

# Challenges of Diving with Disabilities

## By Tammie Shelton

Taken from article published in Diving Medicine Online  
<http://scuba-doc.com>  
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Comments from Campbell:

Have you ever been on a night dive and had your lights go out? Or, imagine yourself doing a shore dive and you find that someone has tied your feet together; just imagine the difficulty of dragging yourself in and out of the water; or of being unable to signal distress to your buddy because of paralysis of your hands?

These are just a few of the challenges that face disabled people who want to experience the serenity and beauty of scuba diving: the blind person is forever in pitch darkness, the paraplegic faces this wall every day.

In spite of these seemingly insurmountable obstacles, there are many disabled who are participating in scuba diving programs especially designed to assist them to experience our sport safely.

We recently were contacted by Tammie Shelton about providing information concerning divers with disability. I asked her to write an article describing how a diving expedition is carried out. I found her account fascinating and publish it here for you to get some insight into some of the problems that arise and how they are managed in the unforbidding milieu of the underwater world.

Start of Article by Tammie Shelton:

"Eels on Wheels Adaptive Scuba Club, a non-profit organization based in Austin, Texas, was formed in 1991 for the purpose of promoting independence and enhancing physical, emotional, psychological and social well-being for children and adults with disabilities through SCUBA diving adventures. Eels prides itself on safely adapting SCUBA so that almost any person can enjoy the adventure. The Eels have taken 13 successful trips together, visiting places such as Cayman Brac, Bonaire, and Roatan. In June, 2004, Eels on Wheels Adaptive Scuba Club visited Ambergris Caye, Belize.

This particular trip was one of our smaller ones, with only twenty-two people (all adults). Of the twenty-two, eighteen were divers, including six in wheelchairs (three with paraplegia and three with quadriplegia). Eels on Wheels stresses the safety and fun for all of its members, which requires certain adjustments to be made in order to ensure their well-being during dives. Most of our paraplegic members are able to dive virtually

unassisted, so the adjustments mentioned here are for the benefit and safety of our quadriplegic divers. We have many male and female divers in our group; for the sake of reading ease, male gender is used.

We carefully split up our group between two boats, equalizing the ability levels of the disabled divers and the expertise of the able-bodied divers. We placed nine divers (including three in wheelchairs) on each boat, plus the native divemaster and boat captain. Each quadriplegic diver must be paired with two buddies, one primary and one secondary. One of the buddies requires a certification level of rescue or above because of the extra care and assistance required for the quadriplegic diver.

In calm seas, gearing the quadriplegic diver in the water is a good option, as they easily float with their wetsuits. By lowering them into the water without their gear, a safer, more controlled entry can be made. Eels on Wheels highly recommends buoyancy control devices that are weight integrated and have shoulder clips, which ensures easier placement and removal on the surface. A series of tropical squalls had left the island just as Eels arrived, leaving a trail of rough, 4-6 foot seas for the first couple of days, so gearing in the water was not a safe option in this case. Back-roll entries off the side rails were required based on the sea conditions and the type boats provided. We typically dive off of boats with platforms on the aft – so back-roll entries created a bit of a challenge for our newer divers, especially with the rough seas. Since people with quadriplegia have no proprioception below their injury, we had to pay particular attention to their legs and arms. So we kept one able-bodied buddy in the boat to assist with the entry and had one able-bodied buddy waiting in the water. That way, we could watch from all angles above and below the water to ensure that the quadriplegic diver made the entry clear of all obstructions. Once the boat crew and third buddy help lower the quadriplegic diver into the water, the primary buddy (already in the water) ensures that legs and arms are clear and then immediately flashes an okay sign in the mask of the quadriplegic diver. Depending on the level of injury of the quadriplegic diver, he can usually respond with a nod or a grunt. If the response is negative or not understood, the primary buddy places the quadriplegic diver in a face up position so he can verbalize his concern. Once the response is okay, the descent begins.

