cofradia house	L	H	An OpWall staff member is based in the student house and the house is locked at night. There is radio contact between the Cofradia house and Base Camp
Violent attack in Cofradia	L	H	Generally Cofradia is a safe place to walk around but there are places to avoid at night particularly the pool halls and discos
Traffic accident	M	H	Participants to be told of dangers from the traffic when walking around Cofradia. Only the approved OpWall driver to be used for transporting volunteers to Manacal forest
Falling when walking around Cofradia	L	M	Cofradia has a number of open drops to drainage pipes and channels. The town is badly lit at night so care needs to be taken when walking around and a torch carried at night
Poor hygiene conditions in the Cofradia house	M	L	A cook is employed to ensure hygiene standards in the kitchen and bathroom areas are maintained. The OpWall staff member is responsible for supervising the food preparation and disposal
Snake bite or attack in Manacal forest	L	H	OpWall staff member to be in forest when volunteers are on site. OpWall staff member to carry cellphone and each group to have walkie talkie radios so they communicate between groups in the forest. No night time surveys to be conducted.
Mosquito bites leading to malaria or dengue fever	H	M	All participants to be instructed to cover up in the early morning and late afternoons, sleep under mosquito nets and wear DEET based insect repellent. In addition participants to take malaria prophylactic

**2011 - 05 Base Camp and field surveys**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Medical problem for volunteer or staff member	M	M	Medical staff to be present at Base Camp at all times. Medical staff to interview all incoming volunteers and staff and record on standard medical record forms previous medical conditions and any treatment given on site. Separate First Aid room with bed for unwell patients to be isolated for recovery. Adequate medical supplies for stabilising any patients needing to be transferred to hospital or treating minor conditions on site
Theft	L	L	A lockable safe is on site for valuables to be stored. All volunteers to be instructed to not leave valuables lying around.
Need for emergency evacuation	L	H	4 wheel drive vehicle permanently stationed at Base Camp and ready for emergency evacuation of volunteers and staff by driving to the CEMESA hospital in San Pedro Sula (2 hours). There is email, and Skype at Base camp so that additional medical advice can be obtained and evacuations co-ordinated.
Lack of hygiene increasing risk of disease	L	M	There are biodigester toilets for solid waste. Urinals are separate in the forest. Toilet paper waste from the urinals needs to be burnt repeatedly each day. Ensure kitchen is cleaned after each meal and that food categories (e.g. meats, vegetables etc) are prepared separately. Clean all tables with bleach at least once a day. Change the dishwashing bucket water frequently and ensure there are numerous buckets with disinfectant and water around the site for volunteers and staff to wash hands.
Fire	L	VH	Ensure there are fire extinguishers in the main building and buckets with sand/water distributed around the site. Ensure that staff are trained in the fire and evacuation to a safe point procedure No smoking to be allowed in any building or tent
Volunteer becoming lost in the forest and unable to find the camp	L	H	No volunteer or staff member to leave base camp or trek without a guide, radio, sufficient water and First Aid kit. All groups leaving camp must sign out on a whiteboard system with details of where they are intending to go and estimated time of return. If the group does not return on time then the Base Camp Manager to make contact with the group by radio and if this is not possible to organise a search and rescue team.
Attack from local people	L	H	Camp guards to be hired to guard the camp 24 hours a day. Local community to be informed of financial benefits accruing to the community so there is a strong element of support for the expeditions.

