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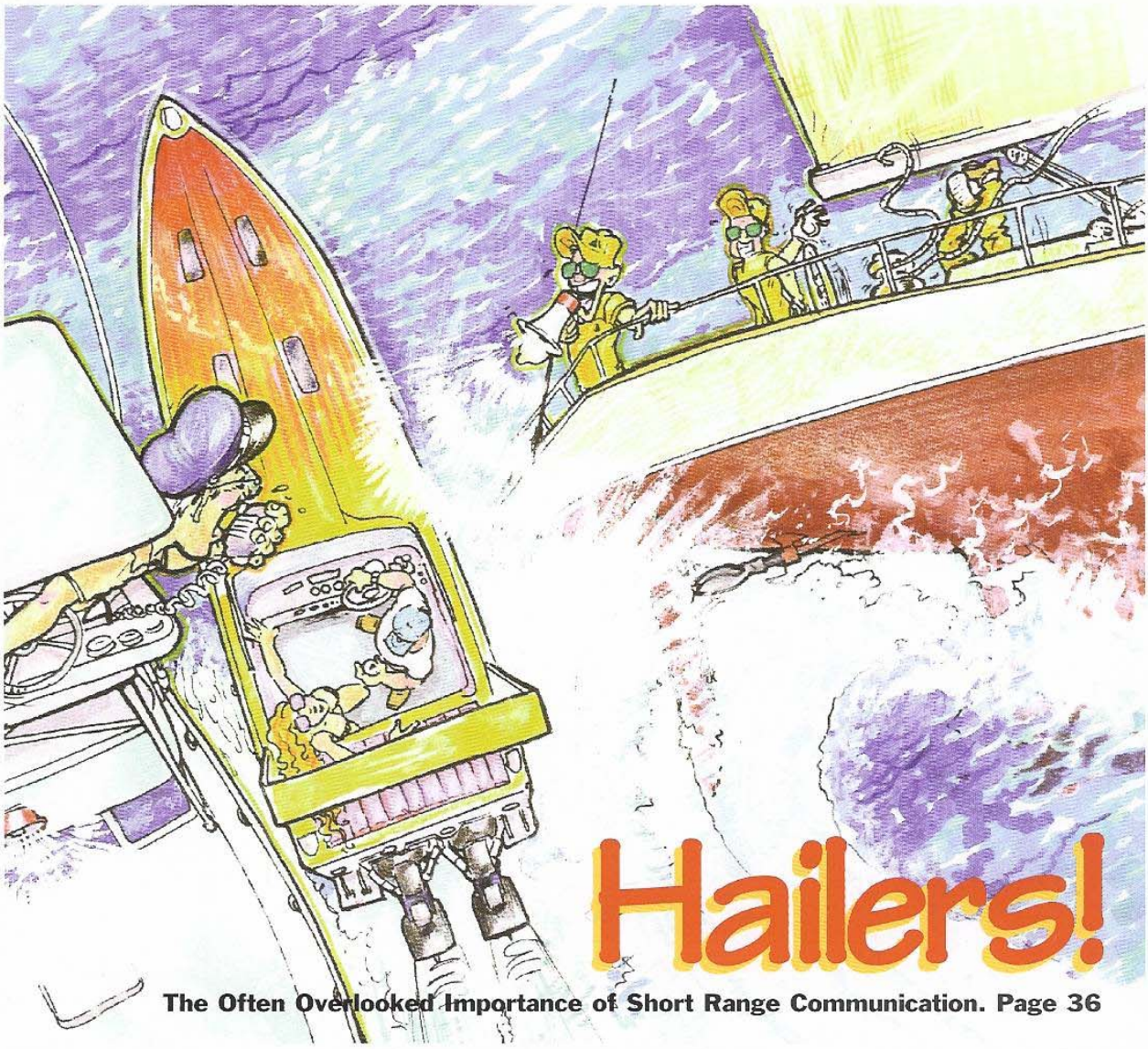

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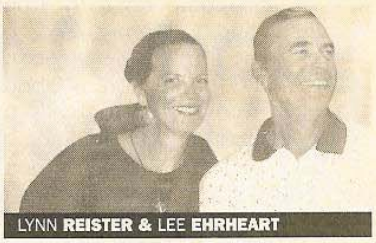
The Wooden Boat: Keeping It Alive



LYNN **REISTER** & LEE **EHRHEART**

There can be a beautiful one-on-one connection between man and his wooden boat. It's quite like a love affair between work and play. The work is the required maintenance. The play is the therapy, the good feeling of the soul to be on hands and knees preparing that wood surface for a gleaming finish.

The play also is the looking forward to the summertime, the boat shows, where we can all be proud of the hard-earned endeavors, the "sea time in our skivvies." It's being there showing off our elegance. It is these memories we love to share.

But, lest we forget what it takes to keep our pride and joy in that primo condition.

