

DIVER EDUCATION SERIES

Selecting A Scuba Diving Buddy

Lee H. Somers

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Sea Grant Depository INTRODUCTION

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"The greatest single safety factor in Navy scuba diving operations is the buddy system." This is a quote from the U. S. Navy Diving Manual [8]. All recreational diving training agencies emphasize the use of the buddy system for all scuba diving. Every scuba diving textbook or manual ever published expounds on the virtues of the buddy system.

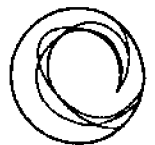
A recreational scuba market attitude study has [1] indicated the following:

Eighty-nine percent of the divers surveyed agree with the statement, "Diving offers a lot of opportunities to meet new people." Meeting new people is a major selling point for the diving sport, and word-of-mouth advertising is of prime importance to diving because the sport is so firmly psychologically-rooted upon a mutual support concept ("buddy system"). Social interaction, therefore, becomes the foundation of attraction to the sport and a major reason for continuing participation.

All divers may not agree that social interaction is the fundamental attraction of diving, but one must acknowledge the significance of the *mutual support concept* as it relates to safety and quality of experience, as well as to marketing strategy.

In spite of nearly universal endorsement, application of the buddy system concept does not appear to provide the scuba diver with a full measure of protection. An analysis of sport diving fatalities during the period of 1971-1980 revealed a total of 1235 scuba diving and 180 skin diving fatalities in the U. S. [4]. Note the following summary of buddy activity during the 1235 sport scuba diving fatal accidents:

No Buddy	179
Buddy Stayed with Victim	280
Buddy Lost Victim Underwater	287
Attempted Buddy Breathing	104



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Buddy Left Water Before Victim	51
Buddy Lost Victim on Surface	105
Unknown	228

This analysis also revealed that 80 fatal accident cases involved the death of two or more divers.

In reviewing these diving fatality statistics it becomes obvious that diving with a buddy does not provide a diver with guaranteed safety. Sixty-seven percent of the divers were apparently using the buddy system at the time of the fatal accident and only 14.5% are known to have not been diving with a buddy.

So, how safe is the buddy system? With the information available, it is still impossible to determine the statistical significance of the buddy system in the prevention of diving fatalities. However, when the figures above are compared to the total number of divers (and dives), it can be said that both the U. S. Navy and the recreational diving communities have excellent safety records. And it must be acknowledged that the buddy system has been the cornerstone of diving safety since the beginning of modern scuba diving. It is possible that the weakness is not in the buddy system, but in the buddies! It is very likely that a general improvement in buddy diving techniques and attitudes could prevent many fatal diving accidents.

How can you be sure your diving buddy will be able to help you if you get in trouble? How can you be sure that you are a good diving buddy for that person who is depending on you for help if necessary?

To help answer these questions, I will examine in this paper the fundamental rules for buddy diving, the qualities of a good diver, criteria for selecting a good diving buddy, undesirable diver personalities, and why some divers prefer to dive solo.

THE BUDDY SYSTEM

"Divers, operating in pairs, are responsible for both the assigned task and each other's safety [8]." The U. S. Navy's basic rules for the buddy diving are:

- Always maintain contact with the buddy. In good visibility, keep your buddy in sight. In poor visibility, use a buddy line.

- Know the meaning of all hand and line signals.
- If a signal is given, it should immediately be acknowledged. Failure of a buddy to respond to a signal must be considered as an emergency.
- Monitor the actions and apparent condition of your buddy. Know the symptoms of diving ailments. If at any time your buddy appears to be in distress or to be acting in an abnormal manner, an immediate determination of the cause should be made and appropriate action taken.
- Never leave a buddy unless (s)he has become entrapped or entangled and cannot be freed with out additional assistance. If assistance must be sought, mark the location of the distressed diver with a line and float.
- Establish a "lost diver" plan for any dive. If buddy contact is broken, follow the plan.
- If one member of a buddy pair aborts a dive, for whatever reason, the other member will also abort and both will surface.
- Know the proper method of buddy breathing.

Being a member of a diving team involves commitment and responsibility. Simply agreeing to swim with another diver does not constitute a true buddy system. The buddy system involves both physical and mental presence. Physical presence is, needless to say, a vital factor. However, the buddy system is also a state of mind. The concept of mutual support begins on your first day of training and continues throughout your diving career. At some time your life may indeed depend upon your choice of a buddy.

Legal or Moral Obligation

In a recent discussion with Walt Hendricks (former Training Director for the National Association of Underwater Instructors), I was stimulated to reflect on the responsibility of a diving buddy. In reality and by the standard of our diving community to-

day, two divers who agree to dive together as a buddy team essentially establish a serious verbal contractual agreement which specifies or implies duty and provisions for specific services to be rendered upon request or need. These services include such considerations as supplying air in the event of air supply depletion/failure, rescue in the event of mishap, management of a stressed or panicked diver, and administration of first aid (including CPR) in the event of injury.

Failure to meet the terms of this contract may be considered to be a breach of contract or duty. In the event that an individual is injured or lost because his/her buddy was unable or unwilling to provide the services required, this breach of duty could be considered as negligence, and the buddy might be held liable for wrongful damages or death.

I feel that any reasonable person would consider this conclusion as highly speculative. Although I am uncertain if the buddy contract has ever been tested in court, I have been informed that buddies have been named in initial suits. In society's legal climate today, a buddy might find himself/herself in a precarious situation. I wish to encourage divers and instructors to seriously consider the responsibilities of being and training a good buddy diver.

