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# Getting There and Back...

The Old-fashioned Way

Scuba Skills

**G**etting to your destination and back without a hassle is commonplace thanks to GPS technology. Nowadays nearly everyone has a GPS unit; they are even standard equipment on many new vehicles. Just type in the destination address and follow the resulting driving instructions.

GPS technology is used successfully on many dive charter boats, but except for a few isolated situations, scuba divers don't have that luxury; once at depth they still must navigate the old-fashioned way.

Finding your way underwater isn't always easy. In fact, when visibility is really poor your only hope is a compass and a prayer. If you know the course you want to follow, set the appropriate heading and the compass will guide you there and back, if you use it correctly.

Compass navigation is your only option in severely reduced visibility, but in better conditions it can be used alone or combined with natural navigation techniques.

Natural navigation, which can only be employed in water clarity that allows you to see a reasonable distance, involves following a visual course from one underwater feature to the next.

Natural navigation skills allow dives to tour the dive site with the confidence that they can safely return to the location from which they started, without surfacing to find their bearings. The outward and return legs follow the same course, except the return sequence is in reverse order and from the opposite direction.

The natural navigation process involves five simple steps.

## PHOTO 1

The boat's anchor is a good stationary starting place for natural navigation.

## Step 1. Determining a Starting Location

Natural navigation begins from an established location to which you plan to return. That location must be a stationary object.

When diving from shore the starting point might be the first highly visible object you encounter after descending. To be effective it must be large enough to be clearly visible from the opposite direction on the return leg.

Natural navigation is a little different when diving from a boat. The tendency is to enter the water, descend and begin the dive beneath the boat. Selecting a stationary object directly beneath the boat as your starting location sounds logical, but may leave you searching at the end of the dive.

An anchored (or moored) vessel is not a stationary object; its exact location may change during the dive due to wind and water movement. Upon returning to the spot where you began the dive you would expect the boat to be floating overhead, but it may not be.

It is not unusual for a vessel to rotate 180 degrees or more on its axis — mooring or anchor — as wind and currents change. When a boat shifts to

hang in the opposite direction, it could be as far away as several hundred feet.

When diving from a boat the most reliable starting location for natural navigation is the bottom of the mooring line or where the anchor rests on the bottom. The divers in Photo 1 are beginning the dive from the anchor. Even if the boat swings during the dive the anchor will remain in the same location.

## Step 2. Selecting Intermediate Targets

While positioned at the bottom of the anchor line the divers in Photo 1 scan the nearby reef to identify their first intermediate target. As they depart the starting location on the first leg of the dive, they will swim toward the selected target.

A target should be a prominent, stationary underwater feature in the distance. Selecting targets that are too close results in numerous intermediate targets, which can become difficult to plot or remember.

Keep in mind, however, that an intermediate target that is marginally visible could be a challenge to locate on the return route if visibility were to decrease during the dive. There is no specific formula for selecting intermediate targets. Each dive site is different.

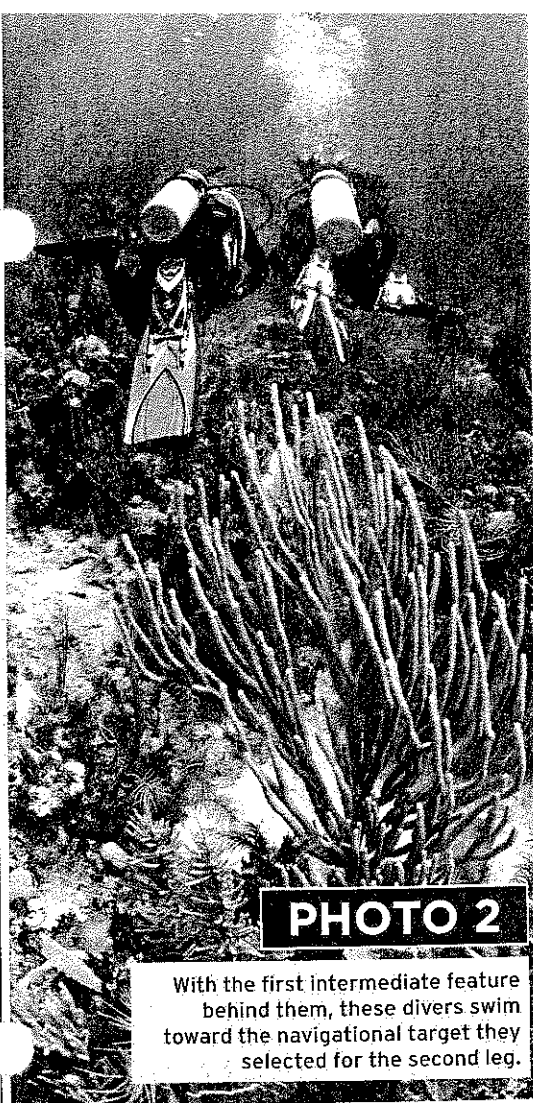
After reaching their initial target — the Gorgonian in the foreground — the divers in Photo 2 have selected a target for the second leg and are on their way.

