FIELD EMERGENCY PROTOCOL AND CONTINGENCY PLAN

THE MAR FISH PROJECT

Introduction

The MAR Fish Project is the latest and largest coordinated monitoring network of fish spawning aggregation sites (FSA) in the Mesoamerican Reef region (MAR) (Annex 1). The overall objective of the MAR Fish initiative is to promote the recovery of fisheries by strengthening the protection of the FSAs of commercial fish, as critical areas in the life cycle of the species, through better knowledge and understanding of the aggregations in the region.

Due to the nature of the project, field visits are quite common to conduct research such as monitoring to the spawning sentinel sites. Researchers and staff from project partners may be at risk while diving during monitoring visits as FSA monitoring dives include deep dives, late in the afternoon, in remote locations, in sites with strong currents and in specific times of the year that can coincide with extreme weather conditions like Nortes and storms. Other risks can be associated with equipment failure, health problems and team separation during diving, to mention some. Field visits may implicate crossing borders that will need the assistance of partners from other countries and specific safety measures that need planning and communication.

Emergencies are unexpected situations that require immediate actions. Therefore, an emergency protocol and safety procedures were designed to be readily available to immediately cover emergencies in and out of the water during monitoring visits. A contingency plan was also designed to help partners plan ahead and have the support needed while in country or foreign waters.

The present *Field emergency protocol and contingency plan for diving accidents* was developed in collaboration with the MAR Fish partners to be applied by field researchers, NGOs and Community based projects in case of emergencies during field visits to the monitoring sites. The emergency protocol includes precautionary measures while planning the field trip, communication procedures when planning a trip to bordering or international waters and an emergency management plan for planning ahead of diving. The contingency plan for diving accidents comprises an emergency response plan if diving accidents may occur, equipment and contacts of authorities and partners in each of the MAR countries.

Objectives

The primary objective of this field emergency protocol and contingency plan is to prevent incidents and to respond effectively in case of diving accidents. It includes a communication protocol while planning the field trip in order to alert partners, especially in bordering or transnational waters.

1. Field emergency protocol

1.1. Precautionary measures

a. For trips that imply working in transnational waters, activate the Security and Communication Protocol (Section 2) for an early warning system.
b. Work with experienced captains and crew that are very familiar with the area.
c. Bring satellite phones while on boat or in remote areas like islands or cayes (or be able to locate the nearest satellite phone and have the emergency numbers handy).
d. In case of a diving emergency during the trip, apply the emergency response plan (section 2.1) (emergency numbers are available in Annexes 2 and 3).
e. Locate the closest Decompression chamber:
   - Mexico: +52 984 873 1365 / +52 984 873 1216
   - San Pedro, Belize: +501 226 2851 / +501 226 2660
   - Roatan, Honduras: +1 954 929 0090 / +504 2407 2244
   - Utila, Honduras: +504 3259 7740
f. Only dive with qualified divers who have verifiable experience in monitoring or have helped the organizations in previous expeditions.
g. Make sure to have on boat a Divers Alert Network (DAN) dive oxygen kit and first aid kit.
h. Make sure that at least two of the divers have first aid training.
i. Each diver is responsible to guarantee they are in good health condition (including a vaccine certificate, if necessary, a negative PCR test).
j. All divers should show proof of valid DAN Dive insurance.
k. Make sure that the diving equipment is maintained in good conditions.
l. Always have a dive coordinator or leader that has read through the emergency protocol and has all equipment and contacts handy.
m. Have a list of allergies to medications, blood type and emergency contacts from each of the divers.

1.2. Security and communication protocol for bordering or international trips

a. Work with authorized bi-national teams when working in border waters of two countries.
b. Work with bigger rather than smaller teams.
c. Activate the communication system in the following steps:
   - Notify the partner organizations from the border country and the project coordinator about the planification of the field trip at least one week before the trip.
   - Partner organizations must provide support to notify the maritime authorities or marine protected areas if applicable of the visit.
   - Notify the project coordinator and partners of when the team or binational teams are going out and when they are planning to come back.
   - Indicate how many hours should be awaited before the emergency contacts should be notified (Annexes 2 and 3).