Diver Separation

It is very easy for two scuba divers to become separated underwater in poor visibility. Frequently, a diver will stop for a few seconds to examine something on the bottom and the buddy will keep swimming. The buddy may no longer be visible only ten feet away. All dive teams must have a standard plan of action to deal with this situation. Normally, a scuba diver is directed to spend no longer than one minute attempting to re-establish buddy contact underwater. If the two divers have not reunited within a minute, both divers are directed to ascend and re-establish contact at the surface. Once this procedure has been adopted by a dive team, if either of the divers fails to surface it must be assumed that the missing diver is entangled, seriously injured, or unconscious on the bottom. Naturally, rescue procedures must be initiated immediately.

In attempting to re-establish contact during that first minute of separation, the divers must systematically search, not swim haphazardly around the bottom. Initially, stay put! First, simply stop and listen for a few seconds. If you hear bubble noises, your buddy is probably still near by. Some divers will tap on their scuba cylinder with a metal object such as a knife. Sound may carry for some distance; however, it is difficult to determine the source direction because of the increased speed of sound underwater.

Second, rise a few feet above the bottom and visually scan all around you. In many quarries and lakes visibility is far more obscured very close to the bottom. A few feet above the bottom you may see your buddy's bubbles or your buddy looking for you. Look for silt trails. There will often be a well defined silt trail that you have made as you and your buddy swam to that location. There may be a smaller (single person) silt trail leading in the direction that your buddy swam. Carefully follow the trail for a few feet. If only one silt trail is visible, it is possible that backtracking a few feet will re-establish buddy contact.

Third, if no silt trails are visible, systematically swim a short distance in each of four directions from the point that you lost contact or do a quick box search of the immediate area using your compass as a guide.

All of the above are to be accomplished in approximately one minute. If you have not re-established contact in that amount of time, prepare to surface. Ideally, you should mark the exact location where you became separated from your buddy. In the event that your buddy is unconscious or entangled, a search team needs an exact point to begin rescue procedures. Do not rely on relocating the point visually once you have surfaced since currents or swimming movement may carry you some distance from that location.

Very few scuba divers diving in conditions of limited visibility carry any type of marker float. If you are diving in a body of water where the use of a diver's flag/float is required and you have the float line, secure that line at or near the location of last buddy contact. However, if you are not towing the float or are diving in a quarry where dive flags are not required, you do not normally

have any means of marking the location.

A marker float small enough to be carried in your BC pocket can be easily be assembled by wrapping 50 to 100 feet of small nylon or strong fishing line around a bright colored cork or fishing float that is only an inch or so in diameter. The length of the line can be adjusted for routine diving depths. Before you start your ascent, secure the line to a submerged object that is secure enough to hold the line and float in place. On a featureless sediment bottom, you can secure the line to your knife handle and embed the knife in the bottom.

The Buddy Line

Scuba diver separation in limited visibility water need never occur. All divers who frequent poor visibility sites should carry a six-foot-long buddy line with loops on each end. The line should be constructed of synthetic polypropylene or polyethylene braided or 3-strand twisted rope, since this type of rope floats and comes in a variety of colors. The advantage of a floating rope is that it doesn't drag on the bottom and catch on objects. A loop large enough to slide over your hand and lower arm should be tied or eye-spliced in each end. Use line that is 1/4- to 1/2-inch in diameter, since very thin line is more difficult to handle. The line is carried in the BC pocket when not in use or at least in your dive bag. Two lines may be joined to make a 12-foot line for special activities.

Many years ago Gary Howland assembled a versatile divers' rope. The rope was about three feet long. There was a hand sized loop at one end and a good sized brass snap-hook at the other. In limited visibility, two ropes could be joined together to make a buddy line. For small boat diving, the looped end could be secured to a cleat or side line (rubber boats) to hold equipment such as cameras or scuba. Many divers working from small inflatable boats don and doff their scuba in the water. The scuba is securely hung over the side on this short rope. The rope can also be used as a belt for casual wear.

SELECTING A DIVING BUDDY

How do you select an individual with whom to share the pleasures and responsibilities

of scuba diving? Keep in mind that all trained scuba divers are not necessarily good buddies. Furthermore, the standard of training for one diver may differ considerably from that of another. For example, there is absolutely no assurance that all NAUI trained divers will have the same philosophy toward buddy diving or will perform skills such as buddy breathing with the same level of proficiency. Some instructors do not even include conventional buddy breathing (sharing a single regulator) in their course. The instructor is the determining factor.

Unfortunately, for many recreational scuba divers the selection of a buddy involves a rather haphazard approach based on countless assumptions. Far too often the selection of a buddy is based solely on availability, not on objective criteria.

Qualities of a Good Diver

Before you can select a diving buddy, you must first understand the characteristics of a good diver. Every diver wants to be a good diver! However, how do you identify this good diver? Over the years, recreational and professional divers have produced many myths or, at least, unusual indicators of apparent diving expertise. In the earlier years of recreational diving, the diver who speared the biggest fish was the best diver. Some dive club memberships were based on such feats as capturing a small shark bare-handed while breathhold diving. Concurrent with the spearfishing era was the prolonged breathholding and deep skin diving syndrome. Naturally, it was often assumed the best divers were the ones who could stay submerged the longest and dive the deepest. Breathholding and underwater distance swimming contest in swimming pools were not uncommon.

With the increasing popularity of scuba, depth became an even more insane yardstick by which to measure and identify the hero diver. Adventurous and possibly somewhat misguided compressed air scuba divers ventured deeper and deeper, some returning to reign as hero images and others to tragically lose their lives in this ultimate quest for recognition. Depths in excess of 400 feet using compressed air scuba were reported. Fortunately, responsible members of the diving community

began to campaign against such stunts, and publishers of some diving periodicals refused to publicize such record diving attempts or accomplishments. Unfortunately, the deep diving syndrome still exists today. Stories of 200- to 300-foot compressed air scuba dives on Caribbean walls, to Great Lakes shipwrecks, and in Florida caves still circulate through the diving community. Although depth achievement is still the mark of a good diver to some individuals, it is a certain sign of questionable emotional stability to most.

