When Your Shore Power Loses Its Cool

Not long ago, Kevin Ritz, an ABYC master technician and author of the Seaworthy story “A Preventable Dockside Tragedy” (October 2009), walked down the docks at a local marina with an infrared camera and snapped some shots of shore power cords. The pictures he took (see page 12) are sobering; the camera shows significant heat buildup that the naked eye can’t see.

Shore power cords have a tough life; they spend months out in the elements, get tossed in lockers, and are pulled on, stepped on and sometimes dropped in the water. Despite the “abuse,” power cords are expected to carry current to the refrigerator, water heater, lights, battery charger, and maybe an air conditioner or heater. Not surprisingly, shore power cords are occasionally damaged, giving them the potential to overheat and start a fire. Seaworthy combed the claim files to find out how to avoid getting burned by shore power problems.

The Crux of the Problem: Resistance (Impedence)

Plug a heater into a typical household extension cord and there isn’t much chance you’ll have a problem. Now plug two heaters into that same cord and suddenly you have the potential for a big problem. The cord is designed to carry a maximum amount of current based on the size of the wires (about enough to run one heater) and if the current limit is exceeded, the wires begin to get hot. The reason is resistance. Resistance is like friction—run too much current through a wire and the “friction” will create heat. It is increased by using smaller wires or running higher current through the wire. Conversely, resistance can be reduced by either running less current through a wire, or using a larger wire. Too much resistance in a shore power cord can cause the cord or connections to melt or even ignite.

Question: Why doesn’t the shore power pedestal just trip the breaker before a damaged cord overheats? The answer is that the breaker will only trip when its cutoff current—30 amps for standard cords—has been exceeded. But if some of the strands of wire in the cord are severed, the cord is effectively smaller and it may only be able to safely carry, say, 20 amps. If you were to then run 30 amps through the cord, resistance will cause the remaining wires to get smoking hot well before the breaker trips. According to Bill Drake, vice president of

Continued on page 12
Abandoning Ship

The article “The Perils of Abandoning Ship” is well written in that it documented the perils of boarding a large ship from a small boat in heavy seas. However, two very important points could have been added to the article.

The first is, boats that remain afloat, no matter how incapacitated, are usually a lot safer for the survival of the crew than attempting to abandon ship onto a life raft or a large ship.

The second point is that owners of all boats heading offshore should install a storm curtain for each berth: a piece of canvas hemmed on all four sides, about two feet wide and running the full length of each sleeping berth, secured firmly with a strip of wood and screws along its length on the companionway side of each sleeping berth so that it can be brought out from under the mattress when needed.

With storm curtains for each berth, the boat’s crew in the article would have had a good chance to ride out the storm, intact.

Steve Gross
Port Roberts, Washington

A Nose for Trouble

Great issue, as always. One additional note: If possible, the person who sniffs your boat’s bilge after refueling should not be the person who actually handled the gas nozzle. Close proximity to gasoline fumes will numb your nose for several minutes.

Tony Gibbs
Bath, Maine

RIBS and Props

Thought you might be interested in this feedback on the prop injury article e-mailed to me by our (US SAILING/US Powerboating) Master Instructor Trainer, Dick Allsopp (Cpt, USN Ret.). The inflation level of a RIB is something a lot of dinghy owners may never even consider—but may discover on their own, eventually, after noticing the difference in handling … sometimes the hard way.

The skittishness and overreaction to waves are often caused by overinflation. Dag Pike, in his excellent book Fast Powerboat Seamanship, discusses this at some length. Basically his test is that if you hit your tube with a clenched fist and it bounces back, your dinghy is overinflated. Hard tubes are for boat shows. I don’t know if that was a factor in this incident or not.

I have frequently taught at programs where people have complained about the instability of their RIB at high speeds. Usually the RIB is overinflated. Pike goes on to say that the seaworthiness of a RIB is due to its ability to flex in response to the waves.

Jo Mogle
Vice Chair, Training Committee
US SAILING
Portsmouth, Rhode island

Negative-on-Negative Terminal Covers

I read the article “Boat Projects Gone Awry,” and where you speak about the many surveyors who often see batteries that are loose, just waiting to be thrown about on the next big wave and so on, you go on to say that (negative) terminals must be covered, something DIY-ers often forget. Any metal object that is grounded and touches a (negative) terminal will spark. I think you meant to say positive terminal, seeing that the negative terminal is always grounded. Unless you are referring to a Model A Ford with a positive ground system.

Ray Burge
Winthrop Harbor, Illinois

Hurricane Prep and Absentee Owners

We own a sailboat, insured through BoatU.S., and keep it at a marina on the West Coast of Florida. Last year we kept it in its slip during the summer hurricane season and had no problems. That was our first year having the boat here in Florida.

We aren’t sure what we should do during hurricane season this year. We will be out of town for the months of June and July. Would you recommend leaving the boat at our dock in the marina (800-foot seawall can withstand 12-foot storm surge; floating concrete docks) and having someone check on it during severe weather? Or should we have the boat hauled onto land and put in a boatyard?

Adeline Lindley
Hudson Valley, New York

There is often no right or wrong answer, only a best guess as to how safe a boat will be at any given location. As Steve Letro points out in this issue (“Predicting Storm
The Boat That Almost Didn’t Float

Since I was moving to the East Coast from my liveaboard boat in Ventura Harbor, California, I packed up my stuff, put it all in large boxes, and stowed it in the aft cabin. The plan was to carry it out to the truck in the morning. I then filled my aft water tanks so no mold or algae would grow in my absence.

Later that night, at about 2 a.m., I jumped down off the forward V-berth into two feet of cold Pacific water! Water was siphoning into my 36-foot Trojan at a rapid rate.

I quickly abandoned ship with my little dog and called the Harbor Patrol ... since it was an emergency, I called 911. The Ventura fire department arrived with a big pump and saved the boat. The Harbor Patrol is closed at night, but a great off-duty guy arrived with the firemen and helped shift my belongings to dry ground.

It turns out it was just a loose hose going out the transom for the little bilge pump. Since it is usually above water, there were no fancy safeguards. All of the weight that was in the aft portion of the boat must have pushed it under. I have taken several boating classes, but no one mentioned weights and balances for motor cruisers.

Please warn folks. Thanks,

Marcy Tripp
Ventura, California

Gone With the Wind?