1.3. Emergency management plan

a. **Emergency Medical Services (EMS)**: Make a written list of emergency resources near your dive site and how to reach them. This may include a hospital, clinic, search and rescue providers, evacuation services, etc. Injured divers should always be taken to the closest medical facility as not all injuries require hyperbaric chamber treatment.

b. **Assign roles**: Important roles to be assigned are the lead diver, the person to activate the EMS and emergency contacts, the caretakers are usually certified rescue divers or emergency first responders. Other members of the team can help to retrieve dive gear, manage bystanders, and/or account for divers still in the water.

c. **Document incident:** Detailed notes about a diver's maximum depth, dive duration and when first symptoms were experienced can help caregivers understand an injured diver's condition.

d. **Use barriers**: Wear gloves when rendering first aid and use a barrier device such as a pocket mask when providing CPR.

e. **Continually evaluate the EMP**: Ensure your plan remains effective. Check local facilities, verify EMS details, expiration dates of first aid supplies, and dive buddies. Periodically practice executing the plan with your current dive group.

2. Contingency plan for diving accidents

A diving accident victim is any person who has been breathing air underwater regardless of depth. It is essential that emergency procedures are pre-planned and medical treatment is initiated as soon as possible. It is the responsibility of the "Lead Diver" to develop procedures for such emergencies including evacuation and medical treatment for each dive location.

2.1. Emergency response plan:

a. Explain the circumstances of the dive incident to the evacuation team, medics and physicians. Do NOT assume that they understand why 100% Oxygen may be required for the diving accident victim or that recompression treatment may be necessary.
b. Rescue victim and/or position so the proper procedures may be initiated.
c. Establish (A)irway, (B)reathing and (C)irculation as required.
d. Administer 100% oxygen, if appropriate (in cases of decompression illness or near drowning).
e. Activate the local EMS for transport to the nearest appropriate medical facility (section 1.3).
f. Contact the national emergency maritime authority (Annex 2).
g. Contact the emergency contact of a national partner organization (Annex 3).

2.2. Safety equipment

- Satellite phone (for sites without phone coverage) or identify the closest (working) satellite phone to the sites you are monitoring.
- Marine radio for the boat.

- GPS
- 2 Nautilus personal emergency GPS (ideal for remote sites).
- Oxygen Administration Equipment - DAN Dive Oxygen Kit.
- First Aid Kit: Bandages, compresses, band-aids, antiseptics, local anesthetic ointment, and any antidote relevant to local wildlife, vinegar, anesthetic ointment.

2.3. First aid supplies

For every dive operation there must be a first aid kit available. There should be at least 2 liters of vinegar and some cold packs for the treatment of jellyfish stings. Supplies for treatment of bites and stings from other marine wildlife should be available.

2.4. Oxygen administration equipment

Provision of as close as practicable to 100% oxygen via a facemask is recognized as the main first aid procedure for treating diving injuries such as decompression illness, embolisms and shock. DAN oxygen kit will be brought onboard.

Breathing oxygen should not be seen as a final step in first aid treatment. Improvement in the patient's condition while being treated on oxygen does not negate the need for proper medical assessment by a doctor trained in diving medicine.

2.5. Dive site registration and risk assessment

The dive leader may register new dive sites and evaluate risk assessment during field activities. Registration must include the following:

1. Risk assessment of the site and the proposed work.
2. Exposure, isolation, known or anticipated depth and tidal currents.
3. Other hazards as appropriate.

2.6. Dive plan

Dives should be planned around the competency of the least experienced diver.

