

# The Lookout

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## The Lookout Newsletter

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## A Message From The Wheelhouse

Hello Divers –



Thanks for checking out Issue # 4 of The Lookout! In this issue, we cover several wide ranging topics that are historical, technical, and relevant to our diving community in Massachusetts Bay. This issue details the history of the local wreck of the Southland, as well as the SS Rose Castle, a 445 foot long ore freighter sunk by a German U-boat off Bell Island, Newfoundland. We recently traveled there with a group of NADE clients and crew to do some diving. Along the lines of large trips and what it takes to plan a complex technical wreck diving trip, we will share insights based on our own experiences in consideration of building and executing a successful trip.

This issue also covers some considerations for CCR diving during the winter time—in both cold water and cold air. We summarize some updates on Stellwagen Bank National Marine Sanctuary and the status of the Management Plan, as well as some of the initiatives rolling out as part of it, such as the recreational wreck site mooring project. There has been a lot of great progress made in furthering the partnership between the dive community and the sanctuary.

Finally, as we close 2010, we'd like to thank all our customers and crew for your continued support and participation aboard Gauntlet—and for helping to create great adventures on the high seas!

We hope you enjoy this issue of The Lookout!

Heather & Dave

## Trip Building



The group in Grand Cayman, preparing to board the boat.

In this article we discuss considerations necessary to organize a dive trip to destinations both on and off the “beaten path.” It is an exercise in balancing goals and logistics. Trip organizers must deliberate the desired dive locations, travel logistics, dive logistics, trip duration, cost, and group dynamics. Trips to popular dive destinations are almost always less complicated and expensive than those to more remote locations. The internet and dive forums are great resources to identify options, pitfalls, and hear reviews by other divers.

### TRIP MODEL

For those interested in organizing a dive trip, there are two general basic models to

consider. The first model is one comprised of friends and associates who share most of the burdens equally. A few of the divers organize the trip with input from the overall group. The costs of the trip are divided equally among each diver, as are the risks and workload during the trip. Divers work collectively to make the trip a success and share responsibility for losses both in preparation for the trip and during the course of the trip itself.

The second model is one where the burden is not shared equally (i.e., the trip is run more like a business venture). The organizers plan and define the trip, then sell spots. The cost for each diver that “buys in” is a higher percentage of the overall cost. This reduces or eliminates the monetary contribution by the organizers so they can make a profit and/or participate in the trip at little or no cost. In this scenario, customers expect less to be required of them during the trip, though they bear financial risk because deposits made prior to the trip (used by the organizers to secure it) are often non-refundable.

Our group of divers organizes yearly trips using primarily the first model with some slight variations depending on the specific trip. The destination is often selected by a few divers in the group that organize the trip, and it is then presented to the rest in order to gauge interest. If enough people give positive responses, the organizers plan and define the trip and “offer” the spots to divers that are friends and associates with whom we are familiar. Costs are generally shared equally among organizers and divers in the group.

### SELECTING A DIVE DESTINATION

Selecting a destination is only one task of many when organizing a trip, but it is arguably the most important, having the greatest impact on all other aspects. It is usually the primary task, but can sometimes come secondary to other logistics. Consider the following:



The group in Halifax, NS, enjoying lunch on Sambro Island in between dives.

- **Goals and Diving Logistics.** Is the trip intended to be a “hardcore” dive trip or more of a vacation? There are many remote dive destinations with nothing more to do than setup, dive, breakdown, fill gas, and repeat. A trip like this has little appeal for non-diving vacationers, and usually the group is “divers only.” Spots could be further limited to technical divers if that is the only diving offered. These trips can be a lot of work depending upon how much of the daily duties must be performed by the divers (e.g., gas filling); this is discussed in more depth later.

There are dive destinations that offer both recreational and technical diving, and sometimes tourist attractions. This is a more inclusive trip that can appeal to all types of divers, as well as non-divers. They offer options should diving be canceled due to weather (e.g., non-diving recreation or entertainment). If there is adequate time, one portion of the trip can concentrate solely on diving and the other portion made into a more “traditional” vacation, in which non-diving spouses and families can participate.

- **Travel logistics.** Destinations within driving distance are typically less logistically challenging than those to which you must fly; however, the driving route and/or duration may present certain complexities that are critical to consider. Driving allows you to bring all your own gear, including tanks and filling equipment, if necessary. There is added security in knowing that everything will arrive in one piece because it is always in your possession.
- **Flying has many challenges.** Do you check your equipment or ship it? Which is safer, quicker, and less expensive? What can and cannot be part of your carry-on baggage? What happens if equipment arrives damaged or does not arrive in time (or at all)? What do you do with the equipment after diving if you are staying to go sightseeing? The ever changing rules and regulations, and increasing costs associated with air travel can make flying with equipment complicated, especially flying to foreign countries.
- **Time and cost.** How much time and money is available for the entire trip? For many divers these constraints control everything. Be sure to include all time requirements (e.g., a day to off-gas before flying) and costs, such as equipment rental costs, airfare, and baggage / shipping fees, etc.

Our group tends to alternate between more logistically complex and expensive trips, and less complex and less costly trips. We normally select locations within driving distance during years in which we are trying to keep costs low, because we know that flying can easily add \$1,000 or more to the individual cost of the trip after equipment rental costs, airfare, and baggage / shipping fees, etc. Money and time allowing, we take more complex trips, travel to farther destinations, or include a vacation component in addition to diving activities.