## Step 3. Looking Over Your Shoulder

Although natural navigation is a forward-looking process, you cannot lose sight of where you've been. On the returning legs you will be using the same intermediate targets to find your way back to the starting location.

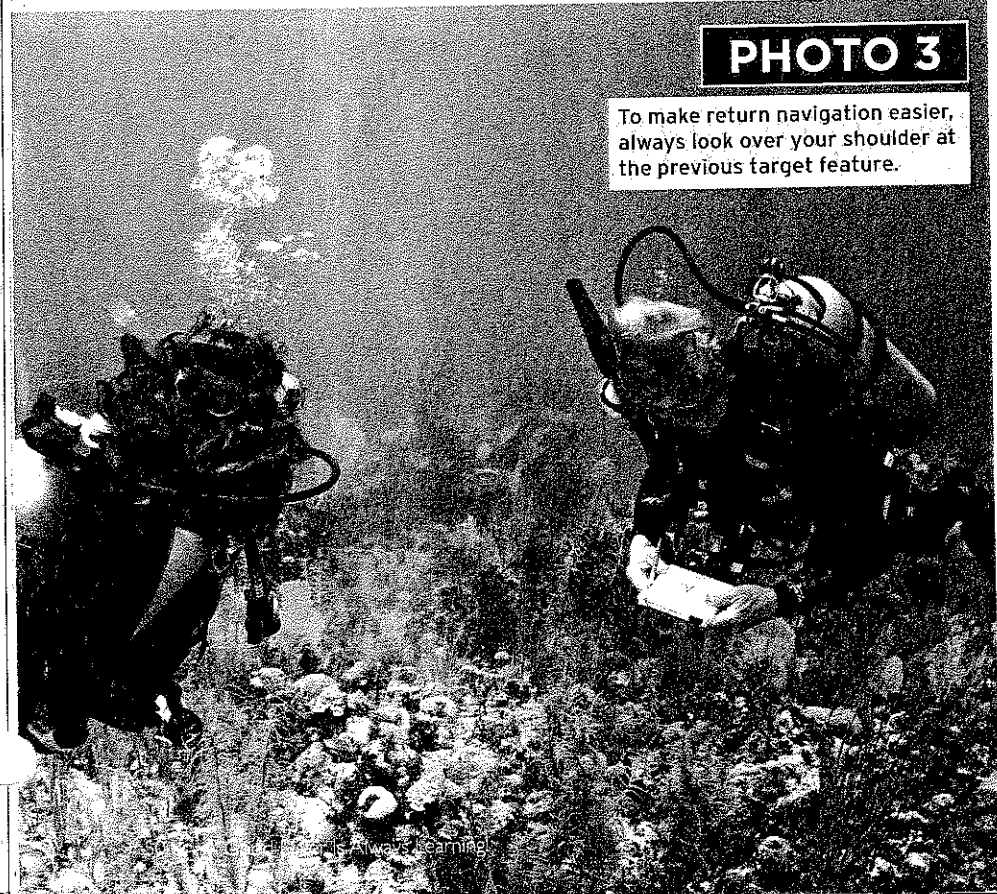
After identifying the next target feature, our divers swim in that direction as they continue touring the reef. Halfway between the two intermediate targets they look over their shoulders to view the previous target from this direction (Photo 3).

Features do not always appear the same from the opposite direction. When



**PHOTO 2**

With the first intermediate feature behind them, these divers swim toward the navigational target they selected for the second leg.



**PHOTO 3**

To make return navigation easier, always look over your shoulder at the previous target feature.

navigating using the natural technique, always look back to observe the previous feature during each leg of the route.