- Location of the dive.
- Consideration of surface and underwater conditions and hazards.
- Maximum depth at bottom of dive and estimated dive times.
- The tasks of all members of the diving team.
- Decompressions schedules and tables used.
- Breathing gas supply, appropriate for the dive; emergency procedures to be followed in the event of equipment/system malfunction or an accident.
- Divers' names, medical dates, duties and last dive details.
- Approximate number of proposed dives.
- Proposed equipment, and boats to be employed.

2.7. Pre-dive safety checks

a. Dive briefing

It is important for a successful diving operation that each member of the dive team understands the objectives of the dive, that they understand their role and the other members of the dive team's roles in the dive. A dive briefing conducted by the Dive Leader allows for the exchange of this information. It also allows the Dive Leader to slightly modify the dive plan due to environmental conditions or the physical condition of any members of the dive team. The dive briefing should include but not be limited to:

- The objectives of the dive;
- Conditions in the operating area;
- Assignments of each member of the dive team;
- Review of communications (including any special hand signals, use of slates etc.);
- Any special equipment or considerations;
- A review of risk and hazard identification noting any changes;
- Lost contact procedures, e.g., search for 1 min underwater if no contact, surface to continue search and reunite;
- Conditions controlling the termination of the dive (time, remaining air supply, etc.);
- Review emergency response plan and recall procedures (section 3.2);
- Soliciting questions to ensure understanding of tasks and assignments.

b. Plan for buddy separation

Search for each other for one minute, if not found, surface. However, you may have circumstances that make a different plan the better one, so adjust as you find best. Emergency planning also means being able to adjust to a situation as it develops. Before the dive, take a few minutes to share your plan with the other divers on your team.

c. Equipment evaluations

Each diver must ensure that his/her equipment is in proper working order and that the equipment is suitable for the type of diving operation. Each diver must also know the safe operation, capabilities and limitations of any equipment they use.

d. Pre-dive equipment check

For all dives an adequate pre-dive check must be performed on both the diver's and stand-by diver's equipment. The pre-dive checks should include but are not limited to:

- Uninterrupted air flow from the tank.
- Zeroing of contents gauge before turning on air supply.
- Air supply turned on.
- Contents of the tank.
- Leaking hoses and or gauges.
- The operation of the contents gauge.

- The operation of second stages, second stage free-flow, torn mouthpiece, etc.
- Depth gauge reads zero and maximum depth indicator is zeroed.
- Inflator hose is connected, inflator operation is OK, dump valve operation is OK.
- Security of tank in BCD harness, etc.

e. Site evaluation

The environmental and other conditions: e.g., weather, visibility, tide, currents, temperature, presence of any other craft etc. should be evaluated on site by the entire dive team before jumping in the water, especially on remote sites like Cayman Crown, because of its location.

2.8. Post-dive procedures

a. Post-dive safety checks

After the completion of a dive, each diver must report any physical problems, symptoms of decompression illness, or equipment malfunctions. Divers showing signs of discomfort after diving must be assessed and treated accordingly.

b. Flying or ascending to altitude after diving

To minimize the risk of developing decompression illness whilst traveling after diving, a diver should have a minimum surface interval of 24 hours before ascending to altitude or flying.

3. Annex 1

Sites being monitored by the MAR Fish Project and partners in charge

Country	Fish Spawning Aggregation Sites	Organization in charge
Mexico	Niche Habin (Punta Allen) Blanquizal San Juan	SCPP Pescadores de Vigía Chico/COBI COBI COBI
Belize	Gladden Spit	SEA
Belize-Guatemala	Cayman Crown	HRI-TIDE
Honduras	Cordelia Banks Power Point (Lawson Rock-Sandy Bay) Western Bank (Texas – West End) New FSA site close to Sandy Bay	CORAL/RMP CORAL/RMP CORAL/RMP CORAL/RMP