## 2011 - 06 Eastern field camps and survey work

Risk	Likelihood	Severity	Control Measures
Volunteers poorly equipped or with a lack of fitness to survive the forest conditions	L	M	Staff to fully brief volunteers prior to the start of the walk and check they have the appropriate equipment with them. Staff to watch the new volunteers carefully for signs of exhaustion and to adjust the distances covered according to the fitness levels
Heavy rain causes river to rise, landslides or tree fall	L	H	Experienced expedition camp manager to select the site to minimise risk from flooding, landslides and tree fall. In exceptionally heavy rain conditions the Camp Manager to organise a 24 hour look out system
Medical problem for volunteer or staff member	M	M	Medical staff to be present at all times. Medical staff to ensure that medical record forms completed at Base Camp follow volunteers and staff going to Cantiles. Adequate medical supplies available at camp. Adequate medical supplies
Need for emergency evacuation	L	H	A stretcher to be kept at the camp and staff to have practiced evacuation of a patient who has to be immobilised and carried out on a stretcher back to Base Camp. Scheduled radio comms times are agreed. The UTM co-ordinates of the winch hole nearest to the camp to be given to the Honduras Military who would organise any helicopter winch evacuations needed.
Lack of hygiene increasing risk of disease	L	M	Ensure at the camp design stage that all river washing is done downstream of the kitchen and that the toilets are sufficiently far from the camp and the river with no possibility of effluent contaminating either. Trench systems are used for solid waste with separate bags for toilet paper which is burnt twice daily. There are separate urinals and again the toilet paper is burnt twice daily. Change the dishwashing bucket water frequently and ensure there are numerous buckets with disinfectant and water around the site for volunteers and staff to wash hands
Fire	L	H	Ensure that staff are trained in the fire and evacuation to a safe point procedure No smoking to be allowed in any tent or hammock
Electric shocks	L	H	Ensure the generator is checked and in good working order before the season starts
Volunteer becoming lost in the forest and unable to find the camp	L	H	No volunteer or staff member to leave the camp or trek without a guide, radio, sufficient water and First Aid kit. All groups leaving camp must sign out on a whiteboard system with details of where they are intending to go and estimated time of return. If the group does not return on time then the Camp Manager to make contact with the group by radio and if this is not possible to organise a search and rescue team after informing Base Camp by radio. Expedition members to be provided with training on what to do if they do get lost and how to avoid separations.
Falling down steep slopes or tripping on slippery surfaces	M	H	Regular trails with steep slopes to be fitted with ropes. Handrails are installed around the river shower and washing areas where needed. All river crossings to be done with trained staff leading and where necessary the use of ropes
Attack from poachers	L	VH	Camp guards to be hired to guard the camp 24 hours a day

**2011 - 07 Buenos Aires, Las Piñitas and village based survey work**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Medical problem for volunteer or staff member	M	M	Medical staff to be present at Base Camp at all times (30 minutes by standby vehicle).
Need for emergency evacuation	L	H	4 wheel drive vehicle at to be used for evacuation by driving to the CEMESA hospital in San Pedro Sula (2 hours).
Lack of hygiene increasing risk of disease	L	M	Ensure all local houses where volunteers or staff will be staying are inspected and that there are adequate toilet and washing facilities. Ensure that the Tucan restaurant is maintaining a high standard of cleanliness in their kitchens and separate food preparation boards for different food types
Fire	L	VH	Ensure that what to do in the event of a fire is explained to each volunteer or staff member as they are booked into the local houses in which they will be staying. No smoking to be allowed in any building or local house.
Being attacked overnight in the local houses or having items stolen from the house	L	H	All volunteers in Buenos Aires to stay in houses with at least 2 volunteers per house and with a staff member sleeping close by. The income obtained from these homestays is substantial and the homeowners themselves are very concerned about ensuring the volunteers and their belongings are safe otherwise the house and village will not be used again. The lodge in Las Piñitas is fenced and a guard will be on duty throughout the day and night to help prevent unwanted intrusions
Attack from local people	VL	H	Local communities are very friendly and welcoming and are fully aware of financial benefits accruing to the community. No social science survey teams to operate without an OpWall staff member and a guard. ESAC, the partners running the Honduras surveys also vet all villages in advance that volunteers are likely to visit.
Volunteer becoming lost in the forest and unable to find the camp	L	H	No volunteer or staff member to leave the villages or trek without a guide, radio, sufficient water and First Aid kit. All groups leaving camp must sign out on a whiteboard system with details of where they are intending to go and estimated time of return. If the group does not return on time then the Camp Manager to make contact with the group by radio and if this is not possible to organise a search and rescue team. Expedition members to be provided with training on what to do if they do get lost and how to avoid separations.