Regarding waterspouts and tornadoes over the water, there is a third type of these phenomena: It is the waterspout that comes ashore. About 50 years ago, such a happening occurred in Manatee County, Florida. A waterspout formed in the Manatee River and went ashore west of Palmetto and headed inland. Along the way, a gas station was totaled and a drive-in movie theater lost part of its display screen.

From the Bradenton Herald, Friday, Oct. 31, 1958: “Mrs. Emery Wilson, who lives on Sneads Island, said she saw the storm building off the island and then it headed for Terra Ceia Bay. A resident of that area said it swept up the bay in the direction of Humpback Bridge and then veered toward Palmetto.”

“Mrs. D. L. Chapman from her Palmetto home at 1026 14th Ave. saw the tornado transform into its funnel shape. She watched black clouds come from Terra Ceia Bay, suddenly glimpsed what seemed like a puff of white smoke coming up to meet the clouds, mushrooming into one large cloud which boiled, made one whirl and in a second was a funnel some three-quarters of a mile from her home.”

The reason I remember this happening is that the gas station attendant escaped injury by being in the concrete block portion of the station when the rest came apart and the drive-in movie people put up on the marquee by the road, “Now Showing—Gone With the Wind.”

C. Henry Depew
Tallahassee, Florida

TowBoatU.S. Kudos

While sailing offshore from the Chesapeake Bay to Miami, the propeller shaft broke about 40 nautical miles south of Charleston. We had to turn around and sail slowly back to Charleston. When we were about 25 nm out, we reached TowBoatU.S. Charleston to arrange to be towed into that very busy harbor. Steve Little of TowboatU.S. Charleston received our call and had one of his boats meet us outside the harbor at about midnight and tow us to an anchorage.

The next morning, which was Saturday, he brought a diver out to inspect the underwater gear and determined that the shaft was broken. Steve then called several repair yards to locate one that was capable of doing the repair. On Monday, Steve had his boat tow us to Pierside Boatworks, where the repairs were performed. Steve even stopped by the yard to make sure the work was being done to my satisfaction.

Steve and his staff were very responsive and did everything exactly when they said it would be done. They were skilled in their craft and very personable. They made an unpleasant situation almost enjoyable.

Don Moore
Annapolis, Maryland
Bad Cleat Installations and Good Samaritans

Two surveyors, Jonathan Klopman in Massachusetts and Jack Hornor in Maryland, recently sent Seaworthy photos of cleats that had pulled out of decks with relatively little force. The cleat on one of the boats—a million-dollar sport fisherman—had been securely bolted to a block of wood, but the wood was only attached to the boat with four small wood screws (photo on the left). The cleat on the second boat, a sailboat, was attached with small bolts that were only fastened about an eighth-inch into the cleat (photo on the right). The cleat popped off, leaving the two bolts still sticking out of the deck.

Weak cleat installations can be dangerous. Last fall, a Good Samaritan was trying to free a grounded boat on Long Island Sound when a cleat pulled out and came whipping through his boat’s sliding glass door. Even though there were kids on both boats, no one was hurt. Jim Reynolds of TowBoatU.S. Bay Shore in New York, who eventually freed the grounded boat, said there have been several instances where people have been seriously injured or even killed when cleats or lines failed. Reynolds says he’s learned to be especially careful where he secures the lines. He also uses a 300-foot Poly-Dacron line, which has less stretch and is safer than nylon.

The message here is that unless you’ve had a lot of experience towing or ungrounding boats, the jobs are best left to professionals.

Reporting Claims Quickly

A member in Maryland wrote BoatU.S. recently to complain about a claims settlement he received after his boat had partially sunk. Even though he’d been sent a check to pay for the damage identified by the surveyor, he felt he was still owed money for a generator he claimed had been ruined by seawater. He was angry.

The problem was that the member had waited over a month to file the claim and by then the generator was long gone. There was nothing to show that the generator had failed due to the partial sinking.

Under “Actions to Take, Sue and Labor Coverage,” the BoatU.S. policy says you must give us the opportunity to inspect the boat as well as damaged equipment before it is repaired or discarded. The best way to avoid this sort of problem—also spelled out in the policy—is to report any sort of accident immediately, so there’s no question as to the cause, nature, and extent of damage.

Scupper Sinkings

Have you checked your cockpit scuppers lately? You might be surprised at how close they are to the water. Scuppers are supposed to drain water out of the cockpit, but over time, boats tend to gain weight when items are brought on board and never removed (spare anchors, batteries, oil, for instance) and scuppers get lower and lower, sometimes ending up underwater. Eventually two things happen: The scuppers are no longer very effective at draining water (especially if they’re also full of gunk), and worse, if they’re low enough, water can back up into the boat. A study done by Seaworthy noted that almost half of all outboard boat sinkings were due to rain or snow.

In this claim (#0909074) the owner kept raising the waterline until the scuppers had to have a coating of bottom paint (a bad sign). Three days of rain were too much for the slowly draining underwater scuppers (the rubber flaps won’t stop water from back-flowing) and the boat sank.

Three things to consider if your boat seems to be slowly sinking: keep excess weight out of your boat, keep the scuppers clear, and use a cockpit cover to keep your boat floating in rainy weather.
Recognizing Swimmers in Trouble

There is a common misconception that when someone is drowning, he or she is going to yell and maybe even wave their arms. If you have swimmers near your boat this summer, it’s important to realize that someone drowning lacks the lung capacity to call for help. A drowning victim acts instinctively, moving his or her arms as though climbing a ladder, taking quick gulps of air, and then slipping underwater. With an adult, this reflexive behavior lasts about 60 seconds before the victim sinks underwater for good. A child will exhibit the reflexive behavior only for about 20 seconds. The struggle is quiet, and often looks “playful.” If you have any doubts about someone in the water, ask if they’re OK. If they can’t answer, they need your help immediately.

Raising and Wrecking Outdrives

It seems that every summer, droughts in various parts of the country have dramatically lowered water levels and made skippers’ boating lives much more difficult. Water—lots of it—is essential to boating.

Owners of some I/O’s cope by raising their outdrives to pass through shallow water. The lower the water, the higher the outdrives are raised. While it’s acceptable to run with an outdrive raised to the trim-level limit, using the trailer switch to raise it still higher puts excessive strain on the spline teeth and can lead to costly repairs.

As the outdrive is raised beyond the limit (with the prop just below the water surface), the steel input shaft pulls slightly out of the aluminum coupler. This results in a sloppy fit and excessive wear between their respective spline teeth at slow speeds (the softer aluminum teeth tend to wear more). Worn spline teeth make noise at slower speeds and will be even louder when the outdrive is turned hard over to either side. If you hear such a noise, have the outdrive pulled for inspection; wear and tear is not covered by insurance.