### DIVE OPERATORS AND FACILITIES

After identifying potential dive destinations and sites, you should consider if there are any local dive shops and boats. This is often a simple task at popular dive locations. It can become very complex if you are planning to dive at more remote sites. Most shops' websites allow you to form a basic understanding of the operators' business practices, capabilities, typical clientele, cost, etc, but it is always necessary to contact the operator directly to address specifics, define your needs, and determine the cost. We suggest discussing the below-listed logistical items beyond cost. Send the operator a written document that outlines your trip with specifics, including equipment rental, gas needs, etc. After a few days, follow-up with a phone call to discuss your document and make sure the operator understands your group's requirements.

#### Dive Boat

Dive boats typically operate at higher-traffic dive destinations, sometimes through a dive shop. Do not assume any dive boat operating in the general area in which you've selected to dive will meet your needs. Consider the following:

- Does the operator provide access to all the sites you want to dive (e.g., specific wrecks)? A site may be out of safe range for the dive boat. The operator may consider some sites beyond its risk tolerance (e.g., extremely deep), or there may be legal reasons for avoiding a particular site.
- Does the boat have adequate space/capacity for your group? A dive boat has legal and practical limits on how many divers it can accommodate. Whether using recreational or technical gear, spell out exactly how much equipment your group will bring aboard and how much space you will need to fit comfortably on the boat. If the boat cannot handle the number of divers in your group and/or equipment (e.g., scooters), does the operator have access to a larger or second boat?
- Will your group be the only divers aboard? This is usually not an issue, but it must be worked out in advance to avoid conflicts with differing needs/desires of the groups, and be reflected in the price.
- Will the operator accommodate the needs of your group? Not all operators are familiar with all types of divers. Many only have experience servicing recreational divers and do not truly understand what is required to service technical or rebreather divers. Technical/rebreather divers require more space on the boat, more assistance donning/doffing equipment, and generally perform longer and more complex dives. Some operators are willing to adapt and do their best to be of service to the group; sometimes this learning curve is accompanied by a few bumps in the road. Other operators have no interest in servicing technical or rebreather divers because of these differences. In recent years, some live aboard dive boats have banned rebreathers due to their perceived risks.
- What credentials are required to dive the sites your group has chosen? The dive industry has a well established certification system that operators use to gauge diver ability and competence. Operators are free to require whatever training and documentation they desire to dive off their boat. This can include requirements above and beyond certification cards, such as logged experience, checkout dives, in water dive masters / guides, dive plan review, etc. The group needs to be aware of these requirements and accept them.

There are many locations where no dive boats operate. In such cases, you must consider other options such as recreational, fisherman, research, and other commercial vessels. This poses many challenges, especially when doing the planning from afar. We recommend trying to find a local diver with experience to help; dive forums are a great resource to make these connections. You will need to identify potential boats, obtain contact information, and reach out to the owners to determine if they are willing to use their boats to facilitate diving for your group and ask what they would charge. Many owners decline to charter their boat for diving. All of the above considerations are even more crucial to define when using a boat that is not already in the business of dive charters. Unforeseen issues that the operator may not have contemplated at the time a charter was brokered can be a major risk in selecting such a boat to use and ultimately ensuring the trip's success.

Recreational boats often do not have vessels with sufficient deck space and/or safe cruising range. Of those that do, many owners are unwilling to chance the potential damage that could be caused by dive passengers and their equipment.

Commercial boats have other considerations, such as meeting the guidelines of their insurance policy. This can eliminate many commercial boats from eligibility, either because the owner (or their insurance provider) says no, or the cost is too high. Fishing vessels can be a viable option, but when not conducting commercial business outside of fishing, they may be more risk averse, particularly if they have little experience with divers. Furthermore, these boats are not well set-up for diving and may require bringing additional equipment (such as a ladder suitable for on boarding divers) that adds both complexity and cost.

#### Dive Store

Dive stores are everywhere, but their capabilities range greatly. The primary services required from a dive store are gas fills and rentals. We suggest contacting the local dive stores in the area where you want to dive and discuss the following, because there are many reasons why the store may not be able to support your group:

- Is the dive shop within a reasonable distance from the dock, and does it have operating hours that fit your daily dive plans? The driving distance between the dock and dive stores can be an issue when it comes to daily gas fills. For example, if the boat arrives back to the dock daily at 4 pm, and the dive shop is an hour away and closes at 5:30, it may not be reasonable to use that shop. The owner may or may not be willing (or able) to extend its hours of operation to accommodate your group, especially if you have a lot of tanks that need to be filled and/or picked up daily.
- Can the dive shop handle your group's size? Does the shop have the ability to fill the quantity of tanks your group will use? For instance, if you only have two days' worth of tanks, you'll need to get one set filled every day. It is no small task to fill tanks for ten divers daily, especially open circuit technical divers with doubles and multiple stage/decompression tanks. If the dive shop is willing to do the work, it often has to arrange for an extra delivery from its gas vendor.
- Does the shop stock the gases required by your group? Not all dive shops offer all gases used in diving. All shops likely provide air, and many provide nitrox, but fewer stock (or will consider procuring) gases for technical divers or rebreathers (e.g., trimix, decompression gasses, 100% oxygen). Some shops are unwilling to fill tanks with more than 40% oxygen. Not all shops have the equipment (e.g., tank fittings, hoses and other hardware) needed for partial pressure filling or a booster. A possible solution is to bring what the shop is lacking, but you are unlikely to find a place that allows outside equipment in their shop.
- Rental equipment. Does the shop rent the equipment you want/need, and do they have enough for the entire group? For instance, they might have aluminum tanks for single tank divers that are not rigged as sling tanks for technical divers. In this case you could use their tanks and your own rigging.

