

Safety Diver

Revised April 4, 2019



South Carolina
Aquarium

South Carolina Aquarium

Dive Operations

Arnold Postell

Dive Safety Officer / Senior Biologist

(843) 579-8536

apostell@scaquarium.org

Ryan Yuen

Assistant Dive Safety Officer

(843) 579-8503

ryuen@scaquarium.org

Markus Pallos

Research & Maintenance Diver

mpallos@scaquarium.org

It is the mission of the South Carolina Aquarium (SCA) Dive Team to provide excellence in animal care and husbandry, to actively support both the educational and conservation endeavors of the SCA, and to provide a memorable, positive guest experience to all those who visit our facility.

Safety Diver Training

- The GOT is an every changing environment based on numerous factors
 - > Food Intake
 - > Animal Additions/Subtractions
 - > Diver activity & numbers
 - > Tank Climate
- Because of this, Safety Diver Training is always On-Going. It is impossible to fully simulate all situations you might encounter.

Goals of Safety Diver Training

To give Divers the knowledge and tools necessary to Continually Evaluate the Safety of the Dive Team in the GOT's changing environment.

To train Divers in how to properly handle key diver-interactive-prone animals.

Training Requirements

PowerPoint Presentation & Quiz

Safety Diver Evaluations

- *At least 2 Graded Evaluations by Dive Operations*

Emergency Response Training

Safety Divers

- Goal of the Safety Diver is to:
 1. **Monitor** Tank Interactions
 2. **Note and Prevent** problems from becoming Emergencies
 3. **Respond** to any Emergencies appropriately

Safety Divers(cont.)

- To Achieve this, the Safety Diver has to be aware of:
 - 1. Animal Behavioral Changes that effect Diver Safety**
 - 2. Diver Interactions that effect Diver Safety**
 - *This is also each divers own individual responsibility*
 - 3. Their own Position & Safety**

Safety Diver Procedures

General Procedures

- First in water; Last out of water
- Does not Trade Tasks during dive
- Initial Position: High & Back-Center of exhibit
- Is mobile to maintain good vantage points
- Carry's Signal Wrench to warn team members of issues
- Monitors divers **and** animals only
 - > No scrubbing/cleaning
 - > No guest interaction
- Primarily signals divers of incoming issues or dangers
 - > Secondarily, *will* assist divers if needed

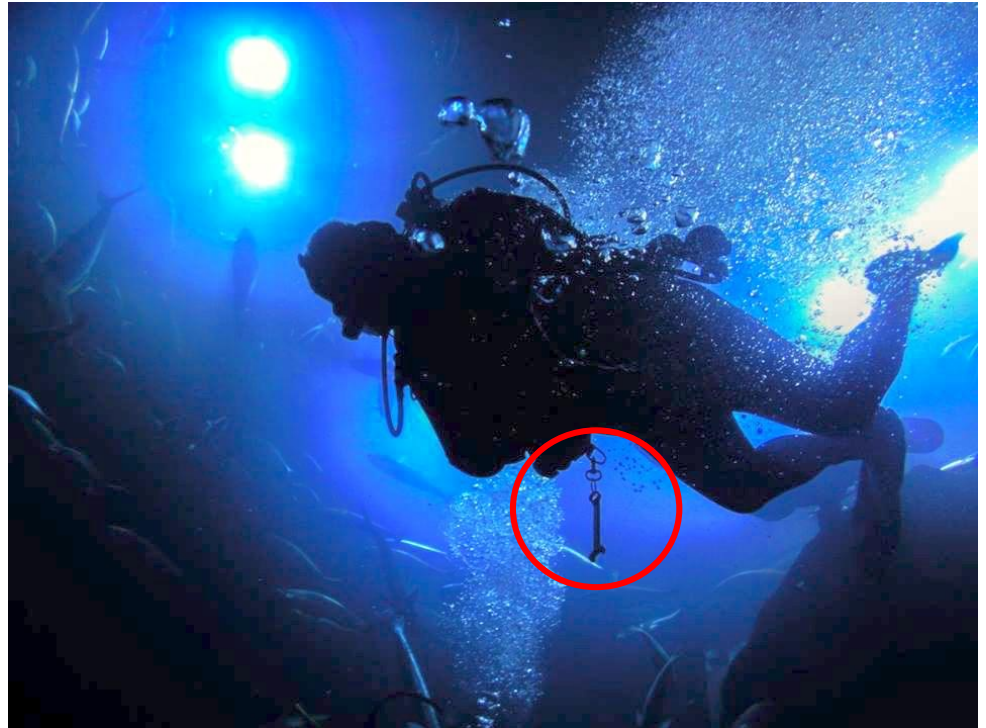
Safety Diver Procedures_(cont.)