It All Starts with a Good Battery

Of all the reasons to have to be towed, perhaps the most easily avoided is a dead battery. The key to avoiding the frustration, hassles and lost time on the water is to replace a battery when you first notice it isn’t holding a charge as well as it used to.

Some things to think about, should you ever have to buy a new battery: First, if you have more than one battery in parallel, replace all of the batteries, not just the one that’s going bad. Make sure they’re the same size and type; mixing new and old or different sizes results in one battery draining back into the others, which ultimately shortens the life of the new battery. Use a deep-cycle battery to run the ship’s lights, stereo, etc. and a starter battery to start the engine. “Dual purpose” batteries do a serviceable job on smaller boats with minimal electrical needs, but on larger boats they tend to be iffy (the exception is AGM batteries, which are capable of both.) Finally, whenever you anchor overnight, turn the battery switch to the house battery (deep cycle), so the starter battery will still be strong in the morning.

Q: Who Could Confuse Water and Gasoline?
A: Just About Anybody

It’s hard shelling out money to fill up gas tanks, but one member was surprised at how cheap the fill-up was on his 32-foot powerboat—until he realized that the dock attendant had pumped the gasoline into his boat’s freshwater tanks. The good news is that someone realized the mistake and the member didn’t just motor off, only to be shocked the first time he tried to have a drink of water. Fortunately, the marina also owned up to what they had done and took care (great care) to remove the gasoline. Once that was done, the entire freshwater system—tanks, pumps, hoses, fittings—had to be replaced.

While the marina was responsible for the potentially dangerous mistake, in the end, the boat’s owner ultimately has to make sure that refueling is done correctly. Refueling is a job that should be done by you, the boat’s skipper, and not a dock attendant or guest. Deck fills should be clearly marked (different colors are available for different fills) and not right next to each other (Claim #0909425).
Mayday Protocol

It’s a Typical Summer Day With the Usual Chatter on the VHF. Suddenly You Hear “Mayday, Mayday, Mayday!” Now What?

If you’re careful, prudent and have a bit of luck, you’ll probably spend a lifetime on the water and never have to send a mayday. But there’s not much you can do about all those other mariners out there, whether they’re the skipper of a tug with a tow half a mile long or two guys in a 15-foot bass boat. When someone develops a problem that is life-threatening, they’ll send a mayday, and you might be the person who hears it. What to do?

The first thing to do is … nothing, other than noting the location of the vessel broadcasting the mayday. If you have been on the radio, cease all transmissions and stand by. While you’re waiting for the Coast Guard or a vessel that may be closer to respond, figure out your distance from and heading to the vessel in distress. This could be the first entry in your radio log if, like a lot of skippers, you don’t routinely maintain a radio log. If you get involved with a mayday, whether as a rescuer, a relay vessel or the vessel in distress, a prudent mariner would note the channel, time and content of radio traffic in the logbook. While radio logs are only required for vessels larger than 65 feet, any involvement with matters related to safety at sea should be noted in the logbook. If you’re the skipper of the 15-foot bass boat, the logbook might be any piece of paper available; the important thing is to have a record of your involvement, if at all possible.

If, after the second mayday broadcast, you hear no radio traffic responding to the mayday, it is appropriate for you to respond. The first thing to do is establish contact with the troubled vessel, and just as with sending a mayday, there is a format for that, derived by the Coast Guard to avoid any possible confusion from having more than one vessel broadcasting the word “mayday.” That word, laden with meaning and tradition, is only to be used by the originating vessel, i.e., the one in trouble. The correct identifying phrase is “Vessel in distress,” and that is how you make contact.

“Vessel in distress, this is (your boat’s name).” Verify your reception of their location and the nature of their distress (sinking, fire …) and give your location, speed and your estimated time of arrival at their location (see “When You’re the Rescuer”).

Next, in a second call, you need to attempt to relay the mayday message to the Coast Guard or another vessel that may be closer or better suited to participate in the rescue. Note that this is done as a separate radio call. The accepted and Coast Guard standard protocol is to say, “Coast Guard station, this is vessel (your boat’s name), I have a vessel on Channel 16 at (their location) that states he is (on fire, sinking, etc.).” Then give your location. You may be asked to relay what information you have regarding number of people aboard, the distressed vessel’s name and so on. The Coast Guard will then make an attempt to contact the distressed vessel on Channel 16.

Note that this procedure is different from previous protocols in which the relay vessel uses the phrase “Mayday relay.” The word mayday used by stations other than the originating vessel has given rise in the past to confusion when other stations have heard partial transmissions and assumed there to be more than one emergency, with the relay vessel(s) also being in distress.

If you are not involved, either as a relay or as a rescuer, when you hear the word mayday, you are required to immediately cease all activity on that frequency. This will be confirmed by the Coast Guard as soon as they respond to the mayday. They will announce who they are, and this will be followed by the words, “Seelonce Channel 16.” In practice, this phrase is rarely used,
but if a vessel were to attempt to use the channel during a mayday, the Coast Guard would make the announcement.

It may be that a commercial towing service, such as TowBoatU.S., will become involved. If they have a rescue vessel that can arrive sooner than the Coast Guard, they will make that known on the radio. Larry Tieman, a skipper with TowBoatU.S. in the Tampa Bay region, confirmed that, saying, "Because of the drawdown in Coast Guard assets, I might have a vessel available sooner than the Coast Guard." With a fleet of 13 vessels, with a minimum of 12 either on the water or ready to make way in a half-hour or less, Tieman and his associates outnumber the Coast Guard in their area and have been involved in many rescues. The same is true of commercial towers in many areas.

The rule for radio silence is observed whether the rescuing authority is the Coast Guard or a commercial towing service. From that instant until notification either by the Coast Guard or the rescuing authority, only radio traffic directly concerned with the mayday is allowed on that channel.

With the conclusion of the mayday, the rescuing authority will re-open the channel for normal traffic, and just as with all the other scenarios, there is a set formula to follow. The broadcast begins with the word, "Mayday," followed by "Hello, all stations," repeated three times. That is followed by the announcing station identifying itself, repeated three times, and then followed by the time of the announcement.

The transmission will conclude with the words, "Seelonce Finay," to indicate that the emergency is done with and that normal radio traffic may resume.

