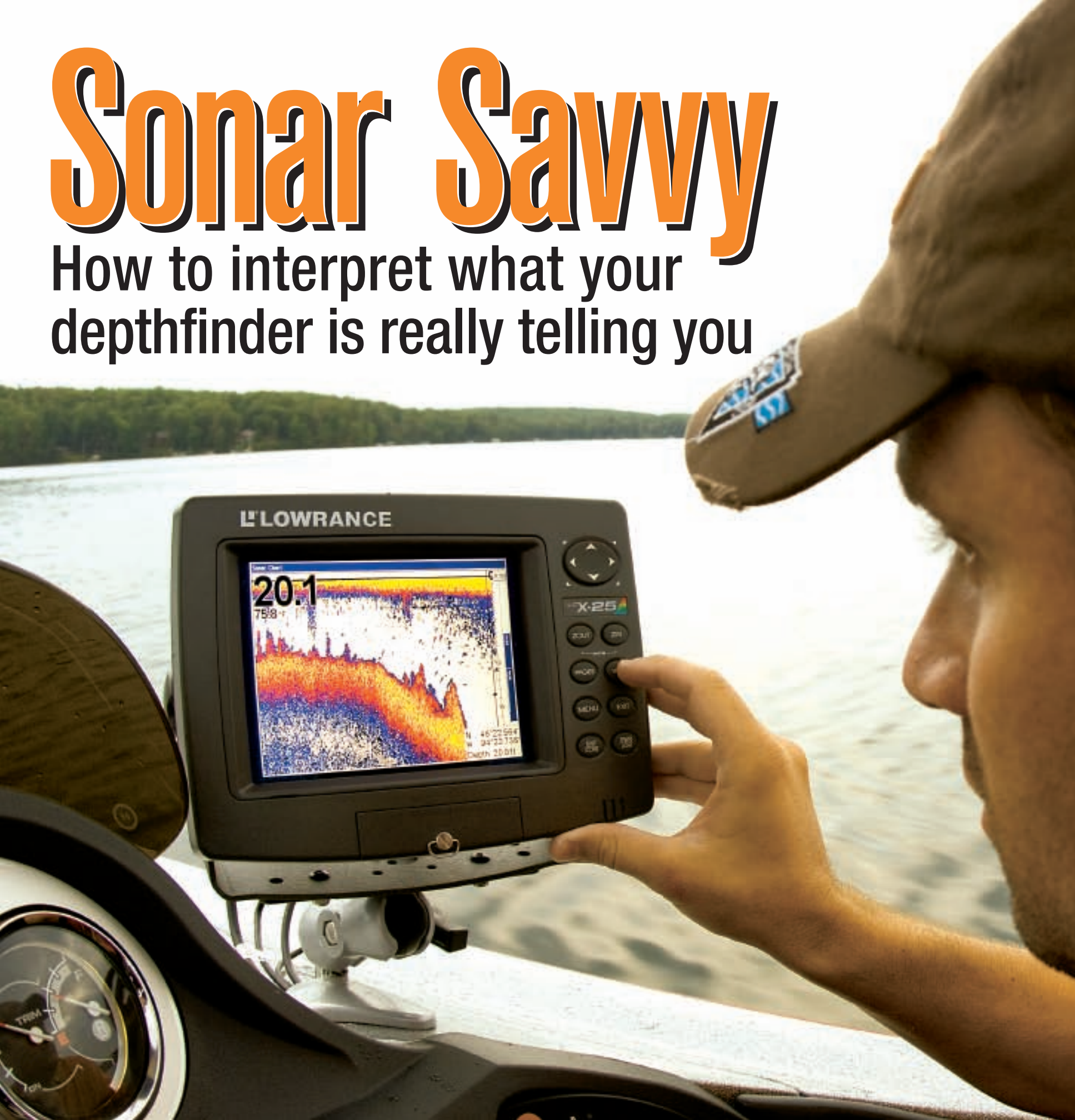


# Sonar Savvy

## How to interpret what your depthfinder is really telling you



Sonar is no secret to NAFC members. It's been an integral part of our fishing experiences for decades. Still, few anglers truly maximize its potential.