4. Annex 2

Emergency contacts of maritime authorities

EMERGENCY CONTACTS OF MARITIME AUTHORITIES IN THE MAR COUNTRIES			
Country	**Agency**	**Contact person**	**Telephone**
Mexico	Emergency number	In Quintana Roo, from 911 they call to the correspondent authority	911
	Capitanía de Puerto	Cancún	998 880 1360
	CONANP	Oficina Central	998 892 1648
	Secretaría de Marina	Oficina Central	998 877 0186
Belize	Belize Fisheries Department	Mr. Rigoberto Quintana	+501 224 4552
	Belize Port Authority	Toll free number	+501 222 5666 / +501 5663 966 16 VHS channel
Guatemala	Comando Naval del Caribe Santo Tomas – CONACAR	Cap. Renato Cabrera	+502 3128 5513 +502 7960 0855 +502 4497 4267 +502 3128 5675
	Capitanía de Puerto (Puerto Barrios)	Maestro Edgar Barrios	+502 5516 3077
	Dirección General de Asuntos Marítimos – DIGEMAR	Alférez Valenzuela	+5024497 4254
	Dirección de Normatividad de la Pesca y Acuicultura - DIPESCA	Julio Lemus	+502 5114 2561
	División para la Protección de la Naturaleza – DIPRONA	Oficina Móvil	+502 4023 1746
	Fiscalía de Delitos contra el Medio Ambiente	Lic. Carlos de Jesús Abrego Hernández	+502 5990 0014 +502 5992 4670
	CONAP Unidad Técnica RVSPM	Sergio Hernandez	+502 5717 4856
	CONAP Nororiente	Tanya Sandoval	+502 4218 5722

Honduras	Emergency number	Call center	911
	Marina Mercante	Sara Zelaya	+504 9827 3483
	Naval Hondureño	Capitán de Corbeta CIN Donny Mauricio Zaldívar Ramos	+504 3286 3201

5. Annex 3

Emergency contacts of partner organizations

EMERGENCY CONTACTS OF PARTNER ORGANIZATIONS				
Country	**Organization**	**Contact name**	**Telephone**	**Email**
Mexico	COBI	Jacobo Caamal	+52 622 165 4753	jcaamal@cobi.org.mx
		Cooperativa Jose Maria Azcorra	+52 983 833 4483	cooperativa_azcorra@live.com.mx
		Cooperativa Vigía Chico	+52 984 871 2059	vigiachico86@hotmail.com
Belize	BFD	Shakera R. Arnold	+501 224 4552	shakera.arnold@fisheries.gov.bz
		Alicia Eck-Nunez	+501 605 0337	alicia.nunez@fisheries.gov.bz
	SEA	Mick Castillo	+501 653 0643	chairman@seabelize.bz
		Wilbert Castillo	+501 664 2662	wilbertcas1989@gmail.com
	TIDE	Celia Mahung	+501 615 6022	execdirector@tidebelize.org
		Leonard Chavarria Jr.	+501 610 2864	development@tidebelize.org
		Cecilia Guerrero	+501 615 1498	scmr@tidebelize.org
Guatemala	FUNDAECO	Silja Ramírez	+502 5515 8161	s.ramirez@fundaeco.org.gt
		Guillermo Gálvez	+502 4220 5662	g.galvez@fundaeco.org.gt
		Otoniel Palencia	+502 5334 4441	e.palencia@fundaeco.org.gt
Guatemala-Belice	HRI	Melanie McField	+1 754 610 9311	mcfield@healthyreefs.org
		Ana Giró	+502 5314 8806	giro@healthyreefs.org
		Nicole Craig	+501 615 5989	craig@healthyreefs.org
Honduras	CORAL	Antonella Rivera	+504 9990 2599	arivera@coral.org
		Pamela Ortega	+504 9675 7114	portega@coral.org
		Tanya Amaya	+504 9673 1224	tamaya@coral.org
	RMP	Francis Lean	+504 8890 6062	francis.lean@roatanmarinepark.org
		Zara Guifarro	+504 3336 5591	zara.guifarro@roatanmarinepark.org
		Grace Horberry	+44 745 502 7282	grace.horberry@roatanmarinepark.org
Divers Alert Network	DAN	DAN America	+1 919 684 9111	

6. References

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