You may instead hear the phrase "Pru-Donce." This is heard when the emergency is occurring over a long period of time and indicates that the channel is available on a limited basis for high-priority messages only. The working channel is not cleared for normal traffic until "Seelonce Finay" is announced by the controlling station.

The procedure for receiving and relaying a mayday message is formulaic, and assumes the vessel in distress is in immediate and grave, life-threatening circumstances. What do you do if you see a vessel that is apparently in distress but you have heard no radio traffic indicating their desire for assistance? They may have lost their radio, or they may not be ready to send a mayday. It is not appropriate for you to originate a mayday on another vessel’s behalf, but you may send a pan-pan message, noting your location and the nature of the observed distress. If you can approach the vessel and establish non-radio communication, they may request a mayday, but remember that only the distressed vessel can give it. Your call for assistance should only state that you are calling on behalf of a “vessel in distress.”

With all that is involved, why not just leave it to the professionals? If you see, or know of, a vessel in immediate, grave and life-threatening distress, you are obliged, under both U.S. law and international treaties, to render assistance to the extent that you are able, without endangering your vessel or your crew. In all likelihood that means making sure the Coast Guard (or other agencies such as TowBoatU.S.) become aware of the situation.

When You’re the Rescuer

It’s a lovely afternoon, and then you hear “Mayday, mayday” on your radio. The location sounds close to your position, so you look around and there, maybe a mile away, is the vessel in distress. You could be there in five minutes. What do you do? There is the weight of tradition as well as numerous international treaties regarding the safety of life at sea that state that any vessel that can offer assistance to another vessel in life-threatening circumstances is required to do so, short of endangering the responding vessel and her crew. As for any worries about liability, the Federal Boat Safety Act of 1971 says, in essence, that aid rendered to persons who desire aid does not carry with it any liability providing the assistance was done in a manner that “any prudent man or woman” would employ.

Let the mayday call conclude and wait for a response from the Coast Guard. When the channel is clear, announce who and where you are, state that you are underway and your time of arrival.

Best practice would be to update the Coast Guard with whatever information you have regarding the emergency: number of people on board or in the water; number of life jackets available; number of people in your vessel, and what your plans are. You may be able only to get them out of the water but require assistance to get them ashore; the more information the Coast Guard has, the better able they will be to assist both the vessel in distress and you, the rescuer.

Break out all your spare life jackets while en route and place fenders to enable you to come alongside, if that is a prudent means of taking on the distressed crew. Rehearse your strategy for taking aboard persons in the water, and be prepared to deal with hypothermia, injuries and shock. Keep the Coast Guard fully aware of your position and actions.

If the vessel is on fire, stay upwind. The distressed crew will have to leave their vessel and the rescue will consist of taking them aboard. Do not attempt to board the vessel and fight the fire yourself. If the vessel is in immediate danger of capsizing, stay sufficiently clear so that you avoid any entanglement with the sinking vessel.

If you have picked up the distressed crew and their vessel is still afloat but not under command, send a pan-pan message on Channel 16 stating the presence of a “hazard to navigation” and give the boat’s location and drift rate, if it can be determined. The empty vessel is not a “derelict,” which is a legal term designating a vessel that has been abandoned by its owner with no intention of returning.

A quick note on the law as it pertains to salvage is in order: “Salvage rights,” the money given to vessels that effect the salvage of a distressed vessel, do not apply to the saving of life. It only pertains to property. Your interests, and liability, are protected by the Good Samaritan law.
Predicting Storm Surge

Forget Saffir Simpson, 
Here’s What You REALLY Need To Know!

By Steve Letro
Meteorologist in Charge, National Weather Service, Jacksonville, FL

Meteorologists and emergency managers had worried about it for years. It seemed like such a great way to convey storm surge information...easy to understand, with specific numbers that people could relate to and make decisions. Yet for all its simplicity, there was an elephant in the room that would not go away.

The “it” being referred to was the Saffir Simpson Hurricane scale, and the elephant was how that scale dealt with storm surge. First devised by Dr. Herb Saffir as a pure wind-versus-damage scale, it was modified by former National Hurricane Center director Dr. Robert Simpson to include storm surge impacts before being used publicly starting in the 1970’s. While it seemed to work fairly successfully for over 20 years, the fact was that those 20 years coincided with an era of generally unfavorable oceanic and atmospheric conditions for Atlantic hurricane development with very few strong hurricanes actually reaching land. Unfortunately, that pattern switched in the mid 1990s, becoming far more active. As more hurricanes began making landfall in the U.S., some of the inherent “warts” in the application of the Saffir Simpson scale to storm surge began to become apparent.

The problem is that the Saffir Simpson scale related storm surge directly and solely to a storm’s maximum winds. In reality, storm surge in any particular location is dependent on many factors, including the physical size of the storm, speed of forward motion, and your location with respect to where the center makes landfall. Furthermore, important local factors such as the depth of coastal waters, coastal elevations and astronomical tides also play a key role. Since these parameters can vary greatly not only from location to location, but also from one storm to the next, it becomes virtually impossible to come up with a “one size fits all” storm surge scale that will work equally well at every location or for every storm. Unfortunately, that is exactly what the Saffir Simpson scale was being used for, with increasingly questionable results.

This issue began to come into focus when Hurricane Charley made landfall along the southwest Florida coast in August, 2004. Wind speeds in Charley were Category 4—145 mph—which should have produced a storm surge of between 13 and 18 feet. Instead, because of the storm’s small size and fast forward motion, the surge was only in the five- to seven-foot range—more reflective of the surge that would be expected from a Category 2 hurricane. While surge inconsistencies such as Charley, as well as some of the storms in the infamous 2005 season, including Katrina, raised suspicions, the problem really came home to roost with Hurricane Ike in 2008. Ike’s maximum wind speed as it approached the Texas coast was in the Category 2 range—110 mph—but by now forecasters recognized that Ike’s massive size was likely to produce a much greater storm surge, as much as 15 to 20 feet. This prompted statements that went so far as to warn of “certain death” for those who did not evacuate. Most people heeded the warning, but not all.

We will probably never know exactly what motivated folks along the Bolivar peninsula of Texas, which was directly in
Anecdotal evidence heavily suggests that some individuals may have made their decision according to the Saffir Simpson category, rather than the urgent warnings and forecasts from meteorologists and emergency management officials of a much more significant storm surge. In some cases, that proved to be fatal, as the surge reached as much as 15 to 20 feet, inundating a large section of the Texas coastline and killing over 20 people.