Initial Entry Procedures

- Note initial positions of Divers on Task
- Note initial position of key “Interaction” Animals
 - > Caretta, Nurses, others in the future?
- Scan between Divers and Key Animals or Other animals
 - > Take a couple minutes to observe a group of animals or a key animal, quickly check back on divers during your observations
 - > Vice versa observe divers and quickly check back on animals
 - > Mix it up so you are not focusing solely on divers or animals
- **Try to have a mental image of Diver and Key Animal positions at all times**

Signal Wrench

- The Signal Wrench is used to tank bang as an underwater signal to the dive team
- Divers hearing the signal should look towards the Safety Diver to receive directions
- It is clipped to the Right Waist D-ring where it can easily reach the tank



Safety Diver Monitors

- Tank Interactions *(in order of priority)*

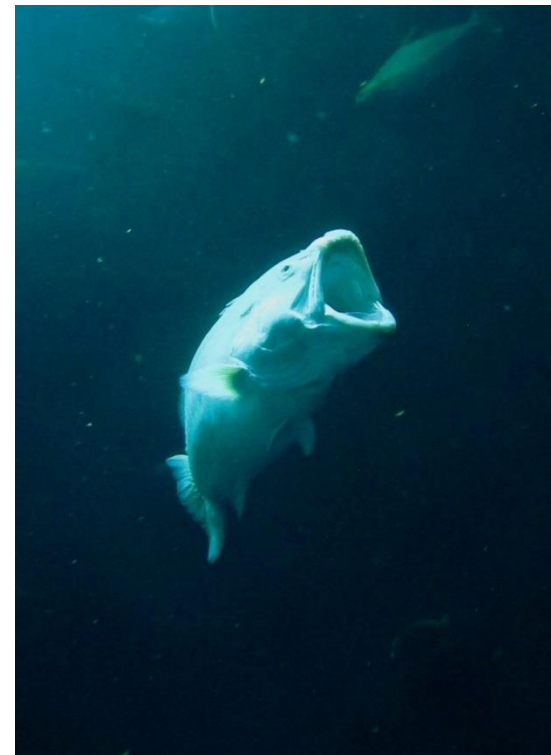
- > Diver to Tasks

- > Animal to Diver

(Report these to DPIC)

- > Animal to Animal

(Report these to DPIC)



Safety Diver Monitors(cont.)

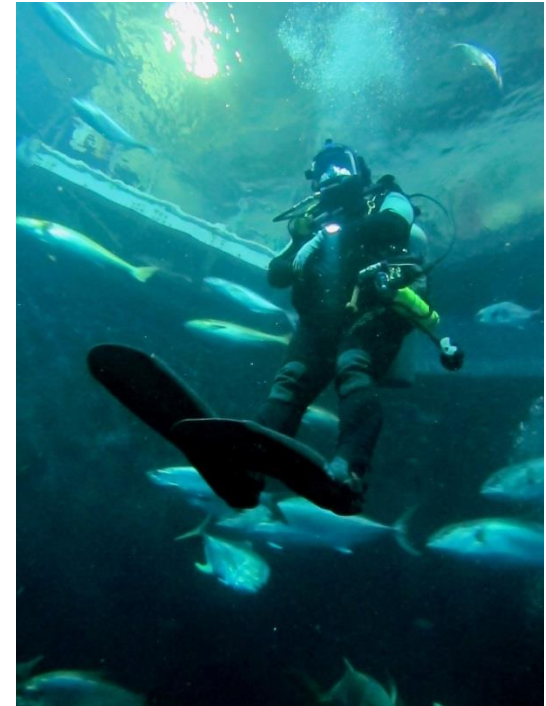
- **Diver to Tasks**

- > Breathing

- Too heavy or too shallow
-> CO2 toxicity

- > Movement

- Why has my buddy not moved in the last 30mins?
 - Flailing, hand paddling, distress



Safety Diver Monitors(cont.)

- **Diver to Tasks**(cont.)

- > Exhibit

- Diver hitting Tank/Gear to Acrylic

- > Other issues

- Broken mask/fin strap
 - Tank strap comes undone
 - ***Gear is bubbling***

- > **Report all gear issues to DPIC**

Safety Diver Monitors_(cont.)