Some locations have no practical facility, which adds significant complication to the dive planning and effort of the group. We faced this complication while diving the spectacular World War II shipwrecks in Halifax, NS. The wrecks are mostly deep (approximately 150 fsw to 300 fsw). The area's technical diving community is very small, and there are no viable dive shops for daily gas fills for a large group. During past trips, we arranged to have the local gas supply company deliver T-bottles of helium, oxygen, and argon to the dock (with the owner's permission). We shipped our own compressor and boosters to the site, and rented a large capacity commercial tow-behind compressor to power the boosters. During years when the group consisted of mostly open circuit divers, it would take us most of the afternoon and evening each day to fill tanks for the following day's dive plans. When the group was mostly CCR divers, the fill time was cut in half, but it was still significant.

### TEAM / GROUP SELECTION

A well planned trip is the foundation of a great trip, but the real key to success is in the participants. There are three basic characteristics that must be considered when selecting a group of divers:

- Skill. The divers must have the skill level, experience, and certifications necessary to perform the dives. This is not always as simple as being certified to dive to a certain depth, or in a certain environment. For example, diving to 200 fsw in warm, clear blue water in a wetsuit is not the same as performing the same dive in cold, low visibility water in a drysuit. That is not to say the warm water diver cannot perform the dives, but the organizers should consider the implications of the diver's learning experience occurring during their trip.
- Financial. Trip costs can be high, and often include substantial risk of divers losing their money if problems arise. Divers that partake in a trip that is beyond, or at the edge, of their financial means can cause difficulty within the dynamics of the group.
- Personality. This is an issue worthy of careful consideration. Most individuals can get along with others for short periods of time, such as during a typical weekend dive charter. This is not always the case on longer trips spent in close quarters. Every small issue (e.g., poor diving, financial stress, etc.) adds up with a "snowball" effect, and can result in a rather uncomfortable situation for everyone in the group.
- Expectations. The group's ultimate expectations and an individual's ability to "buy-in" to the entire trip rolls up many, if not all of the considerations in this section. The individual, as part of the larger successful team, must consent to all scenarios and be committed to the trip in its entirety, regardless of the ultimate outcome. Expectations must be defined, understood and agreed upon by all participants at the outset.



The group in Newfoundland, making the best of a third day of bad weather and heavy wind.

## Winter Operations – Considerations for Rebreather Diving



Frozen rebreather following a dive and return boat ride with exposure to spray.

Diving during the winter when the air and water temperatures are cold increases the risk of equipment malfunction, particularly for rebreather divers. Cold temperatures affect the functionality of most components. The addition of water, especially fresh water, compounds these problems. Thoughtful equipment preparation and management, such as keeping it dry and warm as long as possible, can minimize the risk of equipment failure / malfunction when diving in the cold.

Cold temperatures affect materials and reactions:

- Many materials change dimensions. Materials and mechanical components have an increased risk of failure or malfunction (e.g., gas leaks) and it is often difficult to resolve these problems without heat.
  - Many materials change physical properties. Components become more rigid (e.g., o-rings) and brittle (e.g., plastics) and are more likely to fail or break during normal use.
- Water freezes (even salt water). Fully and partially frozen water can inhibit proper operation of seals and mechanical components. Fresh water held in crevasses and holes in equipment can freeze and crack equipment.
  - Chemical reactions are retarded. More energy is required to activate the scrubber material and its efficiency is reduced. Batteries that power rebreather solenoids and electronics, as well as dive computers, are more likely to fail before or during the dive.

### MATERIAL ISSUES

Cold temperatures cause materials to change dimensions. Most materials shrink / contract when cooled. Not all dimensional changes are uniform, which can result in twisting and warping of components that is not necessarily visible. These changes can affect o-rings, seals, sealing surfaces, and the operation of mechanical components, resulting in gas leaks, free-flows, and mechanical failures. Failure is commonly seen with regulators because they rely on several o-rings, seals, and mechanical components to function properly, but most components on a rebreather are susceptible to some extent (e.g., rebreather DSV mouthpiece, loop hose connectors, solenoid, etc). Some components are less prone, such as environmentally sealed first stages that are designed for cold water use.

Rebreathers have many plastic components, such as the “head” where sensors and electronics are housed, loop hose connectors, etc.. In addition to the materials changing dimensions and contributing to seal failures and mechanical malfunction, they tend to weaken in the cold. The weakened materials are more susceptible to damage during normal use and common accidents, such as the rebreather accidentally tipping over, or a “slip-and-fall” on the boat deck.

### TRANSPORTATION

Preparation begins when assembling the rebreather, but the issues with cold air exposure begin the minute it is removed from a warm, dry environment. We recommend against leaving equipment in the car overnight when it is cold; this includes the back of a pick-up truck and trunk of an enclosed car. It will become deeply cold and can be difficult to re-warm in a timely manner. When transporting the equipment to the dive site, consider keeping it inside the vehicle -- especially if the travel duration is extended -- to keep it warm.

Once equipment has been loaded onto the boat, it will begin to chill significantly out on the back deck. If equipment was wet / damp prior to use, this increases the risk of failure or malfunction. If equipment may become wet while in transit on the boat, cover it with a large plastic trash bag for protection..

Salt water and fresh water freeze at different temperatures (32°F and approximately 28°F, respectively). The risk of equipment failure / malfunction is greater around fresh water due to the higher freezing temperature—in other words, it can happen more easily. In some cases, open-circuit regulators can be “recovered” from a free-flow caused by frozen moisture in the second stage if submersed in salt water. Be aware of crevasses and holes in equipment that can hold water after a dive. If the water freezes during transport it can crack whatever is holding it (this is a technique used to split stone in the olden days, so it can certainly split equipment).