The issue also goes beyond purely meteorological factors. The configuration of the ocean floor at the coastline plays a huge role in producing storm surge; a broad, gently sloping seafloor, such as the type present along much of the Gulf Coast, will generally produce much more surge than one that drops off sharply, as is found off the southeast Florida coast.

The result of these findings has been the removal of reference to Storm Surge in the Saffir Simpson scale. While it is just not feasible to produce a specific Storm Surge scale due to the factors mentioned earlier, the National Weather Service is working with its emergency management and media partners on ways to enhance storm surge recognition and understanding. One thing that can be done now is to begin expressing storm surge in terms of actual inundation, or maximum depth of water above ground level, rather than simply above normal tide levels. In addition to factoring in those local tide levels as well as topography, storm surge forecasts should now be much easier for most to understand and relate to.

In the longer term, there is also work being done on eventual development of a specific Storm Surge Warning, which would allow more specific warning information tailored to individual areas along the coastline. Such a change would have impacts on the entire tropical cyclone watch/warning program, and is therefore probably at least a couple years away from implementation.

Conveying storm surge information to users in a way that is both understandable and realistic is also a challenge. On the plus side, newer technologies, including Geographic Information Systems (GIS) hold great promise for allowing real time, highly detailed graphics to depict storm surge inundation, in many cases down to the level of a city block. The downside is that while such displays are visually striking, they belie the fact that all forecasts and warnings of storm surge, as well as all other hurricane impacts, will only be as accurate as the forecasts of the hurricane itself, including size, motion and structure. In other words, a picture of potential storm surge inundation might depict very fine details, but it will only be correct if the storm's forecast size, motion and intensity are all totally accurate, which is seldom the case. There is great concern that such images, which imply a level of accuracy in the hurricane forecast that simply does not exist, could be taken far too literally, and cause people to make decisions based on an unrealistic graphic rather than the warnings and advice of their emergency managers.

In the end, for all the improvements being made in hurricane forecasting, graphical representation of storm surge and almost instant communication, the ultimate responsibility for our personal safety does not rest with improved science or technology. We must each be willing to make proper preparations for a possible hurricane strike, and to heed the warnings and follow the advice of our emergency management officials in order to make the best possible decisions to protect ourselves, our loved ones and our property from what has been called “The Greatest Storm On Earth,” the hurricane.

If You Live Near the Gulf of Mexico

In areas that may be vulnerable to spill-related damage, BoatUS would like to remind you that your BoatUS Policy will help with the cost to get your boat out of harm's way. If you choose to have your boat hauled out professionally to avoid contamination, 50% of the cost, up to $1,000, will be reimbursed under the "Hurricane Preparation" feature in the "General Conditions" section of your policy.

Also, should your boat come in contact with the oil, please call the BoatUS claims department at 1-800-937-1937. We are available 24/7 to assist you.

NOTE: You can stay up-to-date on the latest oil spill news by visiting BoatUS.com/OilSpill
Coping With Storm Surge

It’s Not Wind That Wrecks Most Boats in a Hurricane, It’s the Storm Surge. Here’s Why — and What You Can Do About It

When Hurricane Fran had finally blown through, Whit Ruark ventured out of his house in Wilmington, North Carolina, glanced around his battered yard, and then headed for the marina to check on his sailboat. Despite having been awake most of the night, Whit said he wasn’t worried; the boat had been pounded by other powerful storms and, thanks to careful preparation and the marina’s sheltered location, it had always survived without a scratch. But when he pulled into the parking lot, Whit was shocked to find an almost empty harbor. He eventually found his boat—after wading almost 300 yards through the marsh—in a pile with dozens of other boats, every one of which was still tied to the marina’s floating docks. While the entire marina had always fared well in storms, the difference this time was a 16-foot storm surge that lifted all of the floating docks off their pilings.

Whenever a large surge is predicted, any marina is more vulnerable; the higher the surge, the greater the marina’s vulnerability. Not just boats at floating docks with shorter pilings, but boats at fixed docks and even boats stored ashore. In this issue, Seaworthy takes a look at which boats are most vulnerable to surge and what can be done to protect them.

- **Boats protected by a low seawall or spit of land that is likely to be underwater.** A good example of what happens when a seawall is overcome occurred at the Watergate Marina in Texas when it was clobbered by Ike’s 15-foot surge. All of the boats at Watergate that were directly behind the seawall were severely damaged, while farther back in the marina, the boats, which were better protected by land, were largely unaffected. The damage to the boats behind the seawall could have been greatly reduced by moving them to hurricane holes or hauling them out and tying them down ashore. Moving boats to empty slips further back in the marina would also have reduced damage.

- **Boats at marinas with floating docks and shorter pilings.** In almost every major hurricane, there are marinas like the one mentioned at the beginning of the article that are completely destroyed because the docks floated away with the boat still attached. The surge was higher than the pilings. Note, however, that floating docks with taller pilings are an excellent place to store a boat in a hurricane. By attaching lines directly to the floating docks, a boat can rise with the surge without straining its dock lines. Boats at floating docks with tall pilings have a far, far better chance of surviving a storm.

- **Boats directly behind a low seawall are especially vulnerable to surge.**
to remain the same, which means the fit for many boats is often uncomfortably tight. In a storm, everyday docking arrangements won’t work; the lines are not long enough to accommodate the surge. Lines are usually strained and broken or, in a few cases, the lines hold and the piling is pulled out of the bottom. Adding extra slack to lines would allow the boat to be bashed against pilings at the start of the storm. If a boat can’t be moved, more and longer lines should be led to more distant pilings. An alternative is to use something like the Tide Minders or Tide Slides that will allow the lines to rise on the piling with the surge. Note that moving a boat to a larger (wider) slip, if possible, is also a good strategy.

• **Boats on lifts.** Whenever possible, boats on lifts or davits should be taken down and stored ashore or moved to a conventional dock. If a boat must be left on its lift, remove the drain plug so the weight of accumulated rainwater will not collapse the lift. (If the tidal surge reaches the boat, which is likely, it will be flooded, but to leave the plug in place is likely to result in more serious structural damage.) Tie the boat securely to its lifting machinery to prevent the boat from swinging or drifting away. Plug the engine’s exhaust outlet (try duct tape) and strip the boat.