During the descent, buddy awareness is paramount. The primary buddy and quadriplegic diver must descend together, with the primary buddy controlling the rate of descent by inflating or deflating both divers' buoyancy control devices. Many of our quadriplegic divers are able to make independent descents, but the primary buddy must be aware of the quadriplegic diver's equalization issues and be available to take control of the descent immediately. Most of our quadriplegic divers have enough arm and hand motion to be able to equalize on their own; however, at times the primary

buddy must assist by pinching the nose of the quadriplegic diver. Another issue during descent is equipment adjustment. The quadriplegic divers are unable to don their equipment alone, and it is almost impossible for the crew to place their equipment on them properly and snugly while on a rocking boat (another reason we prefer gearing up on a calm water's surface). So they secure it well enough to not lose it during entry, and the primary buddy tightens and adjusts all equipment during the descent. Once the divers arrive at the planned depth, the primary buddy assists the quadriplegic diver with neutral buoyancy. Many of our quadriplegic divers are able to move their arms enough to initiate forward motion – in that case; the primary buddy swims along side and is available at a split second's notice. In adverse conditions such as strong current or a tired diver, the primary and secondary buddies swim along either side of the quadriplegic diver and "tow" by holding BC shoulder straps. This placement increases ease of communication by allowing the primary buddy to see the quadriplegic diver's eyes, and allowing the quadriplegic diver to signal the primary buddy quickly and effectively either by using grunts or arm movements.

Communication underwater provides another challenge when diving with people who have quadriplegia, as they do not have full (or any) use of their hands. Our divers brief each other before every dive on communication in order to determine what signals can or can not be used. Then we typically use a question-asking scenario, going from worst-case scenario to least. For example, if a quadriplegic diver wants to communicate, he may grunt in his regulator to get the attention of the primary buddy. The primary buddy can then ask the quadriplegic a series of questions using hand signals until he arrives at the desired signal. Another communication option is to carry a slate with different words on it such as cold, tired, up, cool fish, awesome, and so on. The primary buddy can point to a word and look for a response from the quadriplegic diver. Responses can range from head nods to blinking eyes, to simply looking at the appropriate word – the primary buddy can usually follow the sight line to interpret the word correctly.

All divers with Eels on Wheels follow standard recreational dive limits. We always complete our deepest dive first and follow the same depth and time profiles and surface intervals as those recommended for able-bodied recreational divers. Eels divers stress a slow ascent to the surface, following standard ascent rates. All dives end with a three to five minute safety stop.

Ascents follow the same procedures as descents, in reverse. Our preferred dive profile follows multi-level diving outlines, with several minutes spent at 40 feet, 30 feet, and 20 feet, before the safety stop at 15 feet. Again, many of our quadriplegic divers have enough movement ability to control their own ascent; however, the primary buddy must be immediately available to take control. The

primary buddy also must control the safety stop and ascent rate for both himself and the quadriplegic diver, which again makes buddy awareness imperative.

Assisting quadriplegic divers back into the boat safely offers even more challenge than placing them into the water. Upon breaking the surface, the primary buddy immediately ensures both his and the quadriplegic diver's positive buoyancy. Then he issues the okay sign to the boat and rolls the quadriplegic diver to a supine position in the water. The diver keeps the regulator in his mouth as long as he is still wearing his equipment. The secondary buddy returns to the boat in order to be of assistance in pulling the quadriplegic diver out of the water. The primary buddy removes the equipment from the quadriplegic diver, similar as in a rescue scenario – weight belt (if an integrated weight system is not used), then buoyancy control device and tank, passing all equipment to either another diver or to the boat captain. (Quadriplegic divers do not wear fins, and the mask stays in place until the diver is back in the boat.) The straps on the BCD are loosened and unclipped, but the regulator is not removed and the unit not pushed away from the diver until the boat crew is ready to pull the diver back into the boat. Once the crew is ready and all equipment has been removed, two people in the boat pull the quadriplegic diver back into the boat with the primary buddy pushing the diver's buttocks from the water. This pull-push motion helps to keep the diver's legs from banging the hull of the boat.

Safely diving with people who have quadriplegia takes special training, planning, fine-tuned buddy awareness and a great deal more muscle than diving independently. But the freedom from wheelchairs and increased self-esteem that SCUBA diving provides for people with disabilities makes it well worth the additional work for all involved."

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