## REBREATHER PRE-BREATHING AND MANAGING MOISTURE IN THE LOOP

When pre-breathing the scrubber (to activate the scrubber material and begin the CO<sub>2</sub> elimination chemical process, discussed below), it is important to consider that once pre-breathing is initiated, it should not be interrupted because there is now moisture in the loop (i.e., maintaining dry equipment is no longer the case). If stopped, the loop environment, now containing moisture, will begin to cool and the moisture could freeze. Begin pre-breathing when suiting up, not 20-30 plus minutes prior to suiting up, followed by a break and then resuming pre-breathing while donning gear. Initiate pre-breathing and continue while suiting up, right up through entry into the water and descent.



Frozen saliva on the mushroom valves of a DSV.

Whether pre-breathing is interrupted or not, there is a period of cooling between dives, and the cooling of the loop environment can stop the scrubber material from reacting efficiently and the moisture now in the loop can freeze, especially between dives when there is significant moisture. The moisture can freeze on internal components such as the mushroom valves, thus compromising unidirectional flow of gas. The risk of equipment failure or malfunction is higher once the rebreather is cold, wet, and there is moisture in the loop.

Upon surfacing in freezing air temperatures when a second dive will later be performed, attempt to keep the rebreather warm. This can be accomplished by storing the entire rebreather or components (e.g., scrubber, loop hoses, and DSV) in a warm environment, such as a vehicle or boat cabin (if permitted). The rebreather diver must make a judgment call as to whether or not disassembling the rebreather to keep certain components warm is creating a more or less dangerous situation than the risks associated with cooling. Disassembling the rebreather could allow components to get wetter due to weather and seas, and reassembling the rebreather in a more stressful environment than usual (i.e., there can be more distractions and time pressures) can lead to assembly errors.

## CHEMICAL REACTIONS

For rebreathers, one of the most critical elements is the scrubber. Scrubber material, generally calcium hydroxide, is used to remove carbon dioxide from the breathing loop and is activated by heat and moisture. Without a sufficient amount of heat and moisture introduced by pre-breathing, the scrubber material may not achieve a sufficient reaction temperature in the water to effectively remove CO<sub>2</sub> from the loop.

The lower the air temperature (and/or material temperature), the longer it takes to pre-breathe the scrubber to effectively activate the scrubber material and bring loop CO<sub>2</sub> levels to their minimum. While manufacturers do have some data on the performance of their product at various temperatures, the take-away message is that the activation of scrubber material takes longer in lower air temperatures so additional time pre-breathing the rebreather is warranted. It is difficult to say how much longer since this depends on several variables.

Scrubber duration is also temperature dependent—the lower the water temperature (i.e., the cooler the scrubber material reaction temperature), the shorter the usable duration of scrubber material. Again, while there is some data from manufacturers on scrubber duration time given various temperature and pressure parameters, there is quite a bit of subjectivity and multiple variables to consider. As a result, we recommend being conservative. Take the manufacturer's recommended times for a particular rebreather model and/or scrubber configuration and back off them slightly.

Cold temperatures also affect other chemical reactions, including but not limited to batteries that power rebreather components, such as solenoids and computers, dive computers, cameras, etc. Cold temperature slows the chemical reaction in the battery, thus less current is generated. As a result, batteries deplete more quickly. Certain battery chemistries are more robust in cold conditions (e.g., lithium outperforms nickel metal hydride, which outperforms alkaline), but generally speaking, keeping the battery warm prior to use can reduce risk of failure.

Solenoids are electromechanical valves that are powered by batteries, so their function can be impeded by battery failure. However, solenoid function can also be affected by cold in that components may freeze (resulting in a jammed "open" or "closed" valve) and this can pose a significant problem with respect to PO<sub>2</sub> control (i.e., oxygen leaking into the system). Anticipation of solenoid malfunction and management of a component failure should be a well known skill for a rebreather diver, but taking the time to revisit procedures in the event of a cold-induced solenoid failure is important given the increased potential to encounter such a scenario in cold weather diving.

## SUMMARY

Diving in cold air and water is not for everyone, but in some cases it is unavoidable if you want to dive. In these settings, it is critically important to thoughtfully prepare and manage your equipment by using the appropriate equipment, keeping equipment dry and warm for as long as possible, and then once "use" is initiated, avoiding interruption of the process so as not to allow cooling (and potential freezing) to occur. Once components freeze, the equipment should be set aside and diving aborted.

## Stellwagen Bank National Marine Sanctuary Mooring Project



The pilot house of the Unknown Trawler, resting upright in the sand.

areas, but it is not a viable, allowed method of accessing shipwrecks in Stellwagen.

Despite the sanctuary's recognition that moorings make sense fundamentally, they unfortunately lack the resources to implement a traditional dive mooring system. In addition, the dynamic offshore environment of the sanctuary makes traditional dive moorings somewhat problematic, as many of the dive sites are in areas transited by commercial shipping traffic, or are known areas with high concentrations of marine mammals. As a result, development of a novel mooring system through a partnership effort between the sanctuary and the dive community was necessary.