• Animal to Diver

examples not all encompassing

- > Aggressive/Erratic Swim patterns
 - Shark making tight turns around diver/platform
 - Pectoral fins down, arched back
- > Territorial Behavior
 - Caretta's Shallow ledge during her Territorial Phase
- > Curiosity
 - Triggerfish nipping Diver
 - Chubs, Spadefish, or Permit pulling hair



Safety Diver Monitors_(cont.)

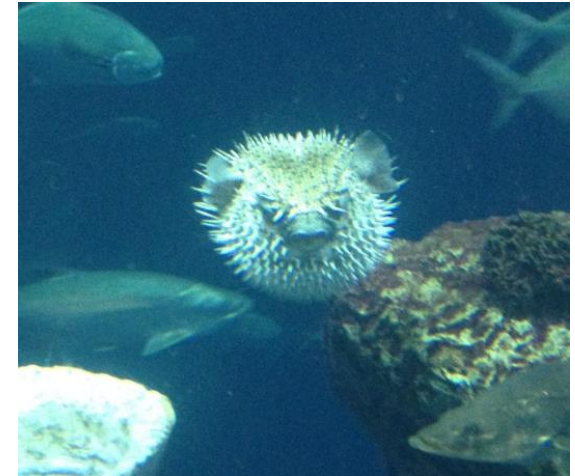
- **Animal to Animal**

- > **Animal interactions that effect Diver safety**

- Predation -> Feeding frenzy / Fish bolting
 - Chasing/Bolting -> large animal running into diver
 - Blunt force trauma
 - Defensive bite
 - Irritation -> “unprovoked” bite of diver

- > **Animal interactions that effect Animal safety**

- New or previous injuries -> getting better or worse?
 - Animal eating exhibit rock or sealant -> gut impaction / animal death
 - Animal body profile -> do they look starved or bloated?



Safety Diver Monitors_(cont.)

- Any **Animal to Diver** or **Animal to Animal Interactions** should be reported to the DPIC
- Repetitive Animal Interactions allows us to establish a pattern and act accordingly to prevent or fix any issues
 - > If every Shift sees a problem, but only one reports it, Dive Ops will not be able to fully understand the behaviors.
 - > Dive Ops also loves to hear cute and funny stories too!



Animal ~~Handling~~ Redirecting

- Avoidance and Prevention is key
- Going Hands-On with an animal should be your last option or an Emergency
- Hands-On interaction should be short and to the point
 - > You should not have to struggle with an animal
 - > You should not need to hold or grasp any Animal
 - > You are redirecting and guiding an animal elsewhere; *not grasping, holding, pushing, or moving.*

Redirection Other Animals

- Nudge or Push animals away using the Back of a Closed Fist
 - > For constant “hair-pickers” sitting at a distance, you can throw your bubble exhaust at them with a cupped hand
- Signal Divers ahead of time to avoid path of Sharks
 - > ie. When Nurse sharks appear agitated by Vacuum Diver
 - > ie. When a stationary cleaning diver is boxing out a sharks swim path



Caretta

- Caretta goes through a several behavior phases annually. Below is the approximate timeline she follows:
 - > **February – April: Migration Phase**
 - She stops eating & cueing to her target box and spends every day swimming at the surface, “sun-dialing” around the tank perimeter
 - Divers can expect her to never make any interactions
 - > **April – July: 2-Month Territorial Phase**
 - She starts cueing voraciously to her target box & patrolling a triangular area. Divers in that area will expect her to give chase and try to bite.
 - Caretta’s Territory is 0-10ft depth, extending from the Shallow Ledge to the Dive Platform
 - > **June – February: Normal Phase**
 - Any interactions from Caretta are short, spontaneous, and usually playful. Nipping can occur but is more gentle than during her territorial phase. They still hurt though.



Caretta(cont.)

- Divers should be signaled anytime Caretta is on a Direct Line of Approach
- Divers' first priority is to dodge or swim away from Caretta
- Redirection should only be used as a last resort
 - > Caretta sometimes looks for diver interaction, so touching/redirection can become a positive reinforcement to her



Redirecting Caretta

Most times she is just curious or even baiting you to touch her. She will often swim up and stop inches from your face. There are several options if you are the targeted Diver:

A. Wait and See

Sit back and stare at her; she may swim off or try to bite

- > Even if she tries to bite, you can lean back and backpedal gently. She may gently follow, but will lose interest after a lengthy moment.