In an early *Skin Diver Magazine* editorial Tzimoulis was among the first to focus realistic public attention on judging the positive qualities that identify a good diver [7]. He identified the following factors:

- Physical Condition
- Proper Equipment
- Underwater Orientation
- Buddy Contact
- Awareness
- Pre-dive Judgment

Tzimoulis summarized a good diver thus: "A good diver is a careful diver. He's a guy who avoids trouble rather than one who is always struggling out of a tight squeeze." Wisely stated!

The qualities that exemplify a good diver are more subtle than one might expect. Personal commitment, self-awareness, and attitude toward diving safety are of vital importance. The good buddy must first be true to him- or herself. Objective self-evaluation is sometimes the most difficult and emotionally painful form of evaluation.

How would you evaluate yourself or another diver? The following are fundamental considerations:

Watermanship. A good diver is comfortable in the water and is a capable swimmer. Unfortunately, some individuals and agencies in the diving community do not equate watermanship with diving ability. In fact, some individuals claim that a person doesn't even have to be a swimmer to be a scuba diver. Instructors have informed me that good swimmers do not make good divers. This statement can be viewed as both true and untrue.

A good swimmer is generally more comfortable in the water than a poor swimmer. And, a person who is more comfortable in the water will generally be a better student/learner. On the other hand, a superb competitive swimmer may not be a good diver. Individuals who have swum hundreds of miles in a swimming pool may lack the common sense and good judgment to dive safely in an ocean environment. Their skill and physical condition may be beyond question. However, high level performance in the calm swimming pool environment often cultivates over-confidence and lack of respect for other aquatic environments.

Today is the age of *push-button diving*. Some instructors and divers suggest that the diving industry's emphasis on buoyancy compensation diving practices has eliminated the need for being a relatively strong and capable swimmer. Needless to say, I disagree. The scuba diver must be a skilled, competent swimmer without the aid of fins, mask, snorkel, buoyancy compensator, and scuba. In my subjective opinion, a good diver must be able to swim comfortably at least 1/4 mile without the aid of this equipment. A committed diver will also have some form of conventional lifesaving training in addition to that associated with scuba diving.

How can you determine if an individual is comfortable in the water? How will the instructor determine this? Such determinations are both subjective and objective. First, only that individual can actually assess his/her own emotional comfort level. If an individual experiences high emotional stress or anxiety when asked to swim in the middle of the pool away from the security of the side or struggles to stay afloat and move in the water, he/she is obviously not comfortable. Many instructors do not include a swimming pre-requisite in their scuba program. Some students are informed that they will only be expected to swim 200 to 300 yards without the aid of equipment before they can be certified.

For a poor swimmer who is uncomfortable in the water, both the training and later experiences can be unpleasant and the learning experience seriously compromised. Such individuals may drop out prior to the end of the course, fail to meet the certification requirements, or "sneak

through." I feel such an individual is at high risk, especially the one that "sneaks through." A poor swimmer is far better off in a swimming course. This person can then learn to scuba dive later when he/she can both enjoy and gain maximum benefit from scuba instruction.

As an instructor, how do I evaluate comfort level in prospective students? I talk to the students and I ask them to swim. I personally feel that a person who can swim at least 400 yards without exhibiting signs of exhaustion or serious emotional/physical stress will enjoy a more successful learning experience and be a safer diver. In addition, I ask my students to demonstrate the ability to float or tread water for 15 to 20 minutes, swim 25 yards underwater, and tow a fellow student 25 yards.

Knowledge. A good diver is a knowledgeable diver. However, knowledge is not always measurable in terms of examination scores or other traditional academic means. A knowledgeable diver is one who takes an intelligent approach toward diving and diving safety. A good diver dives primarily with his/her brain, not muscles. Diving may be as much as 90 percent intelligent decision making.

A good diver can skillfully calculate repetitive dive schedules, recognize symptoms/signs of diving related injuries, systematically analyze environmental conditions and dive requirements, discuss local aquatic life, and so on. In other words, this diver can intelligently discuss any aspect of the dive and is capable of responding immediately to questions on the fundamentals of scuba diving. This diver gives a intelligent reason for his/her actions and choice of diving equipment or procedure. Reasons for selecting a particular regulator such as "It was on sale!" or "My friend liked it!" would not necessarily be considered as highly intelligent responses.

Keep in mind that you may be disappointed when you ask a prospective buddy to work a decompression problem. Homer Fletcher, a well-known California scuba diving instructor, administered a simple repetitive dive problem test to approximately 100 experienced scuba divers. Only 18% completed the test without error.

Physical Fitness. Nearly anyone can swim underwater while breathing from scuba regardless of their physical fitness. I have observed individuals at Caribbean dive resorts who appeared out-of-breath just from the exertion of walking to the dive boat. Although these individuals seemed fairly comfortable underwater, their post-dive near-exhaustion level raises doubt in my mind with regard to both safety and quality of experience. How would such an individual respond in a physically or emotionally stressful situation? Research and experience suggest that both the out-of-shape diver and his/her diving companion could be compromised in a stressful situation. A good diver will maintain a reasonable level of physical fitness.

Some scuba diving situations, particularly for the unskilled novice, can place serious stress on the entire body, especially the cardiovascular and respiratory systems. Anxiety, skill inefficiency, poorly conditioned heart, hyperventilation, obesity, equipment restrictions, breathing resistance, and heat loss are among the many factors which can cause increased heart rate and onset of fatigue. My experience suggests that a person in reasonably good physical condition is a better learner in a scuba diving course and is more apt to be a safe and comfortable diver. Scuba diving will generally be a higher quality experience for the individual in good physical condition.