2011 - 08 Santo Tomas and western camps

Risk	Likelihood	Severity	Control Measures
Medical problem for volunteer or staff member	M	M	Medical staff to be present at Santo Tomas or in Danto or Cortecito camps at all times when teams are present. Sufficient medical supplies to treat most minor conditions on site or to stabilise the patient if evacuation is required.
Need for emergency evacuation	L	H	There is an emergency vehicle on standby at Santo Tomas throughout the expedition that can get a patient to hospital in San Pedro Sula in 2 hours. In an emergency Santo Tomas radio to the telephone manned 24/7 in San Carlos at the base of the mountains who would then telephone Buenos Aires to initiate comms with Base camp. Staff from both Base Camp and Santo Tomas would then go to their sites with good telephone communication and remain there throughout the emergency.
Lack of hygiene increasing risk of disease	L	M	The Camp Manager to ensure the kitchen is kept clean. Ensure there are numerous buckets with disinfectant and water around the site for volunteers and staff to wash hands
Volunteer becoming lost in the forest and unable to find the camp	L	H	No volunteer or staff member to leave the camp or trek without a guide, radio, sufficient water and First Aid kit. All groups leaving camp must sign out on a whiteboard system with details of where they are intending to go and estimated time of return. If the group does not return on time then the Santo Tomas Camp Manager to make contact with the group by radio and if this is not possible to organise a search and rescue team. Expedition members to be provided with training on what to do if they do get lost and how to avoid separations. Adequate navigational aids to be used and carried at all times.
Falling down steep slopes or tripping on slippery surfaces	M	M	Regular trails with steep slopes to be fitted with ropes All river crossings to be done with trained staff leading and where necessary the use of ropes

2011 - 09    **Trekking and wildlife interactions**

Risk	Likelihood	Severity	Control Measures
A fall resulting in serious bleeding or a bone fracture	L	H	Ensuring that all staff and volunteers have footwear with good grip and ankle support. Ensure volunteers are shown how to walk with stick as an aid when descending and ascending slopes. Ensuring that ropes are used when descending, climbing or traversing steep inclines. Ensuring that a Medical Officer with a mobile First Aid kit is in close attendance and in radio or telephone contact with all groups and with the main camps so that additional help can be summoned quickly. Ensuring that an evacuation plan is in position for each location in which the staff and volunteers will be working.
Dehydration leading to death	L	VH	Ensuring that all staff and volunteers are informed that this is a significant risk and that they drink 3 litres of water per day. Ensuring that all trek members carry sufficient water supplies for the duration of the trek. Ensuring that the Trek Leader stops every 30 minutes for the group to rest and checks for signs of dehydration or exhaustion.
Snake bite	VL	H	The main threat comes from pit vipers ( <i>Fer de Lance Bothrops asper</i> ), Godmans Viper ( <i>Cerrophidion godmani</i> ), Emerald Palm Viper ( <i>Bothriechis marchi</i> ). The Fer de Lance is the most aggressive of these snakes and is found at the lower sites with Godmans being more common at higher altitudes. There is a herpetologist at each camp and they are instructed to remove all venomous snakes encountered close to the camp or on the trails. If a snake is encountered then all must be treated as venomous and not approached. No volunteer is allowed to handle a snake and herpetologists are not allowed to bring venomous species back to camp to show volunteers. Volunteers must wear boots/wellingtons, long trousers and long-sleeved shirts when trekking through the forest. Note no-one in 7 years of working in Cusuco with large groups of volunteers has ever been bitten whilst trekking. The only venomous snake bite incident we have had was a herpetologist handling a Godmans Pit Viper. If a snake bite were to happen the response is to apply a pressure bandage, immobilise the patient and evacuate them to hospital. Anti-venom is held at Base Camp in the fridge and in San Carlos at the base of the mountains on the western side of the Park and could be with the patient in <2 hours. Adrenaline to counteract any anaphylactic shock issues is held at each camp. Evacuation routes including use of helicopters and winches have been organised for each site so that the patient can be in hospital in a short period of time and the anti-venom administered under hospital conditions

Drowning or being swept away	L	VH	The Trek Leader to lead any river crossings and to judge whether it is safe for the group to cross either separately or in the case of higher flows using ropes..
Large cat or tapir attack	L	H	All volunteers and staff to travel in small groups in the forest. The chances of this type of incident is extremely low
Small mammal or bat bite	L	H	Only volunteers and staff who have received rabies injections to be allowed to handle bats and small mammals. Any volunteer or staff member bitten by a bat to be given booster rabies injections
Bees and ants	M	M	Trek leaders to identify any major hives and ensure trails avoid these areas
Scorpions	L	M	Ensure all volunteers and staff check their shoes before putting them on.
Stinging plants	M	M	Ensure all volunteers and staff are informed not to touch any plants