That's understandable, given the incredible variety of options on the market. Just keeping up with the latest technological advances in beams, frequencies, cone angles and pixel counts—and making sense of how it all can help you catch more fish—borders on overwhelming.

Likewise, the complexity of many top-shelf units can quickly numb the average human brain into submission. And if you're like me, your eyes glaze over at the mere thought of memorizing a 400-page owner's manual. If I have that much time on my hands, I'm going fishing—not reading about it.

Still, understanding sonar has its rewards. To help you get more from yours without locking up your mental hard drive, I asked electronics wizards Bruce "Doc" Samson and Dave Genz to weigh in on the subject. Collectively, these two NAFC allies have raised my sonar proficiency immeasurably over years of fishing trips, late-night phone calls and emails.

The result is this down-and-dirty rundown of easy tricks and understandable tweaks. Use them and catch more fish.

### Depth Perception

At its most basic level, sonar is a depth indicator. But if you only use it to determine how deep the water is beneath your hull, you're missing the boat. Even so, the art of depth reading bears quick discussion.

Knowing the exact depth is critical when you're searching for subtle structural elements based on their depth (often in accordance with a hydrographic map). Same when you're trying to establish a repeatable pattern—either for the day, or so you can jot notes in your journal or fishing log for future reference.

It's also important to determine the exact depth of suspended fish, baitfish or the tops of structure and cover. This can affect lure selection based on running depth, the amount of letback for trolling rigs, or how deep you set the stop when float fishing.

But, do you really know how deep it is? A variety of ills can throw off your depth perception. Here's a simple yet mitigating factor: How deep is your transducer? Depending on its location below the waterline, you may need to add a foot or more to the sonar reading (or adjust it, if possible).

Here's a more complicated problem. Ever notice a difference between the displayed depth and where the bottom lines up with the scale at the side of the screen? It happens, and it's because of bottom hardness.

Digital depth keys off the peak signal within the bottom band—not the actual surface of the substrate. To further complicate things, the lower the frequency, the wider the bottom signal (and thus, the more inaccurate the digital reading). Bottom line? The softer the bottom, the greater the discrepancy between digital depth and true depth—which is

by Dan Johnson

## Sound Idea

One of the toughest parts of interpreting what you see on your sonar screen is differentiating clutter and interference from the stuff you actually care about.

That's why Lowrance's new Broadband Sounder-1, which I got to see in action at ICAST in July, is so cool. It digitally "purifies" the sonar data coming through your unit, which means better marking and separation of fish, bait, structure, thermoclines and bottom, along with a huge reduction in misleading clutter. It's compatible with all of Lowrance's 2007 models with 5-inch and larger color displays and the five-pin yellow Ethernet connector.

For complete details, click on NAFC Links at [fishingclub.com](http://fishingclub.com).—Ryan Gilligan



displayed on the scale. When in doubt, trust the scale.

On the flip side, I rarely agonize over precise depth when fishing familiar structure on my home waters. This is especially true when I'm using my flasher, which requires me to double or triple numbers around the dial at different depth range settings.

So when I have to recount the actual depth my flasher is displaying, I may be off by 10 feet or so. Doesn't matter if the fish are where they should be on my milk run of spots, and I'm catching them. The important thing is to see how they react to my baits and presentations—I'm often zoomed in on the bottom few feet of the column anyway. On road trips to new water, I mainly use a flasher to speed-search for choice pieces of structure or cover, and the fish associated with them.

Genz feels my pain. "Don't sweat (depth). When you're on top of fish, the actual depth only matters to your buddy—when you're telling him how deep he should be fishing," he laughs.

### Bottom Composition

Next to marking the depth and the presence of fish-attracting structure or cover, sonar's ability to reveal bottom composition is one of its greatest assets.