Our success in caring for our boat depends on our sensitivity and awareness to the changing and wearing process and knowing what to do about it. If we have a oneness with and take care of our favorite "toy", there should be little reason for despair because of our neglect.

There are definitely right and wrong ways to provide care and maintenance. It is usually a lack of understanding of how proper care is given to a boat that allows deficiencies to develop. Its owner may not be aware of the methodical process: what comes first, then second, and so on.

Actually, what's underneath is more important than what's on the surface. The "easier, quicker fix" usually does not contribute to the long term life and health of the boat.

Performing basic maintenance is a requirement because of the weathering process. This process is nature's way of wearing down anything organic in substance. All the materials are slowly wearing down, returning to their origin in Mother Earth. Some degrade faster while others are much slower.

Different kinds of deficiencies develop as a result of the wear and tear process. The sun's ultra violet rays dry out the natural oils wood requires for a long life and changes the chemical structure of the resins in fiberglass boats.

The caustic nature of salt water provides a corrosive environment affecting most everything from the steel fastenings and electrical connections to the painted surfaces. It's not enough that we have the sun on one side and water on the other, added to this are the wind and rain, allowing sweet water moisture to wick into the dry deck seams, butt joints and scarphs. Keep in mind natures way is a 24-hour a day process, a constant pest we usually don't think much about.

Owners soon come to understand that their human efforts need to be ongoing to counteract natures forces and

that their hands-on abilities and experiences help accumulate the wisdom for the realization.

While the lack of maintenance and weathering promote deficiencies, poor boat handling contributes its share as well. Poor skills in this department can cause abrasions, fractures and looseness in certain parts of the hull. Boats are both strong and fragile at the same time.

Deficiencies develop due to lack of, poor or improper maintenance, poor boat handling and the weathering process. These problems fall into six major categories.

1. **Fungi Rot**
2. **Metal Deterioration**
3. **Structural Weaknesses**
4. **Electrolysis Activity**
5. **Caulking**
6. **Protective Finishes**

It is not so straightforward. There are other categories including the machinery, rigging and internal and electrical systems. The above make up the whole picture. We can best understand the whole by taking it apart and examining it piece by piece.

Our first visual evidence of lack of maintenance is in our paints and finishes. They dry out, get brittle, crack, lack their original luster and loosen their adhesion with the wood. Most everything exposed to the elements needs to be painted or refinished annually.

The toxicity in our standard "soft" bottom paints lasts a year or so, then the active copper growth deterrents dissolve out leaving the residue. We've grown up with the notion of annual haul-outs because of the limited lifespan of bottom paints.

Of course, now we pay three times as much for our bottom paints and get a harder paint which last far longer requiring a less frequent haul-out schedule. On the annual haul-out schedule we had the opportunity to inspect the underbody more regularly for non-standard conditions, telltale signs of problems and to change zincs as needed.

Soft rubber compounds in deck seams dry out, becoming less pliable and sometimes harder, even brittle, and may crack over time. This allows water to penetrate the end grain at the butts and wicks along the grain, rusting the fastenings in its path. If the situation continues and is not corrected, wood and metal deterioration will occur. There is an old expression that says "Keep your butts caulked tight."

Keeping seams maintained and dry is of primary importance. To avert bigger problems in the future, do the maintenance right and now. Learn to recognize when the compounds are at their life's end; nothing lasts forever. It all goes over the hill with time.

One of our shipyard teachers taught us, "Don't go home until your work is done", and we have tried to heed his lessons.

Our yard time together will be spent discussing these major problems. Some problems are real issues which affect vessel safety. Fortunately, the problems don't usually happen all at once; it can take years before we must act, although some problems may surface rather quickly. The wisdom is recognizing what we are seeing, knowing

the difference between major and minor problems, and which situation may affect the vessels integrity.

Boat deficiencies can be so multi-faceted that no one person can know it all. Asking for a helping hand or advice can be a wise move. Sometimes a professional in the marine field may need to be consulted.

Each boat becomes very individualistic with its story of a loving, caring owner or one who seems to be out to lunch. We all, as boat owners, have more to do in life than boat work. We need that balance between work and play.

Remember the analogy of the boat being part of the family; too much work and play does affect the family for better or worse. We want to honor the contributions and experiences of our readers and at the same time we honor our professional obligations to offer you the depth of our expertise and wisdom.

We have nearly a lifetime of haulouts, and sea time experience to share. Evaluate our thoughts, ponder the message. Realize too, that professionals can have differing opinions or slants on a subject. We play an active role in the wooden boat community in the Pacific Northwest. We look forward to getting to know you and your boats.

Q How can I identify (fungus) rot? What can I do to minimize the damage to my boat?

A Often, the untrained eye can see fungi rot conditions, when they are on the surface of the wood. In the final stages of decay, the fibers contract, and shrivel up, creating a rippling effect on the wood surface. The painted surface becomes distorted.