### 2011- 10 Camp Building and Maintenance

Risk	Likelihood	Severity	Control Measures
Inappropriate site selection and planning	L	H	Ensuring that only the Forest Operations Manager is allowed to approve site selection, which has to be free of the risk of flooding, becoming stranded on the far side of a swollen river and with a sufficiently rapid evacuation route available. Sites where radio or telephone contact cannot be maintained with base camps, may not be used. Toilet facilities to be placed at least 30m away from the river and cooking facilities. Waste disposal carried out according to the procedures. Biodegradable waste to be buried to a depth of not less than 0.3m and 30m away from the river and non biodegradable waste to be collected and removed from the forest. Ensure no dead trees in the vicinity of the base camp or any trees that look unstable and may fall on the camp during storm events.
Serious cuts from machete use	L	H	Volunteers only allowed to use machete after training by staff and must always cut away from the body. Expedition medical kit maintained at the base camp and mobile kits carried with each group leader.
Burns from cooking or fires	L	M	Fuel stored away from fire. Care taken when moving pans of boiling oil or water. No fire left unattended.
Stomach problems from poor sanitation	M	M	In field camps boil all water for at least 10 minutes, whilst at Base Camp a filtration system has been installed. Ensure all volunteers and staff adhere to strict personal hygiene.

**2011 - 11 Canopy work**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Equipment failure	L	H	Canopy Access Limited staff audit all equipment prior to shipping to country, and inspect each piece prior to initial setup and before assigning equipment to students.
Students poorly equipped to climb trees	L	M	Students are not able to climb until they have completed the training course, and only then under the supervision of the Canopy instructors. Students failing to complete the training course and achieve an acceptable level of proficiency with the equipment as determined by the Canopy instructors will not be allowed to climb.
Climbing line failure	L	H	Lines are only installed by Canopy Access Ltd. staff. Top anchors and lines are inspected weekly by canopy staff. All students climb on two lines, a primary and secondary line, and fall arrest devices are installed, and students taught how to use them, on the secondary line in the unlikely event of a primary line failure.
Panic Attack	L	M	All trees are rigged with two complete sets of lines, and an instructor is able to ascend the same tree and assist a student returning to the ground. Canopy Instructors received extensive training in emergency recovery as part of their BCAP, ACAP and ICAP certifications.
Injury while hiking to climbing site	L	M	All students must have a head torch, in addition to their regular trekking kit, as the canopy access dawn/dusk experience will involve a trek in the dark at least one way. Trees rigged for climbing are all along well defined/travelled paths to reduce risk of injury from roots, logs, holes, etc. Canopy Access instructors lead students and have had extensive first aid training and carry a special canopy access field med kit, in addition to a portable radio to communicate with camp and medical personnel.
Animal bite or attack while hiking to climbing site.	L	H	Canopy Access instructors lead students and have had extensive first aid training and carry a special canopy access field med kit, in addition to a portable radio to communicate with camp and medical personnel.

## 2011 - 12 Jungle Training

Risk	Likelihood	Severity	Control Measures
Volunteers poorly equipped or with a lack of fitness to survive the forest conditions	L	M	Staff to fully brief volunteers prior to the start of the course and check they have the appropriate equipment with them. Staff to watch the new volunteers carefully for signs of exhaustion and to adjust the distances covered according to the fitness levels.
Heavy rain causes river to rise, landslides or tree fall with consequent threat to volunteers and staff	L	M	Experienced expedition camp manager to select the temporary camps to be used to minimise risk from flooding, landslides and treefall. In exceptionally heavy rain conditions the Camp Manager to organise a 24 hour look out system
Medical problem for volunteer or staff member	M	M	Medical staff to be present on the course at all times
Need for emergency evacuation	L	H	Radio contact to be maintained with Base Camp, so that a stretcher and evacuation can be arranged if required. The UTM co-ordinates of the winch hole sites near to each of the temporary camps used on the course to be given to the US evacuation team
Volunteer becoming lost in the forest and unable to find the camp	L	H	No volunteer or staff member to leave the course and trek without a guide, radio, sufficient water and First Aid kit. Expedition members to be provided with training on what to do if they do get lost and how to avoid separations. Adequate navigational aids to be used and carried at all times.
River crossings	M	M	All river crossings to be done with trained staff leading and where necessary the use of ropes
Attack from poachers	L	VH	Guards to accompany the course