Finding a transition from soft to hard substrate can be the key in identifying a hotspot. Also, at certain times of year, soft bottom is better than hard, and vice versa.

Unfortunately, although spotting

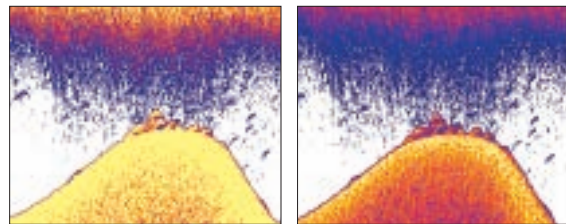
such changes would seem a no-brainer, anglers miss complicating factors.

"There are three ways I determine bottom hardness," Samson says. "The width of the bottom band, color and double echo, which is the most sensitive.

But, he cautions, "When using an LCD

## What's Really Down There?

**Are they bumps or fish? It's hard to tell on the image at left, which is the actual screen capture of a Lowrance unit with the colorline not set properly. At center, the correct setting reveals a cluster of fish near the top of the hump. "Doc" Samson confirmed that they were 1- to 3-pound walleyes by lowering an underwater camera and also by catching a number of the fish. At right, he displays the largest four fish from the school shown on screen.**



with the auto depth feature selected, you will not see the width of the bottom band or the double echo, because auto depth tries to keep the bottom as close as possible to the bottom of the screen."

"Ideally, your flasher or liquid crystal display will show bottom make-up with color or grayscale darkness, second (and sometimes third) echoes, and the thickness of the bottom band," adds Genz.

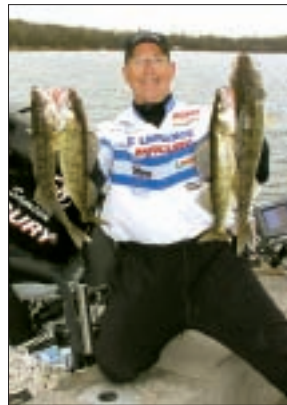
"Soft bottom absorbs sound waves, and hard bottom sends back a stronger signal. By noting changes in color or shades of gray, you can interpret immediate changes—such as rocks on soft bottom.

"Interpreting the width of the bottom band is a little trickier," Genz says. "Normally a wider band means harder bottom. But a steep slope will show also up as a wider band when the bottom composition might not be all that hard."

Conversely, second echoes—always twice as deep as the first returns—are great clues. "These are caused when the initial sonar pulse bounces off a hard bottom, bounces off the surface, goes back to the bottom and returns to the transducer," he explains. "Third echoes come back three times as deep."

Merely watching for additional echoes isn't enough, however. "If you're zooming in on the bottom 10 feet in 25 feet of water, you won't see the second echo, let alone the third. The cure for this is to expand your sonar range."

The more echoes, the harder the bottom. One more caveat is in order, how-



ever. If the depth changes dramatically, you'll have to adjust the gain, or sensitivity, to compensate.

"This is why you don't want your sensitivity on auto when you're trying to determine bottom hardness," says Genz. "The unit will compensate as it tries to keep a good signal on the bottom. I turn my gain to manual and adjust it so I can clearly see a second echo."

## 10,000 Lake Maps, One CD

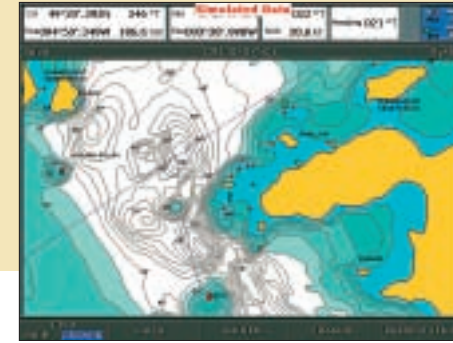
Planning fishing trips and scouting new water just got easier. Mapping mogul Navionics joined forces with Fugawi Software to produce a DVD database of more than 10,000 U.S. fishing lakes—and it sells for just \$19.99, the cost of just a couple decent paper maps.