To help divers evaluate their personal physical fitness level, one can administer the Cooper Aerobic 12-Minute Swimming Test. For persons who appear to be relatively poor swimmers, the Cooper 12-Minute Running Test can be substituted. Both tests are "age and sex adjusted." I feel that a scuba diver should be capable of performing at Fitness Category III (Fair) and that an active diver should attempt to maintain a fitness level of Category IV (Good) on the 12-Minute Swimming Test. This means that an individual between the age of 20 and 29 years should be able to swim at least 500 yards (male) or 400 yards (female) in 12 minutes. Complete instructions and fitness charts can be found in *The Aerobics Way* by Kenneth H. Cooper (Bantam Books, New York, 1977) [2].

I must caution you about fitness testing. Since the heart rate and blood pressure cannot be continuously monitored during this field test, there is a certain degree of risk if one takes the test without having been properly conditioned by previous exercise. If you are over 30 years of age, do not take this type of fitness test prior to beginning an exercise program. Cooper suggests that you postpone testing until you have completed a six-week "starter program." All persons should have a basic medical examination prior to testing. Furthermore, if you feel extreme fatigue, shortness of breath, light-headedness, or nauseous during the fitness test, stop immediately. Do not repeat the test until your fitness level has been gradually improved through regular exercise.

As a general rule, average participation in scuba diving activities is not sufficient to develop and maintain a satisfactory level of physical fitness. Diving must be supplemented by a regular exercise program. Persons who participate in diving only on a seasonal or vacation-time basis should exercise regularly or, at least, initiate a conditioning program six to eight weeks prior to active diving.

Hopefully, your participation in scuba diving will motivate you to improve your overall fitness level and, to some degree, your personal lifestyle. I encourage all divers to re-evaluate their current approach toward physical health, stress management, recreation, and general lifestyle. Scuba diving can be a lifestyle of its own. As part of this new lifestyle you may wish to initiate a personal health and fitness program. The Cooper aerobic exercise program is a good place to start. Over the past two decades it has been accepted and used by a vast population of "average" people. Detailed and simplified publications describing the program are sold throughout the world. The exercises and fitness levels are adjusted for both age and sex. Your personal exercise program can include a variety of activities ranging from running to volleyball and is adaptable to almost any lifestyle or living situation. And, most importantly, it works!

Proper Equipment. Equipment does not make the diver. However, a good diver will have sufficient diving equipment in good

condition that is appropriate for the selected diving conditions. Diving equipment can not be considered a substitute for physical fitness or watermanship, but a good diver will use modern equipment to minimize the amount of physical exertion, thermal stress, and psychological stress associated with a dive and to maximize comfort and pleasure.

Good diving equipment is expensive! However, each diver must select diving equipment that meets safety and environmental requirements for his/her specific geographic area and diving activities. The most obvious variable is in thermal protection requirements, but there are still some regional variations in the type of auxiliary air supply system used (i.e., standard octopus versus secondary scuba or pony system) and special equipment requirements for cave and under ice diving.

The following list is considered to be the minimum equipment requirement for safe scuba diving:

- Mask, fins, boots, and snorkel
- Net equipment bag
- Buoyancy unit
- Knife/sheath
- Thermal protection garment
- Weight belt
- Waterproof decompression tables
- Underwater watch or timer
- Depth gauge
- Scuba regulator with pressure gauge and auxiliary breathing unit
- Scuba cylinder and appropriate backpack
- Buddy line and marker float (for diving in water with limited visibility)
- Dive flag and float (where required)
- Equipment bag or container

Buddy Compatibility. A good scuba diver is a team diver who carefully and objectively selects a diving buddy and does not dive alone. He is a good buddy before, during, and after the dive. The good diving buddy is someone who you can respect for his attitude toward diving and diving safety. Most of all, diving buddies should have a

similar philosophy with regard to diving and the environment.

Ideally, your diving buddy should have been trained by the same instructor and even in the same course as yourself. This provides a greater assurance that both divers will respond to a given situation in a similar manner. This can be very significant in an emergency situation such as one requiring sharing an air supply.

What about physical differences? Male-female pairs? Large person-small person pairs? Diving is a social sport. During my travels I have observed many excellent male-female buddy pairs. However, difference in physical size, regardless of sex, should be a serious consideration in selecting a diving buddy and planning a diving activity. Let's examine the following hypothetical scenario:

A 6 foot, 4 inch tall 240 pound ex-football player and his 5 foot, 2 inch 102 pound wife receive their diver certifications and find that they enjoy diving with each other very much. They have a cottage on a large northern Michigan lake and dive from their outboard motor boat on weekends. Normally, they spend their weekends alone. During a dive approximately 1500 yards off shore in 50 feet of water, they become separated for a few minutes. The wife follows a silt trail and finds her husband lying unconscious on the bottom.

Could the wife bring her unconscious husband to the surface? Yes! A small, properly equipped and trained diver could accomplish this task. Could the wife administer mouth-to-mouth resuscitation in the water? Yes! If she was properly trained and both divers are properly equipped, this task could be accomplished. Could she get her unconscious husband into the boat so that she could administer CPR and get him back to shore? Probably not!

Good training and proper equipment are tremendous size equalizers. However, there are some situations in which size and strength differences can compromise safety. Unfortunately, divers will far too often maintain the "it can't happen to me (us)" syndrome.

Should or should not persons of significantly different size dive as a buddy

pair? Certainly, they can! However, I suggest that such a diving pair should not isolate themselves from other divers and place themselves in a completely self-sufficient situation. Ideally, the couple in the above scenario should have been diving with someone in the boat who was capable of providing assistance in an emergency situation. Keep in mind that the average mother-in-law or 10-year-old child would probably not have been of much assistance in this situation, except to possibly return to shore and seek help from others. Ideally, a second pair of divers should have been invited to share the diving experience.