• **Boats stored ashore on land that are within reach of the anticipated surge.** A good example of what can happen to boats stored ashore in low-lying areas occurred a few years ago in Virginia when the owner of one marina hauled all of the boats and stored them ashore in the parking lot. The surge from Isabel came over the seawall, carried boats off their stands and deposited them in a pile against a hill. Note that while many of the boats suffered significant damage, most were repaired and put back into service. This contrasts sharply with boats in their slips that are bashed against pilings and sank. The latter are far more likely to be damaged beyond repair. There are several solutions: strapping boats down (works if the surge isn’t too great); moving boats to hurricane holes; or storing them ashore on higher ground (again, strapping the boat to earth anchors works best).

• **Boats on moorings in shallow water.** A boat on a mooring can swing to face the wind, which is beneficial; windage will be reduced considerably and it won’t be slammed into a dock unless the anchor or mooring drags. Regarding the latter, the keys to a mooring holding in a hurricane are the type of mooring anchor used (helix anchors work best), the use of chafe protection on penanns, and the amount of scope. The latter is especially vulnerable in shallow harbors, where a scope of 3:1 can be all but eliminated by storm surge. For example, a boat in eight feet of water with 16 feet of chain and an eight-foot pennant will have a scope of about 3:1. If there is a 12-foot surge, the scope will be reduced by half. Adding considerably more scope (longer pennants) is the solution but this must be done uniformly with all of the boats in the harbor.

### Three Ways to Cope with Surge

1. Move your boat to a slip (the wider, the better) or a floating dock with tall pilings.

2. Haul the boat out of the water and strap it down to ground anchors, preferably on high ground above the anticipated surge.

3. Move it to a hurricane hole.
Marinco, one of the largest makers of shore power cords, a hot cord is rarely caused by overloading the circuit; it’s almost always the result of a damaged cord, corrosion, or a poor connection.

### Three Ways Resistance (and Maybe a Fire) Is Created

#### 1. Damage

Cords are most often damaged when they’re pinched between the dock and boat. Cords need to have enough slack to rise and fall with the tide and the movement of the boat, but not enough to get caught on the dock. Cords can be hung neatly with Velcro fasteners along the boat’s railing so that there is minimum sagging when it finally crosses over the water to the pedestal.

Another way cords get damaged is when owners forget to disconnect them before casting off the lines and exiting the slip. One skipper found out the hard (and embarrassing) way that a shore power cord is strong enough to completely stop a boat; not only was the cord damaged, the boat slammed into a piling after being caught up short. Even a relatively minor tug can break strands internally or at the connection ends. And because cords have thick insulation, internal damage is often impossible to see. Broken wire strands make the wire effectively thinner, which can dramatically increase the resistance of the cord. Don’t take the risk; if your cord gets severely pinched or stretched, it should be replaced. In one claim (#0102569), a cord that had been pinched at the dock was put back into use. It worked fine until one day a few weeks later when the owner went on board and found the cord smoking where it had been damaged. If he hadn’t happened to stop by, the cord likely would have started a fire.

#### 2. Corrosion

Corrosion is usually only a problem at the cord’s connections. Corrosion doesn’t conduct electricity well, and like broken wire strands, it causes resistance. Shore power connections are supposed to be moisture-proof, but often the locking rings are damaged or are not used, which can expose the connection to the environment. Corrosion might not be obvious; look at the blades that go into the shore power receptacle and the ones on the boat’s inlet. Bill Drake says that the blades are usually nickel-plated brass; after years of plugging and unplugging, the nickel can eventually wear through, which is an indication that the cord needs to be replaced. Using an abrasive such as an emery cloth to clean the blades is a bad idea, he says, because it will remove the coating. Poor contact can manifest itself as discoloration or melting around the base of the blades, which is a clear indicator that the cord must be replaced immediately. Drake cautions against replacing an overheated cord without knowing what caused the problem. The claim files show that most often, the boat’s inlet is the area that gets overheated and just replacing the cord won’t solve the problem—the inlet likely will have to be replaced as well. Make sure the inlet has a tight-fitting waterproof cap and be sure it’s closed after disconnecting the cord and before leaving the dock. Corrosion typically builds gradually; make it a habit to examine the blades whenever you connect or disconnect the cord.

#### 3. Pitting

A bad connection—whether from corrosion or loose contacts—can cause arcs, which are like tiny lightning bolts between the contacts in the connection. Arcing causes pitting, which, like corrosion, leaves less contact surface and increases resistance. After plugging in a cord, make sure the connection is locked tightly in order to prevent a poor connection.

Arcing also occurs (big time) when a cord is disconnected while the circuit is still energized. To prevent arcing, either turn the power off at the shore power pedestal or turn off the boat’s AC breaker before unplugging or plugging in either end. Failure to do so is the main cause of arcing damage. Blades damaged by arcing can’t be salvaged because the metal is damaged and the coating is ruined.

### Keeping Power Cords Healthy

#### Examining Your Cord

To get an idea of your cord’s condition, start at the ends and look for brown discoloration at the base of the blades. Any brown or black discoloration indicates excessive heat. Blades with a worn nickel coating or pitting (caused by arcing) are another red flag. If any of these conditions exist, don’t use the cord.

Note that damaged cord ends can often be replaced. Check with the manufacturer to
see if they offer repair kits. However, before replacing an overheated connection, you need to know what caused the problem. Often, the boat’s inlet is damaged and just replacing the shore power cord connection will only damage the new one.

If the plug ends look OK, check along the cord itself, looking for any cuts in the insulation and feeling for crushed areas. Thin spots likely indicate the cord was stretched. Finally, any previous repairs to the cord are reason enough to require replacement.

**A Few Tips**

- In the event that your shore power connection falls into salt water, immediately turn off the power at the pedestal. Remove the cord and rinse off the end thoroughly with fresh water and let it dry, which could take several days. Before using, spray with an electrical contact cleaner to displace any remaining water.

- Don’t force connectors. If they won’t fit together, there’s a reason. There are several different connectors and each is used for a different capacity. A 30-amp cord would be a fire hazard if somehow plugged into a 50-amp connection. They’re not interchangeable and should never be modified.

- If you use an adapter, you’re introducing another set of connections that can arc or corrode. Adapters often are not equipped with sealed connections and are typically designed for short-term use and should only be used in dry locations.

- Never cut or splice a cord. A shore power cord has extra-thick insulation that can’t do its job if it’s cut. On the other hand, most shore power cord manufacturers make kits to replace the ends. If you’re comfortable with basic electric projects, it’s a straightforward job.

- Don’t leave the cord plugged in on the dock when your boat is away. If you forget to turn the power off and the cord falls into the water, it could present a shock hazard to swimmers.