Derived from the latest survey sources available, HotMaps Explorer lets you scour structure, contours, vegetation, ramps, marinas and more—all from the comfort of home. Special software allows high-definition two- and three-dimensional views.

The lake information is slick, but HotMaps Explorer also lets you plan, save, download and transfer waypoint and route information between a

PC and GPS plotter. Or, simply print your own paper maps. Needless to say, the ability to find and mark key fishing spots from shore saves valuable time on the water.

HotMaps Explorer sells at retailers nationwide and online—click on NAFC Links for details. Or, call (800) 848-5896.



### Marking Fish

Identifying fish is another huge benefit, but few anglers understand or interpret everything they could. "Hidden fish are a prime example," says Samson. "Fish close to bottom are sometimes displayed as bumps. They show up that way because the ends of the arcs are hidden in the bottom return.

"There are two ways to decide if a bump is a fish: drop an underwater camera or use high-definition color sonar. With sonar, fish return weaker echoes than the bottom, so depending on the setting of your colorline and sensitivity, you should be able to spot a difference in color."

For example, if the bottom is returning a yellow reading and a red bump shows up, the "pimple" could indicate a fish hugging the substrate. With grayscale units, watch for subtle differences in bottom darkness, particularly in odd shapes on bottom.

It's important to set your colorline properly, but some anglers struggle to find the perfect setting. "Adjust it so you can see all the colors available," says Samson. "That way the screen can display variations in bottom composition and reading changes caused by fish on bottom."

It's worth noting that rocks on a soft bottom or a log on hard bottom will

generate different readings as well. Smart sticks can spot rocks because the echoes are stronger. Logs registering softer than hard bottom are a different story.

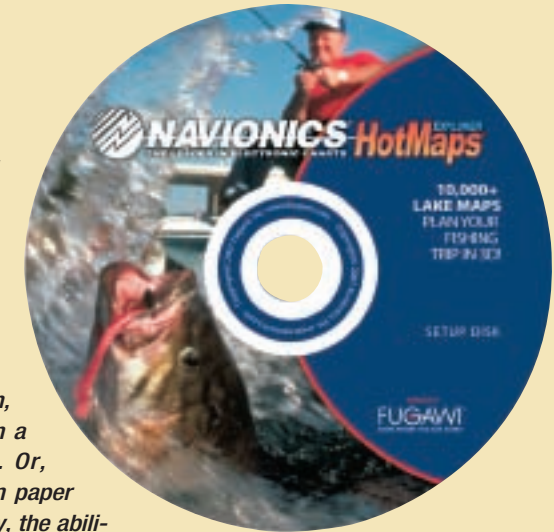
"When in doubt, fish the irregularities," says Genz. "Same with the blind spots along steep breaklines and the gray zones tight to and under standing timber and other sonar blockers (more on these challenges in a moment)."

With practice and concentration, it's also possible to pinpoint other varieties of "hidden" fish—bottom huggers off to the side of the cone and high-riders caught on your sonar's "peripheral vision."

I first became aware of this phenomenon while ice fishing crappies in 30-plus feet of water with a couple of other sonar aces, twin brothers Scott and Marty Glorvigen. We were testing Lowrance's color graphs, and the Glorvigenes pointed out that the sudden appearance of phantom echoes a foot or so under the bottom was actually low-riding fish on the edge of the cone.

"Flashers display the same thing if you pay attention," Genz says, knowing I've fished a Vexilar for many winters.

In a similar vein, it's possible to spot suspended fish off to the side of the boat beyond the stated angle of the sonar cone. Credit this phenomenon to the fact that a sonar cone is less like a trian-



gle and more like the head-on profile of a "well-rounded" sumo wrestler.

"Though few fishermen know it, there's lots of sound out there beyond the cone," says Genz. "It won't always pick up fish, but if the target reflects the sonar well—and there isn't a lot of algae or other junk in the water—the marks from these fish will show up well below the bottom. Keep an eye out for sudden returns like these; they could indicate suspended fish somewhere off to your side."