To be perfectly honest, pulling an unconscious diver of equal size into a boat unassisted is very difficult, if not next to impossible. Try it sometime! Proper diving procedure dictates the presence of at least one more capable individual in the boat.

Underwater Orientation. A good diver always knows her position underwater relative to the boat or established entry/exit points. This diver can always find the way back to the pre-determined exit or ascent point and seldom surfaces more than a few yards from that point. A good diver monitors the scuba air supply continuously throughout the dive and always exits without completely depleting her air supply. The disoriented diver frequently depletes her air supply offshore or at some distance from the boat and must surface swim to the exit point.

Awareness. Tzimoulis used the term *awareness* to denote what is possibly the single most important trait of a good diver [7]. Another term that might be applied is *anticipation*. A good diver develops a "sixth sense" and is always "ahead of the game." He does this by maintaining a constant vigilance of those environmental factors which can contribute to the development of a bad situation (i.e., increasing surf, increasing current, weather changes, heavy surge, and so on). He is aware of time, distance, and air supply. He is alert for signs of fatigue and distress in his buddy. A good diver knows when he is approaching his personal limits of physical or emotional endurance and terminates the dive well before reaching these limits. He knows when to quit or turn back and never complains

when his buddy does likewise. "Good water sense evolves from environmental awareness, thinking ahead, and prior diving with a seasoned veteran" [7].

Pre-dive Judgment. Knowing when not to dive is just as important as knowing when to dive. A good diver evaluates the dive site and water conditions. If the situation appears to involve unacceptable risk, she will select another dive site or cancel diving for the day. She also evaluates herself and her buddy. A diver suffering from a cold, sinus congestion, anxiety, or other forms of illness will refrain from diving rather than compromising the quality of experience and safety of fellow divers. Poor judgment can lead to hazardous, even life-threatening, situations. A good diver will also refrain from diving with a buddy who is not physically/emotionally sound or not properly equipped.

Positive Attitude. A good diver is a safe diver. There is no substitute for common sense, sound judgment, and a continuing concern for personal and fellow diver safety. *Diving safety is not a rule book, it is a state of mind!*

CLASSIFICATION OF DIVERS

Smith has identified five basic types of divers — dependent, vacillator, together, macho, and loner. The descriptions of these various types of divers given below were taken from Smith's excellent article in *Undercurrents* [5].

Dependent Diver. The dependent diver is generally a cautious diver who tends to focus on safety, custom, and rules. This diver will generally depend on dive guides and other more experienced divers to select dive sites, plan dives, and so on. He may not appear outwardly enthusiastic about the pending dive and will often be hesitant about discussing his past diving experiences. Underwater this diver will generally follow the lead of others. The dependent diver lacks self-confidence and is often shy and quiet. In general, the dependent diver prefers to be taken care of and will defer to authority or strong personality.

The Vacillator. The vacillator is generally a good diver who appreciates the need for

caution and safety. He uses good, well-maintained equipment and is willing to follow the dive guide's recommendations. He will express both excitement and concern before a dive. He may or may not be interested in following a dive guide underwater and is reasonably self-assured, but hesitant when discussing his diving experience. The vacillator is not completely confident in his own capabilities and will occasionally find it necessary to prove himself by separating from his buddy or pushing his air supply or dive time/tables to the limit. He is a sociable individual who often has a secret admiration for divers who appear to break the rules, both liking them and being repelled by them.

Together Diver. The together diver is a sociable extrovert who enjoys life and diving. She is calm, cooperative, attentive, and a good listener, showing genuine interest and concern for others. She will give a very realistic appraisal of her diving experience, if asked. A together diver generally cooperates with the dive guide; however, this is situational and depends on the dive operation and location. She is generally in a profession that involves helping others. She can take charge of a situation or defer to another.

Macho Diver. The macho (or machette) diver considers the diving world to be his domain to conquer. He uses equipment that is in mediocre condition and pushes the rules. He is generally a loud extrovert who is a poor listener and somewhat intimidating. He is very enthusiastic about every dive and often refuses to follow the dive guide. He tends to present exaggerated impressions of his diving experience. Members of the opposite sex find the macho diver to be either fascinating or repelling. The macho diver is generally a male who gives divers and diving a bad name.

The Loner. The loner is an introvert who finds diving fascinating because of its technical virtuosity and its peacefulness and solitude. Underwater photographers are often loners. She prefers to not dive with the dive guide. The loner is a limited conversationalist who finds things more interesting than people and is usually involved

in dive and equipment preparation. It is sometimes difficult to determine the diving experience level of the loner.

THE UNDESIRABLE BUDDY

Fead identified the following four types of divers who may make undesirable buddies — the novice diver, the insulated diver, the subtle competitor, and the misunderstood diver (3). I have expanded on Fead's original classification and explanation. In addition, I have included three other potential types of undesirable dive buddies — the parasitic diver, the impatient perfectionist, and the society diver.

Novice Diver. The novice diver is often awkward and unorganized. He is ashamed of his lack of ability and experience. The experienced diver may often be placed in a position of diving with a novice and must recall that he was also once a novice. Time, patience, understanding, consideration, and guidance are needed to transform the novice into a skilled, safe diver. The experienced diver that embarrasses the novice with regard to his capabilities, clumsiness, and apparent lack of experience may very well be producing an anxiety factor that will later affect the diver's performance. The novice may respond by attempting to cover up his shortcomings and may extend himself beyond both his physical and psychological limitations during the dive. This spells trouble for both divers.