**2011 - 13 Night trekking and survey work**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Not being able to see resulting in a fall	L	L	Ensuring all staff and volunteers on night walks have a head torch or hand torch Ensuring that staff members give a briefing including night-trekking techniques prior to the trek group's departure. Ensure that all safety precautions are taken in line with the control measures for trekking
Bites and stings	L	M	Ensuring that all staff and volunteers are advised to use their torches to identify any branches or parts of plants which could cause a danger to themselves or others in the trek group. Ensuring that all staff and volunteers are told not to approach any snakes or try to pick them up. Ensuring that the Medical officer is trained in the snake bite procedures. Ensuring that the Medical Officer carries antihistamines and that treatment is available for anaphylactic shock. Ensuring that the groups of volunteers remain together at all times in the forest to dissuade attacks by any large cats or other animals. Ensuring all night time work is minimised as far as possible and a herpetologist trained in venomous snake handling should accompany all groups working on transects more than a few metres from the main camp
Drowning or being swept away	L	VH	The Trek Leader to lead any river crossings and to judge whether it is safe for the group to cross either separately or in the case of higher flows using ropes. Ensuring that groups keep in close contact with each group member.

**2011 - 14 Rio Esteban and boat transfers to Cayo Menor**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Travel to Nueva Armenia. The road between Jutiapa and Rio Esteban sometimes is impassable due to rain and flooding.	L	M	In these cases then the groups will have to go to Cayos Cochinos via La Ceiba with the Foundation boats or from Nueva Armenia.
Traffic accident	L	M	There is little traffic in Rio Esteban so no danger exists from cars.
Mugging and general violence	L	H	There have not been any recent reports of muggings or violence. The Garifuna tend to enjoy interaction with people from different cultures and are very welcoming.
Mosquitoes	M	H	Use repellent when possible. Sleeping quarters will have mosquito nets and burn mosquito coils
General health problems	M	M	There is a large hospital located in Belfate about 10 kilometres from Rio Esteban should a medical emergency arise.
Stomach problems due to food	M	M	Food preparation will be handled with the utmost care. Salad and vegetables will be washed in purified water to prevent food-related health problems.
Stomach problems due to water	M	M	Ensure that only bottled/treated water be used.
Boat capsizing on way to Cayo Menor	L	H	All passengers on the boats to wear life jackets and the boats to travel in convoy. Each boat to have a radio/cell phone so they can report progress both to staff at Nueva Armenia and Cayo Menor. The Rio Esteban Manager to determine whether the conditions are OK for crossing. If not then the groups will need to remain in Rio Esteban until conditions improve.
Boat engine breaking down	L	M	The boats travel in convoy so if one engine did fail there would be help at hand

2011 - 15 Cayo Menor and dive sites

Risk	Likelihood	Severity	Control Measures
Slipping down restaurant stairs and/or slipping on stairs at individual cabins.	L	M	Make sure all staff and volunteers are advised to be careful when going up and down stairs to the restaurant and to their own cabins. They should always hold on to the handrail especially when wet.
Malaria	M	M	Ensure that all staff and volunteers are told in advance to bring adequate supplies of malaria medication and that they start taking them at least one week before joining the expedition. All staff and volunteers to be informed that anti-malaria medication is only partially effective against malaria and that the first line of defence should be to cover up from about 5pm onwards. Sand flies are a constant nuisance as well. Always wear insect repellent. All buildings and tents on Cayos Cochinos have mosquito netting fitted over all windows and the rooms should be sprayed regularly with insecticide.
Scorpions or snakes	L	M	Staff and volunteers to be advised to knock out shoes before putting them on to check for scorpions. A three month survey of Cayo Menor by a herpetologist has revealed no venomous snakes or other wildlife.
Being hit by falling coconuts	L	H	Most coconut trees on Cayos Cochinos and all those around the research base have been killed by disease, and thus have no coconuts
Fire in the main base or at one of the cabins or in the tents	L	H	Ensure a no smoking policy is strictly enforced in the lecture rooms, restaurant, dry lab areas and inside any of the cabins or tents. Ensure that there are adequate fire extinguishers in the main base. Ensure that flammable materials are stored away from the main base.
Injury or danger encountered when walking around the island.	L	M	Ensure that all staff and volunteers are informed that if they wish to walk around the island, they must first get advice from an experienced member of staff regarding the Risks etc. They must also report their proposed schedule, names of the group, where they are going, times of departure and expected return time to the Dive Operations Centre. Ensure that all group members take plenty of water and sunblock to prevent dehydration and sunstroke.
Dive sites not being appropriate for in-water activities	L	H	Experienced dive staff check each of the confined water dive sites to ensure there is no current, appropriate bottom composition, and a shallow drop-off. Maximum depth is to be less than 3m for confined water dive sites. Each of the Open Water sites is visited pre-season to ensure suitable depth, and that the topography has not been altered in any way that would compromise the safety of the dive site. Each site is checked pre-season and pre-dive for its suitability in terms of depth, topography, salient marine organisms, current, etc. Any site that