**A Better Mousetrap?**

A company called SmartPlug has developed what it thinks is the solution to most of the problems associated with shore power cords. According to the manufacturer, one of the biggest differences in their shore power system is that the connector blades, which are 316 stainless steel rather than the typical nickel-plated brass, are not L-shaped but straight, which the company says offers 20 times the contact area of the old style. The locking mechanism is not twist-lock, but has two spring-loaded latches on the outside of the connector; inserting the plug (easier to do in the dark, the company says, since there is no fumbling to find the proper orientation) also locks it and seals the connection. In case of a plug overheat, it’s equipped with a thermal cutoff that cuts power at around 200º F. The company sells a kit that enables boat owners to retrofit their shore power cords on the boat inlet side. Also available is a retrofit for dock pedestal systems, which highlights a problem with the system—if both ends of a shore power cord have a SmartPlug, it can’t be used in other marinas. This is why, according to the manufacturer, the system can’t be UL marine listed. More information can be found at www.smartplug.com

While the boat end of the cord tends to get inspected more frequently, since it is unplugged whenever the boat is used, don’t forget to periodically check the pedestal connection. Even slight damage is enough to warrant immediate replacement.
In the last issue of *Seaworthy*, there was an account of a sailboat that was abandoned on the way to Bermuda (“Lost at Sea, The Perils of Abandoning Ship”). The following account (Claim #0913926) involves a highly experienced 78-year-old skipper who abandoned his 49-foot trawler last fall in the Gulf of Mexico during a trip from Texas to Florida. And while the story about the Bermuda-bound sailboat centered on the difficulties of getting from a small sailboat onto a giant ship in raging seas, in the following account, it’s the reason the trawler had to be abandoned that makes the story interesting.

On Tuesday, October 27, the skipper was finishing last-minute preparations for his solo trip from Texas to Tampa, Florida, where he was planning to meet his wife for a leisurely, three-month cruise. He hoped to take the Inland Waterway but at the last minute, he had learned that a lock in New Orleans was going to be closed for 45 days for repairs. After topping off his trawler’s tanks at a marina in Clear Lake, the skipper made the decision to take the “shortcut” directly across the Gulf of Mexico. He’d made the trip offshore six times before, always in a sailboat. With his trawler, he estimated the 825-mile voyage would take five or six days.

Technically, it was still hurricane season but 2009 had been unusually quiet—no hurricanes—and when he set out on October 31, a Saturday, calm winds and seas were forecast for the upcoming week.

As predicted, seas were calm for the first two days and the trawler made good time. Since he was by himself with no place to put in for the night, the skipper developed a technique of looking six miles ahead on the radar screen, selecting a course that was clear, and then dozing for 20 minutes. An alarm would wake him up and he’d repeat the process.

Wednesday, as he was approaching the Florida coast, was when the trouble started. Seas built to four feet; not dangerous, certainly, but large enough to occasionally roll the trawler gunwale to gunwale. Sometime in the early afternoon, the starboard engine quit. Seconds later, the port engine quit. The skipper went down into the engine room and found water in the filter. He drained the water and then started the engines. A while later, the port engine stopped again. He discovered more water in the filter. The frustrated skipper then switched tanks, but the problem immediately got worse.

In desperation, he checked the depth gauge and found the boat was in only 200 feet of water. He dropped the anchor and 350 feet of line. Despite the lack of scope, the anchor held.

At almost the same instant the skipper was anchoring his trawler, a late-season storm, Hurricane Ida, was brewing in the Western Caribbean off the coast of Honduras. Initially Ida was only a tropical depression with 35-mph winds, but four days later, on November 8, it would enter the Gulf as a Category 2 hurricane.

The skipper, unaware of the new forecast, was, “racking my brain, trying to figure out a way to get clean fuel to the injector pump.” The fuel pump on the starboard engine was working. He released the plug on the injector pump and was getting clean diesel and no bubble. He tried pushing the stop button and the start button at the same time to clear the cylinder. No go. He disconnected the line from the fuel pump to the two filters on the engine; he worked the lever on the fuel pump; and he continued cleaning fuel with the boat’s fuel polishing system.

Nothing worked. As he kept trying to coax the two engines back to life, his anger at the marina in Texas that had sold him the water-soaked fuel started growing.

The waves continued to build, making the engine room an increasingly more dangerous place to work. While he was cleaning one of the filters, the boat lurched suddenly, catapulting him into the battery box and giving him a nasty gash and a black eye. Later, the skipper was thrown again, this time cracking a rib, twisting a knee, and getting another cut on his head. The 78-year-old continued working, draining the muffler to keep water from backing up to the exhaust manifold. Later, up in the galley, he was thrown against the pantry and got a third gash on his head.

He decided that the time had come to let someone know his predicament. He tried raising a ship on the VHF. Silence. He shot off flares. Nothing. Finally, he raised a Japanese freighter that was late picking up a pilot and didn’t seem interested in helping him. Sometime later, he reached a tug that contacted the Coast Guard; help, he was told, would be sent out the following day.

By the time the Coast Guard arrived the next morning, Ida was well into the Gulf and seas were 14 to 16 feet and rising. According to the claim file, the skipper was reluctant to leave his boat until the Coast Guard told him Ida was quickly approaching and his chances of surviving were “nil.” The skipper said he thought about his wife and also how he was going to get back to the marina that sold him the “dang fuel” and decided to board the cutter. Revenge is a powerful motive. Before leaving, he set a second anchor, a 45-pound CQR, with 350 feet of line.

As soon as the storm had passed, BoatU.S. hired a plane and the skipper was flown to the site where his boat had been anchored. All they found was a small fuel slick. That’s when he finally realized his mistake with the fuel: “With nothing to do but think, I tried to visualize how the fuel could get out of the tank in small amounts. Finally, it came to me—the fuel vent! If fuel could go out, then water could come in. The fuel had been fine for hundreds of miles — until the boat started rolling. When [the boat] rolled 45 degrees, water came over the rail. The vents are two feet below the rail. Probably three or four ounces of seawater would come into the tank. A lot of rolls, a lot of ounces. If I would have thought of that earlier, I could have cut the hose and let the water go into the bilge to be pumped out.”

“‘If only I’d thought of it earlier.’”

This seems like a good place to mention a topic that has been on a lot of people’s minds: the Gulf oil spill. As *Seaworthy* was going to press, there were still hundreds of square miles of crude oil drifting in the Gulf with no end in sight.