Naturally, beginning divers who have just completed their scuba training are considered novice divers. However, many of these individuals are actually better divers than a so-called experienced diver who was trained/certified five years ago and has only made four or five dives in the past three years. There are hundreds of thousands of certified divers who have never advanced above the level of novice or who have regressed back to this level as a result of inactivity.

In my opinion, a scuba diver must have at least one diving activity every two to three months and make absolutely no less than 12 dives per year. A single one-week diving vacation each year is not sufficient to maintain skill level. If an individual is unable to participate in diving on a rou-

tine basis, he should consider enrollment in periodic refresher courses.

Seasonal divers must also use common sense and good judgment as they begin each diving season. Do not expect the average seasonal diver to be much above the level of novice at the beginning of the season. Begin the season with simple dives and increase the complexity as skill level improves. Maintenance of skill and knowledge level is part of the commitment one must make to be a safe scuba diver!

Many experienced divers and instructors who must dive with novice divers consider that they are essentially diving alone. Unfortunately, this is true. The experienced diver must be prepared to independently deal with emergency situations as well as manage those of his buddy. For example, let's assume that the experienced diver has a complete air supply failure and that the novice diver does not have an alternate air source regulator. Attempting to buddy breath in this situation could elevate the anxiety level of an already stressed diver and initiate a panic response. Either or both divers could drown. A more prudent experienced diver would probably elect to execute a controlled emergency ascent. Some experienced divers and instructors prefer to carry an independent emergency air supply (pony bottle) when teaching and diving with novices. Others simply make certain that the novice diver is equipped with an alternate air source.

Insulated Diver. The insulated diver is the diver who feels that the rules of safe diving do not apply to her. Everyone else should dive by the rules, however, she is so good that nothing can happen to her. This type of diver often gets into serious trouble. The buddy must be prepared to rescue the insulated diver and can not depend on that diver to reciprocate in an emergency.

There are many species in the genus of insulated divers. The "I have other priorities" diver is one who becomes defensive when challenged with regard to attitude or diving skill. These divers appear to enjoy participating in diving; however, they often have a disregard for the finer details of skilled performance, equipment maintenance, and diving safety procedures. This

is a diver who cares more about her social status within the group than diving safety.

Another species is the "mossback" who views modern advancements, standards, equipment, and safety attitudes as taking all of the fun out of diving. This diver might make a statement such as, "In the good old days we didn't need all of these new fangled gadgets such as pressure gauges, octopuses, and oxygen units. Aren't there any real divers besides me around today?"

Do not confuse this type of diver with the "dinosaur" who is a diver of long-standing experience who soundly and objectively reflects on modern diving trends. These dinosaurs established the foundation on which modern scuba diving was built.

Subtle Competitor. The subtle competitor is, in my opinion, one of the most difficult divers to deal with and a potentially dangerous buddy. This diver is always challenging other divers in a subtle but provoking manner, especially novices. He commonly brags about his low air consumption. The minute he returns to the boat he immediately asks how much air you have left and proceeds to boast that he has 1000 pounds more. If you use 15 pounds of weight on your belt, he glows with competitive satisfaction by using either more or less. He prides himself on swimming further or faster than his buddy. Most frightening of all, he is generally a *deep freak*. Life and diving is a continuous series of competitive events.

Do not accept the challenge of the subtle competitor. You can only lose; you cannot win! Such feats of competition in scuba diving tend to push you to and beyond your physical and emotional limits. Every diver has a reasonable and prudent safe limit. Remember that the subtle competitor is not just competing with his buddy, but also with himself. As a buddy you must ultimately be prepared to rescue this diver when he finally exceeds his limit — and he generally will someday.

Misunderstood Diver. The misunderstood diver is the one who fails to communicate with her buddy before the dive. She assumes that every dive will be the same as the previous dive; consequently, there is no need for planning. This is the diver who always gets separated from her buddy un-

derwater, leaves necessary equipment at home, and never brings enough money to pay her way. She simply fails at thinking. And thinking is the process in diving by which problems are solved or avoided. If the misunderstood diver thinks at all, she thinks alone.

Parasitic Diver. In our society there are givers and takers. The parasite is a self-centered taker. This individual will carefully seek out and take advantage of a diver who is a giver. He never pays his own way. Some refer to him as a freeloader. Dive trips and activities must be arranged to his convenience and satisfaction. He often prides himself on his ability to deceive and manipulate his buddies, other members of the diving party, employers, friends, and even family. By nature, he must be in control. If he perceives that he is losing control of his buddy, he may respond in either anger or feelings of rejection.

This group also includes individuals who will promise anything and sexually prostitute themselves in return for diving equipment and expensive diving vacations. The social climate and mutual support concept makes recreational scuba diving an attractive environment for these predators. There appears to be a sufficient supply of naive and willing prey.

The parasite is often an excellent technical diver. However, because of his deep-seated self-centered philosophy toward relationships with all other people, one must be concerned about how he will respond if his buddy requires emergency assistance.

Impatient Perfectionist. The impatient perfectionist is generally an excellent, safe, and conscientious diver. She is extremely compatible with some individuals and a very desirable diving buddy. However, her desire for perfection and perceived impatience can be unnerving to some other divers, especially novice divers, slow divers, unorganized divers, untidy divers, and insecure divers. She can be extremely demanding, and even intimidating, at times. This can produce an unacceptable anxiety or stress response in a buddy diver. Combining a slow diver, such as one who takes an hour to prepare for a dive and suit-up, and an impatient perfectionist can produce an extremely stressful situation.

Society Diver. The society diver is the mover and the shaker of the diving world — a product of modern society. For this individual, diving is an excuse to party. He often equates diving vacation fun with the consumption of alcoholic beverages [6], the use of various narcotics, and loud partying while more serious divers are trying to sleep. He favors games such as "tequila trivia." Dive travel promoters and resort and boat operators capitalize on the desires of the modern-day society diver by providing such enticements as open bar packages and complimentary beer and wine on tap. And local island entrepreneurs supply everything else.