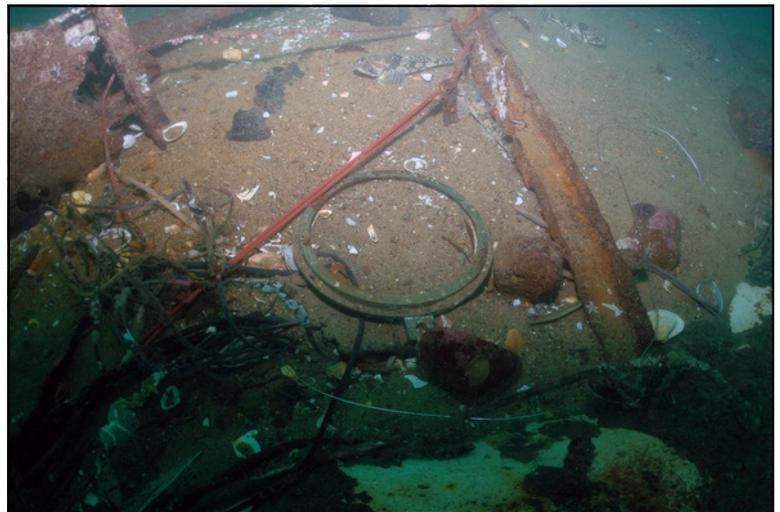
In partnership with SBNMS, Northern Atlantic Dive Expeditions, Inc. applied for a grant through PADI Project Aware to obtain funding to purchase mooring equipment tackle and hardware. This project grant described our goals to develop, deploy, and assess the efficacy of a novel dive mooring system compatible with the environment and multiple uses of SBNMS. This novel system aimed to adapt existing mooring techniques to create a system that can be appropriately and effectively used in the sanctuary's environment. We received the grant from PADI Project Aware, and through volunteer efforts on the part of the sanctuary and SAC diving representatives, the mooring was installed in July 2010 on the wreck of the "Unknown Trawler" in 100 fsw.



A view of the remnants of the helm inside the pilot house.

The finalization of the Management Plan for Stellwagen Bank National Marine Sanctuary (SBNMS) contained a number of Action Plans for Maritime Heritage Resources that were described in a separate piece in this newsletter. One of the initiatives included the installation of moorings on contemporary shipwrecks as a "first step" in a program aimed at introducing moorings in a manner consistent with sanctuary regulations, to improve accessibility for divers.

It is important to not only recognize, but to keep in mind the mission of SBNMS, which is to "conserve, protect, and enhance the biodiversity, ecological integrity, and cultural legacy while facilitating uses compatible with the primary goal of resource protection." While diving on shipwrecks can be a compatible use, some diving access techniques are not compatible. Conventional methods of accessing a shipwreck site via use of a grapple / anchor -- or attaching a mooring line directly to the wreck with a chain -- are not prohibited because of the potentially destructive nature of the tool. This is the standard practice in most



A brass porthole in the sand amongst debris.

The dive mooring system utilizes a 1000 pound pyramid anchor with a 10-foot buoyed chain, but not a surface buoy. In designing the mooring, we opted to implement a mooring system rather than a complete mooring for several reasons. Surface buoys are impractical for the exposed coastal Massachusetts waters that are transited by large ships, fishing vessels, and large numbers of recreational boaters. Furthermore, a surface buoy requires expensive yearly maintenance that is cost prohibitive for regional dive charters and SBNMS.

The mooring system still requires some in-water work to attach a line, but ultimately provides a fixed mooring line that a dive boat can attach to and use for the duration of the diving operation. The dive boat can drop a weighted line near the location of the wreck and mooring—the mooring is located a short distance away from the wreck, but within the limits of normal visibility. The first divers in the water then attach the down line to the mooring at the top of the buoyed chain, thereby allowing the dive boat crew to secure the down line to the boat. This allows the boat to

“anchor” without impacting the shipwreck. The remaining divers on the vessel can safely descend and ascend the fixed line. This method and mooring system represents a key change in the methodology whereby the tie-in is shifted from the shipwreck to the pyramid block, thus eliminating the potential for damage to the shipwreck. Upon completion of the diving operations, the last divers detach and remove the entire down line from the mooring.

Several dive charter operations have already ran successful trips to the Unknown Trawler utilizing this mooring system! Divers are fascinated by this interesting shipwreck that teems with marine life typical of the sanctuary’s environment. Over the coming season, more information including photos, videos and brochures with details on how to utilize the mooring will be made available to the public. It is our hope that this site will prove to be a successful pilot for the mooring system and create opportunities for additional funding on other sites in the sanctuary, both historic and contemporary.

Matthew Lawrence of SBNMS and Heather Knowles of NADE will be presenting on this project at the upcoming Boston Sea Rovers Clinic, scheduled to take place March 4 - 6, 2011.

## Wreck of the Southland



Newspaper headline following scuttling of the Southland.

After less than 5 years of service with her original owners, the Sarah Weems changed ownership a number of times before being laid to rest only 13 years after she was built. According to a January 1922 edition of the Marine Review, the Kennebec Navigation Company of Kennebec, ME had then purchased the Sarah Weems from the Baltimore and Carolina Steamship Company. In October 1925, the Sarah Weems was reportedly sold to Morris Levinson of New London, CT and made New York her homeport. She was renamed the Sarah Weaver but was shortly thereafter renamed the Southland in January 1926. In February 1926, the Southland was sold to the Atlantic Transportation Company, making her homeport in Portland, ME.

The Southland, with her wooden-hulled frame, was no match for the rough sea conditions of the North Atlantic when compared to the modern iron-hulled vessels of the early 1930s. Considered a “white elephant” by her owners—of little use to them, yet unable to be disposed of readily, they attempted to sell her. As a result of failed attempts, the decision was made to scuttle the Southland outside of Boston Harbor. On December 2, 1930, the tugboat Eileen Ross towed her several miles from Nantasket Beach to Minot’s Ledge near Scituate, MA. Her hull was set afire, and she sank below the ocean’s surface to her final resting place in the Lightship Dumping Grounds. There remains debate as to the actual date on which the Southland actually sank. The First Naval District Headquarters Wreck List of 1942 reports her as having sunk in December 1930; whereas, other reports list the date of her sinking as a few years later, May 25, 1933.