			represents a risk to students is taken off the list of suitable dive sites until it can be reviewed by senior dive staff.
Visiting other islands	L	L	All visits to be arranged with at least 2 people and must be with an Op Wall staff member.
Excessive drinking or inappropriate behaviour	L	M	Beer is restricted to 2 bottles per day for anyone of legal age on the island and no spirits are allowed. There is a party once a week but the volunteers will be supervised to prevent any excessive drinking. Anyone who has been drinking will be banned from diving the following day.
Bite whilst handling boas or ctenosaurs	L	M	The bite is not venomous, but will need to be treated with iodine. There are no venomous snakes on Cayo Menor.
Insufficient communication facilities	L	H	The key to effective emergency planning is to ensure that there is adequate communications between the research base and rescue facilities. On Cayo Menor there is a VHF radio system which can communicate with many of the key staff on the island, each of the speed boats and with other mainland bases such as the La Ceiba office of HCRF. In addition there are always two cell phones on Cayo Menor which can communicate with the mainland and a landline in the HCRF offices. There are always at least 4 speedboats with multiple engines available at the Cayo Menor research base which can evacuate injured staff or volunteers to Utila Island (for decompression sickness) in approximately 45 minutes or the mainland (for non diving incidents) in about 1 hour.
Injury or illness requiring treatment on Cayo Menor	M	M	A qualified Medical Officer will be based on Cayo Menor at all times during the expeditions. An extensive First Aid kit is available on the island to treat most minor conditions and to provide life support facilities (e.g. intravenous fluid supplies, oxygen, pain relief etc) whilst more seriously injured patients are transported to hospital. A 24 hour emergency telephone line with English speaking doctors is available through the insurance bought by Operation Wallacea volunteers and this number can be contacted by the cell phones
Diver with decompression sickness requiring a recompression chamber	L	VH	A recompression chamber is available on Utila Island a 45 minute speed boat ride from Cayo Menor. Sufficient oxygen supplies are available to cover the time from the patient first showing signs of decompression sickness to arriving at the recompression chamber in Utila. These supplies include small bottles of oxygen on each of the dive boats and trained personnel on each dive boat in the administration of oxygen. On return to Cayo Menor there is then a large bottle of oxygen with sufficient supplies to complete the journey to Utila. There are numerous speed boats and spare engines on Cayo Menor to ensure the patient can be evacuated at any time of day or night. The 24 hour contact numbers are available on Cayo Menor for the recompression chamber on Utila and the hyperbaric medical staff along with the radio contact frequencies from the VHF radio system on Cayo Menor

Injury or illness requiring treatment in La Ceiba	L	M	The D'Antoni hospital in La Ceiba is capable of treating most fractures and other serious but non life threatening injuries. Evacuation to the D'Antoni hospital would be by speed boat taking approximately 1 hour, directly from Cayo Menor to La Ceiba accompanied by the Medical Officer.
Injury or illness requiring treatment outside Honduras	L	VH	Helicopters are available 24 hours through the OpWall agreement with the Honduran and US Airforces which can be used to evacuate seriously injured patients.
Swimming	L	L	Swimming is only allowed inside the buoyed off areas in front of the research centre All swimming has to be done with at least two people in the water. Foot protection should be worn when wading into the water. No swimming is allowed after dark.