Using first-person reports from BoatU.S. members, TowBoatU.S. towers and Co-op Marina managers, BoatU.S.’s new online page www.BoatUS.com/oilspill provides fishing and boating conditions at various ports, NOAA maps, updates, and photos. There is also information on protecting
Kevin Ritz ("A Preventable Dockside Tragedy," Seaworthy, October 2009) took the photo while on vacation in Hilo, Hawaii of a boat he saw next to a bridge. She (this boat was definitely a she) had a pink hull, pink deck, pink cabin, pink ports, pink mast, pink handrails, pink cockpit, pink hatches, pink telltales and pink vents. The boat was not entirely pink, however; there was a bright blue BoatU.S. sticker on the mast. Kevin noted that BoatU.S. members’ boats come in all shapes, sizes and colors.

Whatever storms develop this hurricane season, you’ll be able to follow them using state-of-the-art tracking models at www.BoatUS.com/hurricanes. The site includes detailed information on how to prepare your boat for a storm.

You can also stay informed by signing up to receive Hurricane Advisory Alerts for your area, which are issued by the National Hurricane Center.

Another good site: www.nauticalcharts.noaa.gov. Aside from being enjoyable, learning how to access the wealth of information at the site will make you a better mariner.

Suzanne Giesemann, author of A Woman’s Guide to Greater Enjoyment on the Water, wrote to Seaworthy awhile ago about a subject she feels passionately about: wives learning how to operate the family boat. She wondered what would happen if the husband were to fall overboard or have a heart attack … would his spouse know what to do? Suzanne cites an example she found at the U.S. SAILING website of a husband who went overboard and was lost; the wife spent three days adrift because she didn’t know how to operate the boat or even call for help on the VHF. Women, she says, need to at least know the basics.

It’s a topic that has been covered in Seaworthy (“Giving Women the Helm,” Vol. 20, No. 1), which made the obvious point that husbands benefit as much as wives when the latter learn to operate a boat. Maybe more. The problem, as Suzanne points out, is that a lot of wives are reluctant, even afraid, to take the helm. The fear, she says, stems as much from making mistakes and being ridiculed as it does from banging up the boat.

The solution is for husbands to (gently) coax their wives to spend time at the helm. It’s best to start on open water away from crowds with the goal of eventually encouraging the wife to bring the boat into its slip.

Aside from learning how to handle the helm, Suzanne suggests it’s important for wives to know where the thru-hulls are located, how to make a distress call, how to use the flares, how to start and kill the engine, how to use a GPS, how to navigate, and “any other skill that has been the husband’s domain.”

A spouse’s enjoyment, she says, is sure to increase when your mate feels more like a partner than a passenger.

### Lightning Strike Probability by State

It’s summer, which is the season for heat, humidity, and lightning. Earlier statistics in Seaworthy have shown that sailboats are far more likely to be struck by lightning than powerboats.

The following probabilities of lightning strikes by state were taken from the BoatU.S. claim files and are based on the number of boats insured in each state compared to the number that was struck by lightning in a given year. One obvious question: Why are the chances of being struck in Rhode Island and Maryland greater than in Florida? The answer is that Rhode Island and Maryland have a much higher percentage of sailboats.

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<tr>
<td>Rhode Island</td>
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<tr>
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<tr>
<td><strong>Average (all boats)</strong></td>
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It’s not known for certain whether lightning is a factor in the widespread problem of boat fires that occur in the Gulf of Mexico, historically one of the most prolific hurricane regions. Sadly, women’s lives have been lost to the same kinds of tragedy. Women, she says, need to know what to do if they get oil on their hull and topsides. If you live in the Gulf or are planning a visit, check the site for your area, which are issued by the National Hurricane Center.
Seaworthy editors occasionally take a break from writing about boat fires, hurricanes and collisions to focus on a topic that readers have told us is far more problematic: bird poop. Specifically, how to keep the latter from making your decks look like the bottom of a bird cage. We’ve received hundreds of stories, including techniques that seem to work and others that are definitely a waste of time. The underlying theme has always been: “Who is smarter, people or birds?”

The letters make it clear that there is no single technique that works for all types of birds—seagulls, cormorants, osprey, pelicans, sparrows, to name a few. To be fair, quite a few readers insist that nothing works, ever. While Seaworthy editors have relied on anecdotes to discover what works, at least one publication has opted to take a scientific approach. In the April 2010 issue of Practical Sailor, the editors reported on a six-month field test (“Boat Care That’s for the Birds”), which was conducted using a wide assortment of commercially available birdie repellents. PS broke the devices down into two groups: visual devices that are intended to scare birds and physical exclusion devices that are intended to prevent a bird from landing on the boat.

The test was conducted on some seldom-used floating finger piers at Sunset Cay Marina in South Carolina, which is near a marsh that is home to many (well fed) gulls, pelicans, herons, cormorants, black skimmers, pigeons, and assorted smaller birds. During the course of the experiment, the devices were subjected to temperatures ranging from steamy hot to near freezing with lots of wind and rain. Here’s some of what Practical Sailor found:

• One of the problems common to all of the devices was a lack of durability (the exception was the spike panels). Sections of something called Irri-Tape reflected light and flapped in the wind and seemed to do a good job repelling birds but was gone in less than a month. So too were the eye balloons (Scare Eye and Terror-Eyes), which also appeared to have been doing a good job before they disappeared.

• The Prowler Owl kept gulls, but not pigeons, away. It too had durability issues; a wing broke after only two weeks and the owl itself blew away after 10 weeks.

• Among the physical exclusion devices, the spiked products protected the smallest areas. The testers found bird droppings fewer than 10 inches from each of the spiked panels. The three spider-like devices performed similarly; you would need several of them to protect an entire boat.

• BIRDOFF’s self-named product was strung around the boat and appeared to work well and be durable (no moving parts), but you will have to allow time to roll it all up whenever you want to use the boat.

• While it wasn’t tested, a motion-activated sprinkler was highly recommended by a California marina employee who was interviewed for the article. (Sprinkler devices were also recommended by Seaworthy readers, although they reported the devices sprinkled people as well as birds.) The manager of a marina in Galveston had similar praise for a sound-emitting device but said they finally took it down because the noise was driving people nuts.

The article concluded, “Successful bird deterrence is a complex business,” to which we would add that it’s also a very frustrating business. The best way to protect a boat, the editors noted, would be to use a combination of devices that best suits your boat’s configuration and location. They warned that you’ll have to check on them regularly, change the positioning, and do some maintenance if you’re going to have any success. For more on what works and doesn’t work, go to www.BoatUS.com/Seaworthy.