The multitude of shipwrecks in Massachusetts Bay provides not only thrilling adventures for the modern underwater explorer, but also provides historians with a unique window into our society’s past. While some ships were lost at sea due to tragic circumstances that laced media headlines, many ships experienced a more anonymous end. Often times, these overlooked vessels can provide us with a brief glimpse into momentous times in our history. Such is the story of the Southland, which provides us with a unique view into Depression-era Boston.

The Southland, originally named the Sarah Weems, was a wooden, coal-fire steam-powered freighter built in 1917 by M. Mitchell Davis & Son in Solomons, Maryland. She measured 206 ft long and displaced 1,521 gross tons (924 net tons). She was originally built for the Baltimore and Carolina Steamship Company for use as a trade and passenger vessel during World War I. Her primary cargo consisted of farm produce with routes running between Baltimore and major southern ports, including Charleston, SC.



The Southland.



The large propeller of the Southland, shrouded in dragger net.

The Southland rests in an area that would become known as the Lightship Dumping Grounds. The Southland was one of the first vessels intentionally sunk as part of a program under the Works Progress Administration (“WPA”), which played a small role in helping revitalize a Depression era-stricken Boston. The WPA was established by FDR in June 1933 in an effort to ignite economic growth during the Depression by providing employment to millions of Americans through public works projects. One such project, which actually began in 1930 and was later incorporated into the WPA, was a project to scuttle old, unused shipwrecks in an area east of Boston Light that became known as the Lightship Dumping Grounds. This project created jobs for local mariners who were employed to prepare these ships to be sunk and transport them to their final resting place. It also helped clean-up Boston Harbor of these unsightly, abandoned vessels. It ran from 1930 to 1942 and saw the sinking of 64 ships in total. The Southland is considered to be an early participant of this project. Other frequently dived local wrecks in the dumping

grounds include the Coyote and the Reliance.

Today, the Southland rests in 160ft of water, upright and semi-intact. The majority of the ship’s hull was consumed by the fire that was set to sink the ship. Flattened portions of the hull’s ribs remain with fragments strewn about. A large boiler sits mid-ship, rising approximately 15ft off the bottom. Aft of the boiler sits a triple expansion steam engine with a propeller shaft extending to the stern of the ship where it connects to a four-bladed, steel propeller. A large dragger net rests tangled in one of the propellers. Forward of the boiler sit two winches. The bow of the ship is less defined and identified by a large pile of chain lying in the sand.

Overall, the Southland offers a great deep dive for the trained diver. While not fully intact, the swim from the boiler along the propeller shaft to the propeller offers much to explore. Much of the wreck is covered in colorful anemones. Passing over burned wooden fragments of the wreck’s hull provides a glimpse into her final days. Many dives can be done investigating the scattered fragments that lie along the ship’s hull.

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## The Battles of Bell Island – SS Rose Castle



The SS Rose Castle underway.

On the morning of November 2, 1942, the German U-boat U-518, fired two torpedoes at the SS Rose Castle, sinking the freighter within 90 seconds. The Rose Castle was the third of four merchant ships sunk by German U-boats during what became known as the Battles of Bell Island during World War II.

The Rose Castle was a transport steamer built in 1915 by Short Brothers Ltd, in Pallion, Sunderland, England. She measured 455 feet, displaced 7,546 tons, had a triple expansion engine with three single boilers, and had a maximum speed of 11 knots. The Rose Castle was built for the Lancashire Shipping Company in Liverpool and was primarily used to transport coal and iron ore. In 1917, the Rose Castle was reported sold to a “T. Lewis” and then to Dominion Shipping Company of Canada in 1920. From 1930 to 1937, the Rose Castle operated for Port Line Ltd of London before being sold to the Rose Castle Steamship Company and taking port in Halifax, Nova Scotia.

Foreshadowing its eventual fate, the Rose Castle avoided a few near disasters during her lifetime. On July 27, 1928, she collided with the 16,402-ton Canadian Pacific passenger liner Montrose carrying 1,000 passengers in the St. Lawrence River. Both vessels were badly damaged, but all passengers were reported safe. The Rose Castle, beached after the collision, was repaired in Quebec. At an August 1928 inquiry, the Montrose was found to be solely at fault. There are reports that in 1939 a German ship near Montreal mistakenly rammed the Rose Castle as the ship was racing out to sea. There was no significant damage reported to the Rose Castle. Finally, after the outbreak of WWII, the Rose Castle was fired upon by the U-69 on October 20, 1942 after the U-boat had sunk the passenger ferry, SS Caribou. Fortunately, the torpedo failed to detonate, and the Rose Castle was able to postpone its demise, if only briefly.

While operating for the Rose Castle Steamship Company in Canada, WWII erupted in Europe. The Rose Castle was to play an important role by transporting iron ore from Canadian mines to Allied Europe. One of the key sources of iron ore was located in the mines of Bell Island, Newfoundland.

In the 1890s, a large, high-grade iron ore mine was discovered on Bell Island. During WWII, this mine became a primary source of iron ore used by the Allied forces in Europe to make steel for weapons used to fight the Axis Powers. In an effort to prevent these transatlantic shipments, German forces sought to attack these transport ships right at their source.

As part of this effort to disrupt the shipment of iron ore to Europe, U-boats were dispatched to Bell Island in what would become known as the Battles of Bell Island. The first of these attacks came on September 5, 1942. The German U-boat, U-513, under the command of Captain Rolf Rugeberg cruised into Conception Bay the previous night under the cover of the freighter SS Evelyn B. The following morning at approximately 11:00 am, the U-513 fired at and sank the SS Saganaga while the ship was anchored and awaiting orders to set sail with a load of iron ore for North Sydney. Twenty-nine among the 48 man crew were reported missing. The U-513 quickly turned its attention to the SS Lord Strathcona. She too soon sank, but fortunately, the crew were able to safely abandon ship. After the attacks, the U-513 quietly slipped out of Conception Bay.