The physiological and emotional adversities associated with the consumption of alcohol or drugs are obvious. Pre-dive drinking can reduce muscle control and coordination, increase the diver's cooling rate, impair the diver's ability to make proper judgments, and promote "risk taking" and triggering of fear/anxiety responses. Do you want to entrust buddy responsibilities to this individual? Do you want to take responsibility for the seriously compromised diver? Are you a seriously compromised diver?

I am certain that divers, instructors, and dive guides can identify many other subclasses of the above. What type of diver are you? What type of diver do you want for a buddy?

MAKING THE SELECTION

All divers must ultimately develop their own criteria for selecting a diving buddy. The following questions and explanations may serve as basis for developing these personal criteria:

Is this diver properly trained and experienced to participate in the proposed dive? Far too often divers are embarrassed to ask a new buddy to let them see their certification card/logbook or to ask if they have ever dived in a particular environmental condition. Would you enter a five foot surf or dive in a strong current with a buddy who had only made six dives in a small Midwest quarry? A new and prudent buddy team will take time to get to know each other and will make simple dives before proceeding to more complex or poten-

tially demanding situations. Above all, diving buddies must be honest with each other. If you are not comfortable with the situation or feel that the dive is beyond your present capability, say so! Do not jeopardize the safety of yourself or your buddy.

Ideally, diving buddies should have the same training background. The initial dives for a new buddy pair should actually be self-imposed retraining or evaluation dives.

Is this diver physically and emotionally fit to make this dive? If you select a buddy who is in extremely poor physical condition, you may find yourself in a rescue situation. Furthermore, this unfit diver may be worthless in the event that you need assistance. Modern trends in diving instruction, equipment, and promotion have encouraged many individuals of marginal fitness and swimming ability to participate in scuba diving. Buoyancy equipment and fins are often substituted for fitness and swimming ability. A good diver is equally at ease in the water with or without diving equipment.

Avoid selecting a diving buddy who is obviously ill. Respiratory infections such as colds, sore throats, and sinusitis can impair a diver's ability to equalize pressure. This may cause considerable problems during descent and may even require you to abort the dive. Chest colds and bronchitis are serious problems that may predispose the diver to pulmonary barotrauma. Individuals who are exhibiting obvious signs of fatigue, abnormal breathing, diarrhea, severe headache, etc. may also be considered poor candidates for diving buddies.

There appears to be incontrovertible evidence that a fat rat (experimentally) or a fat person is more susceptible to decompression sickness than a lean one. Selecting an obese buddy may require a more conservative approach to diving.

Avoid diving with individuals who are taking recreational or street drugs. They can be very unpredictable, may respond unsatisfactorily to even minor problems, exhibit reduced physical stamina and tolerance to cold, or have a drug reaction while diving. The risks are obvious. You could be at extremely high personal risk in

attempting to rescue this diver or to deal with drug-related responses. In addition, the legal implications of guilt by association with persons buying and consuming drugs could be quite drastic. In many countries, you are assumed to be guilty until proven otherwise when it comes to drug trafficking.

I apply the same rules to alcohol as I do other drugs. If the diver is exhibiting signs of intoxication or consuming alcohol prior to diving and between dives, I recommend that this person be considered as an unacceptable diving buddy. An individual with a hangover is also a poor choice. Most authorities suggest that at least 24 hours should elapse between heavy drinking and diving. Individuals should not dive for at least 4 hours after drinking any alcoholic beverage. A chronic alcoholic should never be allowed to dive.

Emotional stability is equally important. An individual who is exhibiting signs of anxiety, stress, despondency, irritability, exaggerated fears, poor judgment, difficulty in thinking or concentrating, fixation of ideas, memory loss, and so on may represent an unacceptable risk. Persons with serious emotional and personal problems are probably less likely to be good diving buddies.

Is this diver properly equipped for this dive? Evaluating a new buddy's diving equipment is a significant factor in selecting a diving buddy. Both his and your safety depends on that equipment. Does your buddy have a submersible pressure gauge? If not, he is not an acceptable diving buddy. Does he have proper thermal protection for the environmental conditions? Does his equipment show signs of abuse and lack of maintenance? Does he have a dive timer and depth gauge? Does he have an alternate air supply system? Does he appear to have too much weight on his belt? Does all of his equipment appear to be in good working condition or is his regulator leaking air, etc.

Equipment does not make the diver! However, the quality, completeness, and condition of a diver's equipment is a good indicator of that diver's attitude toward diving safety. A poorly equipped diver is more often than not an unacceptable buddy. For example, if the buoyancy compensator does not function in an emergency, it might

result in the loss of his life, your life, or both. Do you want to rely on the buddy breathing skills of an unknown diver without an alternate air source at 100 feet? Even 40 feet? Evaluate your own equipment! Are you properly equipped?

How will this diver respond in an emergency? Exactly how a diver will respond under the stress of an actual emergency is difficult if not impossible to assess. Most divers do not even know how they would respond themselves. However, you can identify if your response and your buddy's response are likely to be compatible through discussion of training and personal diving philosophies.

Do not simply assume that your buddy will respond the same as you would in an emergency. A good buddy team will develop a routine of periodic emergency procedure and rescue practice.

Does this diver have CPR, first aid, lifesaving and/or diver rescue training? A good buddy should have at least some level of first aid and CPR training. *Do you?*

Is this diver a good buddy? Don't be afraid to ask fellow divers about a new buddy. Reputation is a key factor. Poor diving buddies are soon identified in the diving community.