B. Fending

Place hand on her shoulder/shell to keep her at a distance, swim around to her side, then swim away.

- > She will be pushing you, you are not pushing her. Keep your arm stiff to allow you to leverage around her.
- > Caution, your arm is probably within grasp of her mouth

C. Duck Under

Place hand under her shell, use her momentum to both duck under & send her over your head, then swim in the opposite direction from her

Redirecting Caretta_(cont.)

When Caretta is in her 2-month Territorial Phase or extremely motivated towards a diver, you will need to be more hands-on:

1. Position yourself head on towards her
 - > Establish proper buoyancy & trim to stay stationary
2. Put your hands on her Front Flippers or shoulders to stop her momentum
 - > Regardless of her initial intentions she will now try to bite you.
3. Spin her 180°; moving hands along edge of shell
 - > Stay stationary and spin her with your hands only; Do not Swim
 - > *Finning & pushing, swimming her, or pushing her sideways will allow her to over power and outswim you. To the Guests it can be misinterpreted as harassment.*
4. Position her facing directly away from you
5. Gently push her away
 - > Pushing her forcefully becomes a game to her and she will keep coming back for more

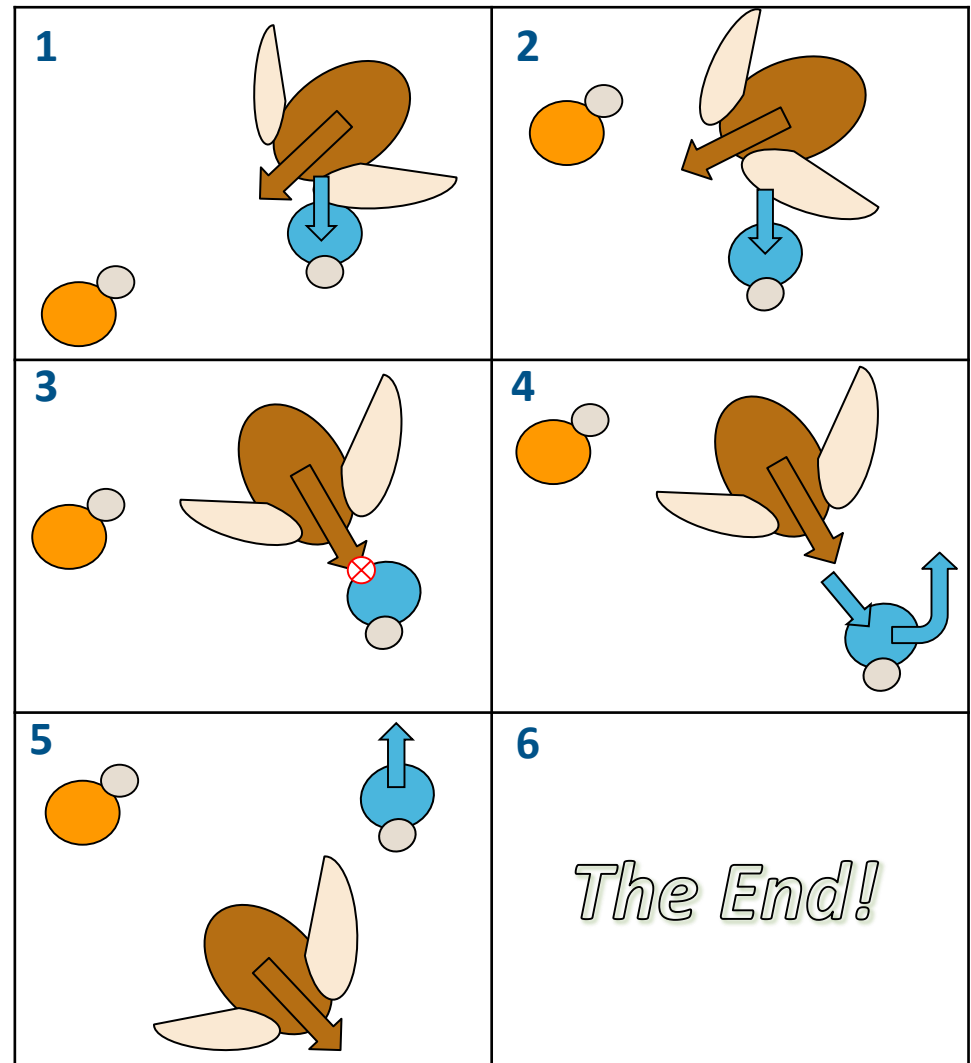
Redirecting Caretta_(cont.)