This is the kind of movement and instability that can be most noticeable. We call this condition dry rot. Another term used to describe this condition is cubical rot, where the wood breaks up into small cubed pieces across the grain.

This tell-tale characteristic indicates the nutrients in the wood have been consumed by the fungus. The fungus spores then move on to greener pastures farther up the wood grain. At other times, the fungi are deeper in the wood with little visual

evidence to reveal its presence.

One of the primary tasks of the marine surveyor is to identify hidden rot pockets, their depth, extent, and their impact on the integrity of the hull. The method surveyors use to search for rot is a process called percussion sounding.

This is a "tap dance" of careful hammer tapping on the hull, decks and internal structure, listening for tell-tale sounds. The tapping sends a sound wave through the total thickness of the wood. When tapped, good solid wood gives off a high pitched, crisp solid sound. On the other hand, wet or rotting wood produces a duller, softer, lower tone.

A high pitched hard tone can be heard when tapping over a wad or pocket of epoxy repair material, often unseen under the layers of paint. Sound/tone changes occur when tapping over different structural members.

For instance, a plank with a frame or beam behind or beneath it, will sound differently than when the plank is tapped between the frames, where there is open space behind.

It will usually take a trained, experienced and sensitive ear to properly understand and interpret the sound changes. There is an art to it.

Hands-on experience with a variety of woods and various hull structures makes a good teacher. With interest and desire, most of us can develop the ability to learn and interpret what the different sounds mean.

Try your hand at it. Buy a 6- or 8-ounce a ball peen or plastic head hammer and practice tapping and listening to the different sounds. Be careful not to dent the hull.

Soft woods, like cedar, and hulls with fresh paint or many layers of paint are vulnerable to the tapping and small dent marks can be left by the hammer head. Even the most experienced and careful of surveyors will leave a dent or two periodically.

As you tap along an area where the sound should be relatively consistent, and the tone varies for no explainable reason, the area may be determined suspect. These suspect areas are then probed with an ice pick-type tool to determine the depth and severity of the rot.

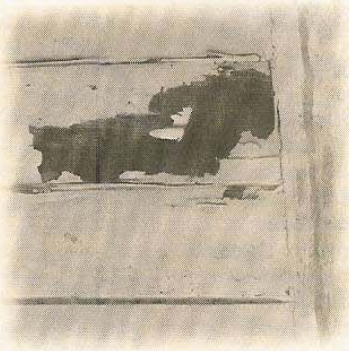
Is the rot more superficial, on the woods surface or is it in a rot pocket? Is it deep, affecting the full plank thickness?

In seriously affected wood, an ice pick will go into the wood like soft butter, with little or no pressure. The spores first travel fore-and-aft, with the grain of the wood. With more rapid growth, the spores travel inward, going from plank to frame to longitudinals and then, in severe cases, throughout the entire hull structure.

As moisture travels inward from the surface of the plank or decking, the spores follow. The affected areas also grow in diameter. The extent of the growth depends upon having the ideal living conditions for the spores.

Let's look at the nature of these spores more closely and talk about their life cycle. Spores are a low form of plant life, a living organism. They are a parasite in the form of small white filament-like hairy threads.

What do they need to thrive? They enjoy many of the same living conditions that human beings do, oxygen and a congenial temperature range from 75-90 degrees. They feed on the nutrients of the cellular wood structure. Fungi need moisture, the sweet-water type, in just the right amount. It does not like salt water. Salt acts as an antiseptic to the fungus.



All wooden boats are at risk of having fungus rot problems above the waterline whether they are moored in fresh or salt water, because of their exposure to fresh rainwater. The fresh water invites fungus growth. Wooden boats moored in salt water usually do not have fungus rot problems below the waterline because of the pickling/antiseptic action of the salt water.

Fungus spores can be controlled. They can frozen or killed by hot steam in the shipwright's steam box. The wood is steamed to limber it up and soften the grain so it can be bent and twisted to lay along the curve of the hull. On the other hand, waterlogged wood does not support the fungus because it lacks adequate oxygen.

If you can eliminate any one of the elements the fungi requires to thrive, the fungi will lie dormant for long periods of time, even years, laying in wait, until just the right living conditions return and the spores growth is restored. Under these more favorable conditions, the right temperature, the correct amount of moisture and oxygen and a food source, the wood nutrients, the fungus if off and running again.

Once the fungus rot is discovered, the big question is how much infestation and damage has occurred. This is a bothersome question for all of us, the surveyors, shipwrights, owners, and buyers alike. We have learned from hundreds of years of experience, that the "opening up process (the removal of damaged wood) is a process of discovery.

We usually discover there is more fungus among us rather than less.

How far should one go to make a good, effective repair? How much wood is damaged? How costly will it be? These particular questions can present a dilemma. We will look into these issues in future articles.