Diving buddies often develop very close personal relationships which involve extensive travel, social activities, educational involvements, and lasting friendships. In selecting a buddy one might also wish to consider fundamental personal and social factors including the following:

- Am I socially compatible with this individual?
- Will this individual make a good traveling companion and roommate?
- Is this individual financially responsible and capable of paying his/her own way?
- Would I be comfortable with this individual in most or all social and diving situations?
- Is there any reason that would lead me to feel that I could not trust this individual?

diving situations?

- Is there any reason that would lead me to feel that I could not trust this individual?

Ideally, diving buddies should use identical equipment so that they are completely familiar with that equipment. Many military, scientific, and rescue dive teams outfit all divers with the same make and model of equipment so that the divers only have to learn the assembly, procedural, and operational aspects of one kind of equipment. This is safer and allows for more flexibility in the field.

Some buddy pairs actually work out a cooperative purchasing plan. For example, let's assume that a well-established buddy pair decides that they want to develop their underwater photography skills. They can split the cost of the system for co-ownership or work out a scheme where each purchases different components to be used on a shared basis. The latter is attractive in the event that the pair decides to go their own way later; each of them can take the specific items that they purchased. This avoids many arguments and the necessity for cash settlements.

A buddy pair or several buddy pairs may cooperatively purchase an oxygen system and assemble a single good first aid kit. A team need carry only one good repair/spares kit. Some have even entered into joint ventures involving boat or vacation home purchases.

Interpersonal Attraction

Smith developed a series of questions to assist individual divers in classifying themselves as dependent, vacillator, together, macho, or loner divers [5]. Most objective individuals should be able to determine their classification from the descriptions given earlier in the paper. Smith also developed a matrix of interpersonal attractions (Table 1) to assist divers in selecting divers that would be possible matches. First, determine what type of diver you are. Next, find your type at the top of the matrix and read down the column until a "+" (match) or "?" (possible match) appears. A "-" denotes an undesirable match. This method is especially useful for the diver who must quickly

select a diving buddy from among a group of strangers at a dive resort.

How can a diver quickly identify a match or mismatch? Simple observational analysis is probably the best method. During preparation for the dive and the boat ride to the dive site you can learn a great deal about a group of divers by noting the condition of their equipment, posture or activity during the boat ride, eye-scan return, and efficiency in handling equipment. Table 2 summarizes Smith's classifications based on observations [5].

In addition, Smith also asks prospective buddies the following three basic questions:

- Are you looking forward to the dive?
- Do you intend to stick with the guides?
- What is your experience?

The response to these questions will generally be consistent with the personality traits of the diver as previously discussed.

Smith presented a systematic mechanism for selecting a potential diving buddy which may prove useful to many people who must quickly select a diving buddy from among a group of strangers. However, he also acknowledges intuition or the "sixth sense" as an effective mechanism. Some divers simply scan a group of divers and know who will probably make an acceptable diving buddy. He suggests that the natural tendency for opposites to attract and the belief that nature usually makes acceptable initial matches is also workable.

Keep in mind that quick methods of selecting a diving buddy are secondary to careful, long-term evaluation. Physical attractiveness is also not an appropriate criteria for dive buddy selection. For diving holidays I prefer to select a diving buddy and traveling companion with whom I have dived before.

SOLO SCUBA DIVING

The buddy system is considered by many to be the cornerstone of scuba diving safety. Yet divers continue to die because of the inability of the buddy to assist in an emergency. In talking to many "old timers" I hear tales of horror relating the incidences

TABLE 2. OBSERVATIONAL ANALYSIS

Dependent Vacillator Together Macho Loner

	Dependent	Vacillator	Together	Macho	Loner
Equipment Condition					
New	X		X		X
Well Worn		X	X		X
Neglected				X	
Photographic					X
Posture/Activity					
Upright, Facing Out		X	X		
Active/Roaming					X
Bowed, Slumped Shoulder		X			
Busy with Equipment					X
Eye Scan-Return (readiness to meet your gaze)					
First			X	X	
Second		X			
Last	X				X
Equipment Prep and Donning					
Slow/Mistakes	X				
Reasonable Pace		X	X		
Rushed, Lacks Care				X	
Slow, Great Care					X

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SOLO SCUBA DIVING

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hear tales of horror relating the incidences where they almost lost their lives as the results of the actions of a buddy. Subjectively, I feel that there are an increasing number of closet solo divers. Although I do not condone this practice, I do respect the motivations.

One former instructor and very experienced diver indicated the only time he had ever come close to death in diving was at the hands of a panicked buddy. In reflection, I realize that my only personal close calls in 30 years of recreational diving have been as a result of the actions of other divers. In these cases, my fault was in the unwise selection of a buddy or in diving with a group of previously unknown divers. The results have included decompression sickness, abandonment in a Florida cave, and forced independent emergency ascents.

Will the time come in recreational diving where there is public pressure for a

solo scuba diver certification? Maybe! Maybe not! In spite of the fundamental rule of buddy diving, there are a number of divers solo diving today.

CONCLUSIONS

The buddy system *can be* the cornerstone of safety and quality of experience in scuba diving. Through careful selection of a diving buddy one can develop a mutual support relationship that will foster many rewards. This selection should not be made haphazardly or in haste.

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The Author

Lee H. Somers is Assistant Professor of Sports Medicine and Communications in the Division of Physical Education and Associate Research Scientist in the Department of Atmospheric, Oceanic, and Space Sciences, at the University of Michigan. He is the Diving Safety Coordinator for the University and a Campus Specialist for the Michigan Sea Grant College Program. Dr. Somers' diving career, beginning in 1954, has included scientific, commercial, public safety, and recreational diving. He served as director of the University of Michigan's hyperbaric chamber facility for 12 years. Dr. Somers has been a certified scuba diving instructor for 30 years and in charge of the Underwater Education Program at the University of Michigan since 1969.

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