Rare times, the Safety Diver will have to intervene and redirect on behalf of another diver (ie. new diver or Show Diver) or object (ie. a pumpkin or FOB):

1. Approach at a 90 degree angle to Caretta's side. Grab her front flipper.
2. Pull Caretta & backpedal gently until her full attention is directed at you.
3. Release Caretta and use yourself to guide/bait her away from her original target.
4. Once at a distance from Caretta's original target, disengage by swimming away or if necessary redirect as described previously.
5. Redirect as needed until she loses interest.

Redirecting Caretta_(cont.)

1. Approach at a 90 degree angle to **Caretta's** side. Grab her front flipper.
2. Pull **Caretta** & backpedal gently until her full attention is directed at **you**.
3. Release **Caretta** and use **yourself** to guide/bait her away from her original **target**.
4. Once at a distance from **Caretta's** original **target**, disengage by swimming away or if necessary redirect as described previously.
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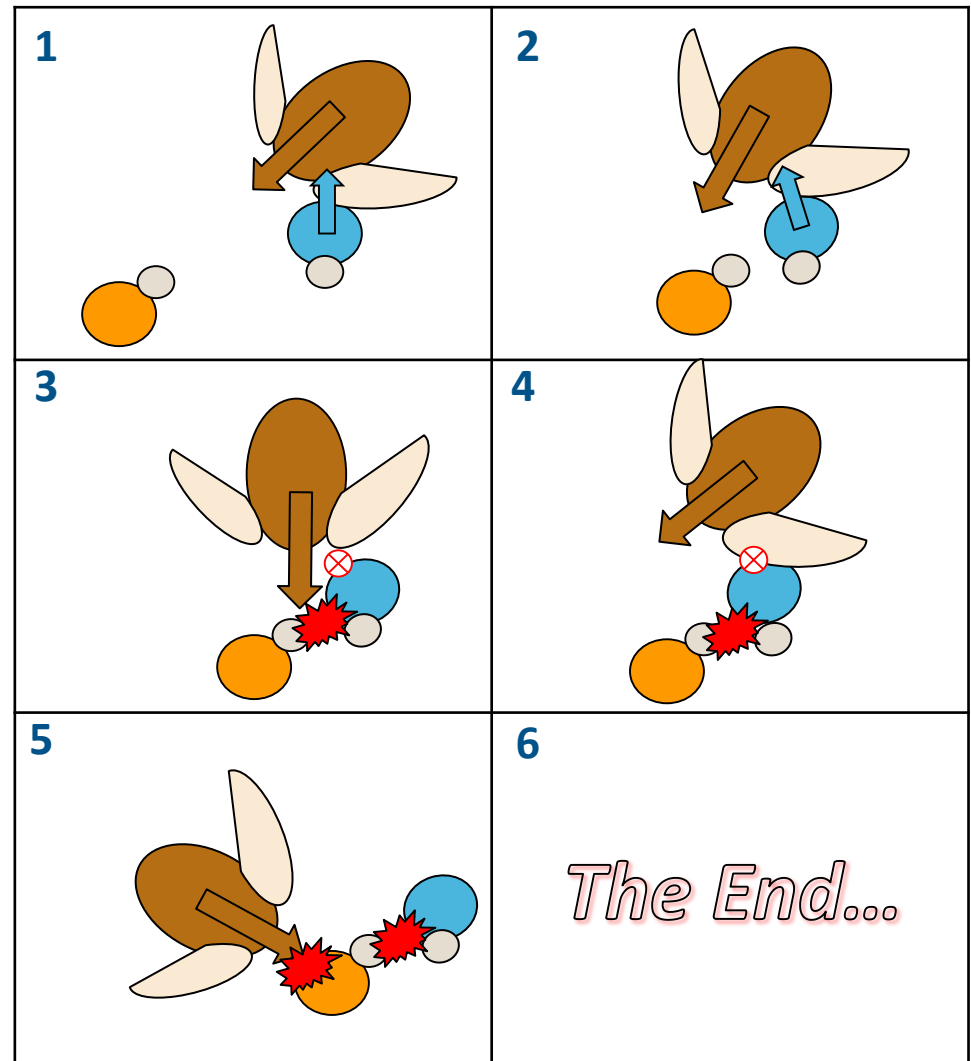
The Wrong Way — Redirecting Caretta