The second set of attacks came two months later. On the evening of November 1, 1942, under the cover of darkness, German U-boat U-518, snuck into Conception Bay. The SS Rose Castle, under the command of Walter J. MacDonald, was lying at anchor fully loaded with iron ore awaiting orders to sail to Sydney, Nova Scotia. At approximately 7:00 am on November 2, the U-518, on her maiden voyage under the command of Friedrich Wissmann, took aim at the 3,000-ton coal boat, Anna T. The first torpedo was fired, but missed its target, passing under the nearby anchored Flying Dale, and exploded into the Scotia Pier on Bell Island. This was considered the first and only attack in North America during WWII. The U-518 then turned its sights on the nearby Rose Castle and fired two shots at her. These torpedoes directly hit their mark, sinking the Rose Castle within 90 seconds and taking with her the lives of 28 out of 43 of the ship's crewmen.

After sinking the Rose Castle, the U-518 then fired at and sank the nearby 400 foot Free French liner PLM 27. The PLM 27 sank in less than one minute and took with her 12 lives. One again, the U-518 quickly set out to open sea. The U-518 would eventually meet her fate at the hands of allied forces on April 22, 1945 northwest of the Azores. While under the command of Hans Offermann, she was sunk by US destroyer escorts, USS Carter and USS Neal A. Scott.

The Bell Island shipwrecks each lie upright and primarily intact. They are also amazingly well preserved. Protected by Conception Bay, these wrecks were shielded from the

destructive impact of the open ocean. Being out of heavy shipping traffic areas, they were not deemed navigational hazards and thus were never demolished. The cold waters of Newfoundland also aided in the preservation and provide for visibility of up to 80 feet. Of these four great ships that saw a tragic end during WWII, the Rose Castle is considered to be the highlight of the Bell Island shipwrecks. Resting at a depth of 160 feet with the top of the wreck sitting at approximately 100 feet, the SS Rose Castle provides an excellent dive for both recreational and technical divers. Most of the great sites are between 120 and 140 feet.

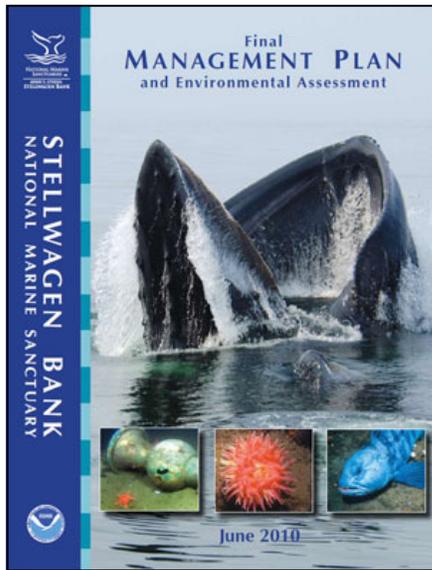
A dive along the wreck presents an up-close view of the massive blast hole along the side of the ship, a majestic gun resting on the ship's stern deck, a well preserved Marconi room, an intact telegraph in the engine room, and numerous personal effects of the ship's crew serving as a time capsule of the fateful day's events. In addition, an intact U-boat torpedo rests approximately 100 feet off of the wreck's stern. Despite her tragic end, significant life remains on the wreck in the form of colorful anemones and abundant fish life. The Rose Castle is truly the gem of the Bell Island wrecks and an exceptional dive.

Divers who take the time and effort to travel to and dive the Bell Island shipwrecks will be met with a combination of remarkably well-preserved shipwrecks, exceptional visibility and an amazing journey into a significant moment in history.



The engine room telegraph.

## Stellwagen Bank Highlights: Update on the Final Management Plan



The final management plan for Stellwagen Bank NMS.

In June, the Stellwagen Bank National Marine Sanctuary finalized its Management Plan and Environmental Assessment. This concluded a process that spanned several years beginning in 2002, moving from the scoping phase to working group activities, compilation of the draft plan, public commenting, and finally, finalization of the plan itself. This plan replaces the previous version, implemented in 1993 and will guide sanctuary management for the next five years before the review process begins once again.

The June 2010 plan is a modern plan that focuses on key issues affecting the sanctuary, including ecosystem alteration, wildlife disturbance, vessel traffic and its potential threat to marine mammals, water quality, and invasive species. Many of these issues were not well understood or recognized when the original management plan was published in 1993. The plan also addresses sanctuary programs such as maritime heritage preservation, conservation science, enforcement, interagency cooperation, public outreach and education, and infrastructure development.

During the management plan review process, the dive community established itself as a true constituency and stakeholder group. Prior to the review process, the dive community was largely unknown to the sanctuary's staff, and their understanding of diving in the sanctuary - as well as diver interest - was unclear. However, active outreach on the part of divers within the community raised awareness and informed others about the potential issues facing divers regarding access to sanctuary shipwreck sites. In January 2008, a diving seat was added to the Sanctuary Advisory Council (SAC) in response to increased diving constituency activity, establishing dive community representation for the first time since the SAC's inception in 2001. Ultimately, through these efforts and an alignment with a conservation stance, a collaborative relationship was formed with the sanctuary.