## 2011 - 16 Chachahuate and East End

Risk	Likelihood	Severity	Control Measures
Boat capsizing	L	M	Travel to Chachahuate or East End is only possible by Foundation boat from the research station and these will only make the crossing if the conditions are safe. Any boats leading a group to Chachahuate will have a radio and will be in radio contact with the research station on Cayo Menor. Life Jackets will be provided
Mugging and general violence	L	H	Violence is highly unlikely since the Garifuna communities are excited to receive tourists and are very welcoming. The students will always be accompanied by an Operation Wallacea staff member.
Mosquitoes (Malaria & Dengue)	M	H	Students are recommended to take anti-malarials and are encouraged to cover up and use bug spray whenever possible.
Stomach problems	M	M	OpWall staff member to check the food preparation and storage areas. Ensure that only bottled/treated water be used.

**2011 - 17 Utila and dive sites**

<b>Risk</b>	<b>Likelihood</b>	<b>Severity</b>	<b>Control Measures</b>
Falling over on the ferry	L	H	All volunteers will be accompanied on the ferry journeys by an appointed staff member who will brief the group on safety tips such as minimising movement around the boat once it is underway
Dive sites not being appropriate for in-water activities	L	VH	Experienced dive staff check each of the confined water dive sites to ensure there is no current, appropriate bottom composition, and a shallow drop-off. Confined water dives are done in the pool. Each dive site is checked pre-season, and pre dive, for dangers such as strong current and dangerous marine organisms, and any site that represents a high risk to Open Water Students is taken off the list of suitable dive sites (and consequently not used). Each site is checked pre-season and pre-dive for its suitability in terms of depth, topography, salient marine organisms, current, etc. Any site that represents a risk to students is taken off the list of suitable dive sites until it can be reviewed by senior dive staff.
Excessive drinking or inappropriate behaviour	L	M	Beer is restricted to 2 bottles per day for anyone of legal age at Coral View. However, alcohol is available in town so volunteers to be warned of dangers of drinking if they are going into town and particularly of then diving the following day. Anyone who has been drinking will be banned from diving the following day.
Going into town	L	M	The Camp Manager has to be informed of any groups leaving site and when they are due to return. All trips off site should be in groups of at least 2 people. There is not a high level of mugging or theft on Utila. However, all visits to the town should be made in groups of at least 2 people together.
Kayaking	L	M	The Camp Manager has to be informed of any groups intending to kayak. All kayakers need to wear life jackets and must be in a group with at least 2 kayaks, one of which is led by an experienced kayaker.
Malaria	M	M	Ensure that all staff and volunteers are told in advance to bring adequate supplies of malaria medication and that they start taking them at least one week before joining the expedition. All staff and volunteers to be informed that anti malaria medication is only partially effective against malaria and that the first line of defence should be to cover up from about 5pm onwards. Sand flies are a constant nuisance as well. Always wear insect repellent. All rooms have mosquito netting fitted over all windows and the rooms should be sprayed regularly with insecticide.

Insufficient communication facilities	L	H	The key to effective emergency planning is to ensure that there is adequate communications between the research base and rescue facilities. Each of the dive boats has a radio which communicates back to the Dive Operations Centre. From here there are landlines and cell phones coverage available so that the Utila based doctor can be contacted. There is twice daily ferry from Utila to the mainland (1.5 hours) that can be used to evacuate patients if needed to the D'Antoni hospital in La Ceiba. There is recompression chamber on Utila. If the patient requires immediate evacuation the US Airforce Base agreement can be used to evacuate the patient from the landing strip on the island.
Injury or illness requiring treatment on Utila	M	M	OpWall have a doctor on site and there is also 1 English speaking and 2 Spanish doctors on the island. A 24 hour emergency telephone line with English speaking doctors is available through the insurance bought by Operation Wallacea volunteers and this number can be contacted by the cell phones
Diver with decompression sickness requiring a recompression chamber	L	H	A recompression chamber is available on Utila. Sufficient oxygen supplies are available to cover the time from the patient first showing signs of decompression sickness to arriving at the recompression chamber. These supplies include small bottles of oxygen on each of the dive boats and trained personnel on each dive boat in the administration of oxygen. On return to Coral View there is sufficient oxygen to complete the journey to the recompression chamber. The 24 hour contact numbers are available at Coral View for the recompression chamber.
Injury or illness requiring treatment in La Ceiba	L	M	The D'Antoni hospital in La Ceiba is capable of treating most fractures and other serious but non life threatening injuries. Evacuation to the D'Antoni hospital would be by the ferry taking approximately 1.5 hours, directly from Utila to La Ceiba.