Pushing & Shoving – *Don't-do-this*

- Putting a hand on her shell and swimming into her or pushing her is always the wrong choice; Caretta will ignore you and keep swimming towards her target.
- If Caretta does push back, she is a stronger swimmer than a diver
- What usually results is, the diver doing the pushing will be pushed back and strafed into Caretta's original target.
- The pushing diver is then boxed in and Caretta will be able to outmaneuver and fully control the situation
- Usually this results in multiple divers in close quarters struggling with Caretta.
 - **This is dangerous for divers and displays a very negative interaction to guests**
 - **It is entirely avoidable; do not do this.**

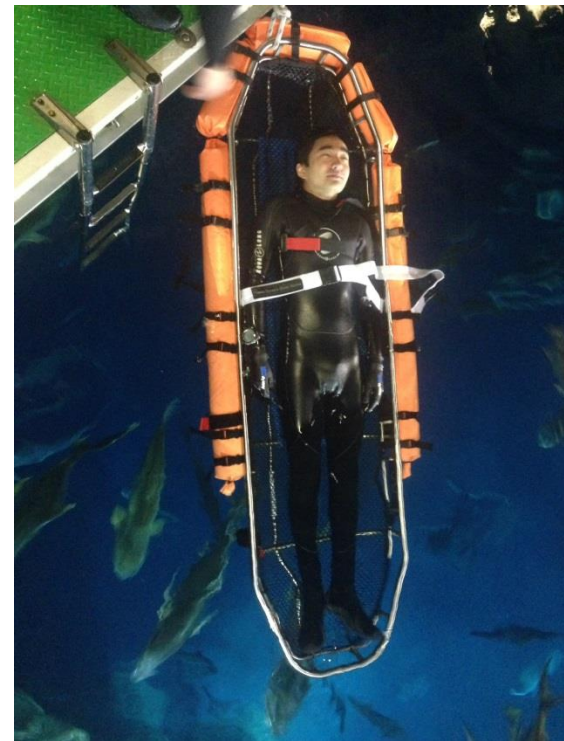
The Wrong Way — Redirecting Caretta_(cont.)

1. Safety Diver intercepts Caretta & pushes against her
2. Caretta keeps swimming, causing the Safety Diver to strafe
3. Safety Diver is pushed back and strafed into Caretta's Target diver
4. Safety Diver is boxed in and cannot move. Caretta is free to loop around
5. Caretta makes contact with Target diver. Safety Diver is boxed in on opposite side of Target diver



Emergency Response Training

- Schedule: March & September
- Covers UW Rescue & Extraction for GOT Exhibit only
- Topics Not Covered that are in a recreational Rescue Diver Certification Course:
 - > Search & Salvage
 - > Panic diver
 - > Beach and Boat Extraction



“Universal” Signals – You’re It

In a Situation where a single diver needs to take action, most likely to avoid *Caretta*:

1. Safety Diver should Tap, *Point to individual diver, then Point in the direction* they should look towards
2. Individual diver sees signal and should duck then roll to look behind them
 - > If no danger is present, look back to Safety Diver to interpret additional signals
3. Individual & Safety Diver Act appropriately



“Universal” Signals – Take Cover

In a Situation where

A) Entire animal collection goes chaotic

B) Shark displaying aggressive behavior

1. Safety Diver should Tap then Signal all divers by placing a *Hand-Fin on Forehead* then point in the direction of the chaos
2. All Divers acknowledge the Safety Diver then ensure those next to them heard the Safety Diver's Signal.
3. All Divers Take Cover
 - > Put back against wall or rockwork
 - > Avoid the cave mouths
4. When safe exit the tank or continue the dive
 - > Safety Stops at Team's discretion



“Universal” Signals – Unconscious Diver Rescue

In a Situation of an Emergency or Traumatically Injured Diver:

1. Safety Diver should Tap then Signal all divers by *swimming and pointing at victim*
 - > Shake and tap an Unconscious Diver upon arrival
2. All other Divers act appropriately:
 - > Assist Safety Diver in Ascent of Victim
 - > Surface and activate dive alarm
 - > Exit tank to help with Extraction
 - > Stage yourself and Exit after Victim Extraction
 - > Drop Caretta’s Box if she is interacting with the Rescue



