

**The Nature Conservancy
Palmyra Atoll
S.C.U.B.A. Diving Protocol**

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Palmyra Dive Protocol

All diving at Palmyra Atoll will follow these minimum diving standards. The Lead Diver, each institution's Dive Safety Officer (or equivalent designee), and TNC on-island staff shall ensure that these minimum diving standards are met.

Section One: Organization

1.10 Auspices

- Compressed-gas diving operations by science parties to Palmyra will be conducted only with authorization of the divers' home institution, and the Island Manager. As part of the research proposals submitted to PARC Science Committee, evidence of approval by the diving safety program of the lead PI's home institution shall be required.

1.20 Project Planning and Requirements

- A comprehensive dive plan approved by the Lead PI's home institution must be submitted to TNC no less than 6 weeks prior to deployment, including:
 - Dates of proposed operations, number of days diving, number of dives per day, proposed depths and estimated dive duration.
 - Dive locations.
 - Description of diving activity, including risk assessment.
 - Name, home institution, depth authorization, contact and emergency contact information of all divers.
 - Name of designated chief scientist and designated diving supervisor (Lead Diver).
 - A list of person(s) qualified for compressor operations and cylinder filling (upon completion of system orientation by PARC staff). Qualification will be based on experience (or willingness to be trained) with compressor operation and designated time availability for operation while on island. If qualified personnel are not available through the home institution an individual will have to be hired by that institution. A list of qualified personnel will be supplied upon request.
- The dive plan will designate a Lead Diver who will be responsible for the oversight of all project diving activities, including:
 - Consultation with Chief of Marine Operations (CMO), Island Manager and Refuge Manager.
 - Ensuring compliance with the approved dive plan.
 - Pre- and post-dive briefings.
 - Daily dive log record keeping, including dive times, air use, depths, bottom times, and surface intervals.
 - Other tasks as required by either PARC or the home institution.
- All dives shall be planned and conducted in such a manner that decompression stops are not required.

Section Two: Regulations

2.10 Certification

- ❑ All visiting scientific divers shall be qualified by their home institution as full active-status scientific divers.

2.20 Depth Certification

- ❑ The Maximum depth limit for all operations is 130', or limited by the divers' depth authorizations as specified in the dive plan.
- ❑ No more than three dives per day greater than 60' will be made.

2.30 Types of Diving Permitted

- ❑ Only compressed air dives are allowed: no mixed gas or re-breather devices are permitted.
- ❑ Night diving is allowed within the Lagoon and approved zones only. Conditions must be correct with CMO, Island Manager, Refuge Manager and Lead Diver concurring on all issues including weather, divers, gear used and location of dive. CMO must be aboard vessel during night dives inside the Lagoon.

Section Three: Diving Procedures

3.10 Diving Conditions

- ❑ The conduct of daily diving operations is contingent on safe weather and sea conditions, and the approval of the Island Manager, CMO, and Lead Diver. Diving operations may be suspended for safety reasons including changing weather or sea conditions by any of these four persons.

3.20 Designating a Lead Diver

- ❑ A Lead Diver is required for all dives. If more than one Lead Diver is in a group one must be designated for entirety of trip. Individual divers may be delegated the role of in-water supervisor or other support duties by the Lead Diver, consistent with AAUS certification, their diving authorization, experience, and abilities.
- ❑ Lead Diver will alter dive plan with the CMO as necessary.

3.30 Solo Diving Prohibited

- Dive Buddy Protocol
 - All Divers have the responsibility and may refuse to dive if he/she feels the conditions, activity, equipment, or his/her health makes it unsafe or unwise.
 - Establish common signals to communicate. New dive teams to atoll must communicate signal use to the CMO and Island staff.
 - Divers must dive in pairs or groups.
 - Divers must maintain close proximity to offer immediate aid if necessary.
 - If separated from dive buddy, divers should search for 1 minute, then surface at a normal rate.
 - If dive buddy is not found at surface, give recall signal to other divers still underwater, mark present location (GPS, Anchor float), release drift drogue, send diver(s) to search for no more than 5 minutes, and then begin drifting with the current
 - The CMO or Lead Diver should immediately radio the situation to island staff who will be ready to mobilize as necessary.

3.40 Diver Responsibility

- Under normal conditions, all divers shall end their dives with a minimum cylinder pressure of 500 psi. Failure to observe this may result in restriction or revocation of permission to dive by the Island Manager, Lead Diver, or their designees.
- In the case of accidental decompression, the diver shall complete all stops as directed by his/her dive computer, or until a minimum cylinder pressure of 300 psi is reached. Notify Lead Diver upon surfacing. The diver shall not dive for a minimum SI of 12 hours, and be monitored for DCS.
- In case of omitted decompression stops, the Lead Diver shall be notified, the diver shall, be placed on 100% Oxygen for a minimum of 60 minutes, provided with fluids for re-hydration, and monitored for signs/symptoms of DCS. If signs/symptoms of DCS are present, initiate emergency management plan for treatment of DCS. The diver shall refrain from diving for a minimum of 24 hours and be monitored for any developing DCS symptoms. If DCS persists Evacuation will be necessary.
- No flying within 24 hours of last dive.

3.50 Use of Dive Computers

- The use of dive computers is mandatory. The Lead Diver must monitor all computers and carry a secondary depth gauge and time device. In the event of computer failure, dive must be safely aborted. No diving for 24 hours.
- Scientific divers shall be trained and authorized in dive computer use by their home institution. Computer use will be in compliance with the AAUS Guidelines for the Use of Dive Computers. It is recommended that divers bring a back up computer.

3.60 Diving Operations: Lagoon

- When diving within the Lagoon the Lagoon boat can be anchored and left unattended.
- Dive boat must do check in with Island base on location of dive, when divers go down and when divers are up.

3.70 Diving Operations: Offshore

- When diving off shore the CMO and Lead Diver are required. The CMO must be on the boat at all times during diving.
- All dive groups outside the lagoon must tow a surface buoy with dive reel. If group plans to remain in one location then buoy can be anchored in place.
- Dive boat must carry a tag line for diving or snorkeling in currents.
- In the event divers need to be recalled, CMO will activate the diver recall device.
- The Lead Diver will signal the CMO to move in for pick up. All divers must be visible on the surface before the CMO moves in for pick-up. If group anticipates different ascension to the surface then the designated Lead Diver for each group will signal the CMO.

Section 4: S.C.U.B.A Equipment

4.10 Breathing Air

- The station supplies maintained and inspected tanks filled with, high quality tested compressed air.

4.20 Standard Equipment

- All divers (scientific & recreational) are required to carry;
 - Dive equipment: mask, fins, snorkel, weight belt, knife or cutting device, BCD, submersible pressure gauge, depth gauge, bottom timer, compass, regulator with 2nd stage and alternate air source.
 - Safety equipment: Whistle (regular whistle and one attached to inflate hose), pocket mirror, an inflatable safety sausage and a small 100' line reel to use in conjunction with an inflatable safety sausage in the event of separation from dive group or early ascent.
- Any gear supplied by a visiting diver must be of standard SCUBA quality and approved of by the Lead Diver and approved by their home institution