## 2011 - 18 Diving and snorkelling

Risk	Likelihood	Severity	Control Measures
Tanks falling off dive benches.	L	M	Ensure all staff and volunteers are instructed to lay tanks down onto dive benches at all times when they are not holding the tank.
Falling over whilst getting into & out of dive boat with equipment.	M	H	Make sure that all staff and volunteers hand equipment to boat handlers with care and make sure it is secure in the boat. Staff and volunteers should take care when getting into and out of dive boats at the Jetty to avoid falling or slipping.
Falling out of dive boat whilst going to dive sites.	L	H	Ensure all staff and volunteers are instructed not to wear weight belts on dive boats, and stay seated at all times. Make sure staff and volunteers are instructed to sit evenly on each side of the boat.
Hitting head when backwards roll into water at the dive sites or tipping over boat on entry	L	M	Ensure all staff and volunteers are told to check behind them and let the boat leader know that they are going into the water. Ensure the divers enter the water in an agreed order so that the boat is not unbalanced. Ensure divers are aware of the possibility of the boat hitting their head when hanging onto the mooring rope.
Decompression sickness	L	VH	Ensure all diving procedures are followed completely. Limit dives to 2 per day, minimum 3 hour surface interval, maximum depth 18m for survey dives, and maximum depth of 30m for pleasure dives – advanced divers or equivalent only. Maximum dive time of 50 minutes with a 5 minute stop at 5m before surfacing for all dives >10m and 60 minutes including 5 minute stop at 5m. Ensure that the dive procedures are audited every month throughout the season. Ensure that all boats carry oxygen supplies and that there are sufficient oxygen supplies at the base camp to continue treating the patient throughout the period of the evacuation. Ensure that there are qualified staff who can administer oxygen. There is a recompression chamber on Utila.
Being hit by boat on surfacing	L	VH	Surface slowly with arm raised and slowly turning to check for Risks.
Being left in water at the end of a dive	L	M	Ensure all dive boat leaders operate the boat roster system for each dive. Make certain that the dive safety procedures are audited every month throughout the season. Ensure that all pairs of divers have a SMB with them for inflation at the end of the dive. Ensure that the boat roster is completed every dive.

Becoming separated from buddy	L	M	Ensure that all staff and volunteers are trained in the lost diver procedure. Note visibility at all sites is very good and trainee divers are in a maximum group size of 8 with a Dive Instructor and a Dive Master in the water with them at all times. Qualified divers are groups of 6 or less with a Dive Master in the water with them.
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	M	M	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. Ensure all volunteers and staff are informed of the serious danger of breath holding whilst scuba diving.
Being hit by a boat whilst snorkelling	L	VH	Ensure that all staff and volunteers are told that they must snorkel in pairs and with an inflated SMB with him/her to increase the visibility of the group. There must be a Dive Master in the water or on shore watch for each group of 6 divers. Ensure that all staff and volunteers stop snorkelling every couple of minutes to check their location.
Being swept out to sea by offshore currents	L	M	Ensure that all staff and volunteers are told that if they encounter a strong current to abort the snorkel.
Being stung when wading at the start and end of the snorkel	L	M	Ensure that all snorkellers wear foot protection when wading into the water.

## 2011 - 19 Hurricane and severe weather risks

Risk	Likelihood	Severity	Control Measures
Hurricane or severe weather warnings	M	H	The Camp Manager via the HCRF office in La Ceiba to be responsible for monitoring weather conditions for the marine sites on a daily basis. If the HCRF Director after consultation with the Camp Manager considers the impending weather conditions to be sufficiently serious to warrant an evacuation of personnel from the marine sites, then instructions to be given to remove all staff and volunteers to the nearest large city. The HCRF Director to be responsible for ensuring that safe accommodation and transport to that accommodation is arranged for all staff and volunteers.