During the public commenting period, the dive community's level of engagement was noteworthy and divers registered a volume of comments similar to that of the commercial and recreational fishing constituencies. This marked level of participation on the part of the dive community was critical in establishing a presence and informing both the sanctuary and other well-established and powerful stakeholder groups, such as conservation, that the dive community is a relevant group. Not only were divers active during the commenting period, but the comments were well-informed and addressed specific concerns that have ultimately been incorporated into strategies associated with Final Management Plan action plans.

The final Management Plan does not alter the existing regulations pertaining to sanctuary management. It does, however, detail strategies around fulfilling the objectives of sanctuary management. Currently, there are three sanctuary specific regulations that pertain to historic resources in the sanctuary (excerpt from 15 CFR 922.142:). Prohibited or otherwise regulated activities:

(3) Drilling into, dredging or otherwise altering the seabed of the Sanctuary; or constructing, placing or abandoning any structure, material or other matter on the seabed of the Sanctuary, except as an incidental result of:

- (i) Anchoring vessel;
- (ii) Traditional fishing operations; or
- (iii) Installation of navigational aids.

(4) Moving, removing or injuring, or attempting to move, remove or injure, a Sanctuary historical resource. This prohibition does not apply to moving, removing or injury resulting incidentally from traditional fishing operations.

(7) Possessing within the Sanctuary (regardless of where taken, moved or removed from), except as necessary for valid law enforcement purposes, any historic resource, or any marine mammal, marine reptile or seabird taken in violation of the Marine Mammal Protection Act, Endangered Species Act or Migratory Bird Treaty Act.

In order for these regulations (and any others that apply generally to the sanctuary) to change, an Environmental Impact Statement (EIS) would need to be produced. At this time, it does not appear that an EIS will be developed, and the current Management Plan and Environmental Assessment (June 2010) will guide sanctuary management for the next five years. Otherwise, there are no new regulations which pertain to accessing dive sites within the sanctuary. Diving on all shipwreck sites is currently allowed, provided that the dives are in compliance with existing sanctuary regulations as stated above.

The strategies outlined in the Maritime Heritage (MH) Action Plan do specify certain actions that the sanctuary could take to manage shipwreck sites and potentially regulate access. It is important that the dive community remain involved with the sanctuary to ensure that the execution of strategies outlined in the action plan continues to be developed with stakeholder input.

Based on public comments submitted by the dive community, one key change in the plan was the creation of a new strategy related to facilitating access to modern shipwrecks. Refer to Objective 6 in the MH action plan. This strategy is in the process of being implemented through a partnership between the dive community and the sanctuary, and is currently in a pilot phase. The wreck of the "unknown trawler" in 100 feet of water was selected to be a pilot site for a unique mooring system, developed for the sanctuary's environment, regulations and overall needs. The mooring project was funded by a PADI Project Aware Grant. More information about this project is discussed in another article in this newsletter.

There are still concerns with some of the strategies outlined in the MH action plan, especially around the management of historic sites, which are generally the ones that divers are most interested in visiting, but also tend to be the most fragile and in need of protection. Ultimately, the issue needs to be considered in the context of how the impact of commercial fishing is weighted relative to the impact of divers with regard to how access may be regulated. Currently, commercial fishing activities on or around these sites cannot be legally regulated or restricted. Regulating diver access when commercial fishing cannot be regulated does not address the need for true protection of maritime heritage sites. This issue will continue to be a challenge for the sanctuary and for divers.

There are strategies in the final version of the plan that are unchanged related to implementation of mooring buoys on historic sites. In addition, no changes were made to strategies around historic site listing on the National Register of Historic Places (NRHP) and its implications around how that may affect access or the ability to actually implement a mooring system, should that be desired. There were few revisions, if any, in the plan related to addressing these questions. Again, the best path forward for the dive community is to continue to communicate and collaborate with the sanctuary to ensure the best all around approach can be taken.

Finally, despite a well developed Management Plan, the sanctuary's budget continues to suffer serious reductions as a result of the overall economy and federal allocation of funds devoted to the National Marine Sanctuaries program. This is something that should concern the dive community, particularly because maritime heritage is a lower priority program within the sanctuary's program initiatives, which means it receives less funding or suffers first when funds are reduced. This affects the ability for the sanctuary to implement strategies or fulfill the management plan's mandates.

In summary, the 2010 MP is a real attempt to describe strategies that characterize, protect and facilitate access to shipwrecks. This is a positive step forward where divers can continue to play an important role working with the sanctuary in this regard. The next MP revision in 2015 may contain new strategies that are borne out of the feedback related to those implemented (or not implemented) in the 2010 plan. For this reason, sanctuary collaboration and partnership with the dive community in general, clubs, stores or charter boats is critically important.

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## Gauntlet News

### **Explorers Club Sea Stories Event, November 20, 2010:**

We would like to thank the organizers at the Explorers Club for the invitation to present on the USS Nezinscot at the annual Sea Stories Event. Learn more about the Explorers Club and general events here: <http://www.explorers.org/>

### **Boston Sea Rovers Clinic, March 4-6, 2011:**

The Boston Sea Rovers Clinic is back with a new location in Danvers, MA. NADE will be exhibiting as always. Heather Knowles and Matthew Lawrence (of SBNMS) will be presenting on the Stellwagen mooring project during the daytime seminars. Hope to see you there!

### **Beneath the Sea (BTS), March 25-27, 2011:**

We will be in attendance during the BTS 2011 exposition and look forward to catching up with everyone!

### **Summer Dive Schedule and 2011 Plans:**

Over the next few months, our 2011 schedule will be developed. We usually publish the summer schedule by late March / early April. If you have special requests or would like to discuss training, please let us know as soon as possible. We are currently planning a basic PRISM CCR course and open-circuit technical diver and trimix classes this season!