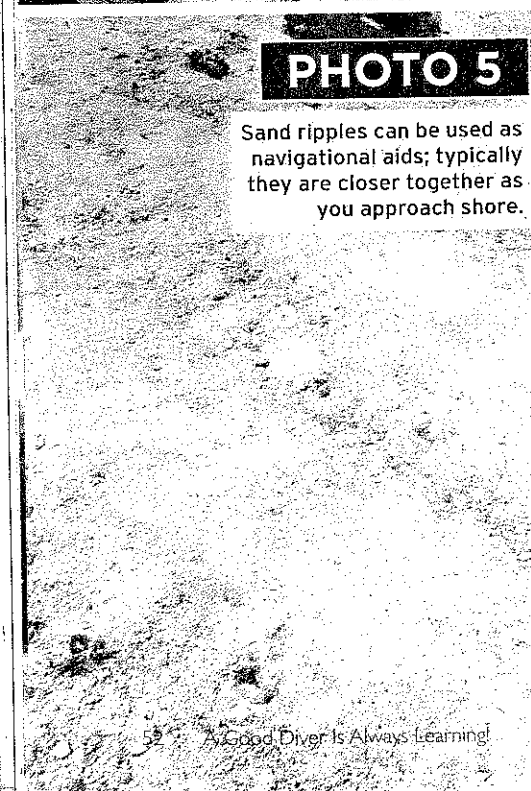
#### Step 4. Plotting the Course

An underwater slate and pencil is the only dive accessory required



**PHOTO 4**

Sketching each outward leg on a slate provides a road map for the return swim. Adding distance or time detail creates an additional level of comfort.



**PHOTO 5**

Sand ripples can be used as navigational aids; typically they are closer together as you approach shore.

for natural navigation; it is used to record the course you follow so you can find your way back.

Before departing the starting location, mark it on the lower edge of the slate. After identifying the first target feature, sketch that feature on the slate in its relative position to the starting point. As the dive progresses, sketch each subsequent target feature on the slate. To ensure adequate space, record from the bottom toward the top.

When ready to return to the starting location, reverse direction and follow the plotted course beginning from the final target.

#### Step 5. Adding Time or Distance

When visibility is good it is often possible to successfully complete a natural navigation dive simply by following the course plotted on the slate. However, adding time or distance detail to each leg improves the odds.

Elapsed time or distance provides an additional perspective and a fallback in case visibility decreases to where the intermediate features are no longer visible.

Time is measured by how long you spend swimming from one target feature to the next. The speed at which you swim is immaterial as long as it is consistent throughout the dive.

Distance typically is measured by the kick cycles it takes to swim from one target feature to the next. The more kick cycles it takes, the farther it is. The kicking stroke used when counting cycles should be consistent throughout the dive as well.

When monitoring distance (kick cycles) or time, record the value on the slate next to the relevant leg. Photo 4 depicts a basic drawing created during a dive that involved three legs — the first was 25 kick cycles, the second 30 and the third 25. Using the sketch to guide them on the return trip, the divers knew which direction to head, what target features to look for and the approximate number of kick cycles between each. A natural navigation sketch can be as basic or as detailed as desired; as long as it pro-

vides a road map that guides you back to the starting location.

#### Other Natural Aids to Navigation

In addition to feature mapping there are several other less accurate techniques a diver can use to determine if he is headed in the desired direction. Shore divers often use sand ripples (Photo 5). Sand ripples generally run parallel to shore and become increasingly closer together as they near the shoreline. Toward the end of a shore dive if the sand ripples are getting farther apart you may be going in the wrong direction.

Current is another natural aid. Although its dependability varies by region, current can be used to confirm that you are going in the desired direction. If the current is coming from your right during the first half of the dive it most likely should be from your left when making your way back to the exit location; if not, you may have gotten turned around.

Depth can also be used to determine your whereabouts. Typically, the farther away from shore you go the deeper the water. If you descend from a boat to the bottom at 60 feet (18 m) and later find yourself in much shallower water you may need to head seaward to locate your boat.

Shadows are another navigation aid. At the beginning of the dive note the angle of the sun and where the shadows fall behind underwater features like coral heads and sponges. This information can be used to confirm that you are headed where you want to go.

Sound is not necessarily a good navigational aid, although a live-aboard dive boat's generator can sometimes be used to locate the boat when its presence is shrouded by poor visibility. At the end of the dive you may return to where you thought the boat was anchored but don't see it overhead. If you hear the drone of the generator, however, there is a good chance that it is there but out of sight.

Natural navigation involves being keenly aware of your surroundings while at depth and applying a few simple steps to help you find your way. It may be getting there and back the old-fashioned way, but it works.