It's tough for most of us to visualize the concept of fish not being directly under the transducer, when our sonar (with the exception of some side-scanners and multi-beams) tends to compress fish readings into a vertical line from top to bottom.

This can hide fish at the same depth on opposite sides of the sonar cone. While two or more fish may be present at 25 feet, three feet out of center, only one will be displayed—and it may be depicted as a large fish, when the returns are actually from a trio of 8-inch bluegills.

Speaking of fish size, neither Genz nor Samson is afraid to weigh in on this often controversial topic.

"Some people say it's impossible to tell how big the fish is, and others say they can tell all the time; the truth is somewhere in between," says Genz, who has spent many hours studying sonar returns and compar-

## A Sideways Glance

**S**onar interpretation was literally turned on its side in 2005 when Humminbird introduced Side Imaging technology in its 987c SI unit. Suddenly anglers could see photo-like images of not only what was directly below their boats, but also what was off to the side. Plus, the units were still equipped with traditional down-looking sonar.

Humminbird made the technology more accessible (the original 987c SI units went for \$1,999.99) with the introduction of the 797c2 SI Combo (street price, \$999.99) last year. It provides the same detailed, picture-like images, with a 5-inch color screen. The unit also includes a precision 16 channel WAAS GPS receiver that plots position on a built-in, 30-meter resolution UniMap of U.S. inland lakes, rivers and coastal areas, or on optional Navionics Gold and HotMaps Premium charts.—Ryan Gilligan



ing them with underwater camera images. “Pay attention to how a return behaves and you’ll pick up clues about whether it is one large fish or several small ones.

“When a fish charges up to the bait and the edges of the signal are flickering, that’s a good sign it’s a big fish. Those are the

fish look larger or smaller. This can throw off your perception quite a bit.”

Although Genz uses liquid crystal units when motoring to fishing spots, he typically uses a flasher once he’s on the spot. One of his biggest beefs with liquid crystal is the “cartoon fish” produced (some-

the graph would display it as a fish. There weren’t really fish down there, and the guy should have kept moving.”

Samson isn’t a big fan of animation, either. “Turn off the cartoon fish,” he says. “The unit can read weeds as fish, and you won’t have any way to tell the difference.”

## Flasher Lesson

**One clue to bottom hardness is the presence of a double echo (left).**

**Sound waves bounced off a hard bottom will hit the surface, return to bottom and travel back to the transducer,**

**resulting in a “phantom” return at double the water depth. In contrast, a soft bottom (right) absorbs sound waves, yielding a weaker initial return and no double echoes.**



**The right level of sensitivity or gain is key to getting a clear picture of the underwater world. At left, correct gain reveals weed tops, an opening beneath the canopy, and bottom. At right, too much gain produces a virtually unreadable clutter.**

dorsal and pectoral fins of a large, aggressive fish. On the other hand, if a strong return suddenly vanishes when you jig the lure, chances are it was actually two or more small fish that got spooked.”

Samson shares a similar viewpoint. “You can kind of tell,” he says. “But it requires basing your educated guesses on a lot of experience with interpreting sonar returns and fish behavior. Even so, keep in mind that the second you change the zoom, the

times erroneously) by “fish ID” modes.

“I’ve watched veteran anglers mesmerized by the cartoon fish floating by on their sonar screens,” he says. “They’ll tell me, ‘See, there’s fish down there; they’re just not biting.’ In one case, every time the angler jigged his lure the bait would turn sideways, changing its profile—and

### Look Smart

Beyond the electronics tricks and tweaks, maximizing sonar is also a matter of paying attention to what the display is trying to tell you. Read what the fish are doing, how they react to a lure, and how they’re positioned in relation to one another, to baitfish and structure.

“It’s also important to save the information for future use,” says Samson. “Always back up your waypoints on a CD.”

Another way to get everything sonar offers is to upgrade your system as improvements become available. That way you can reap the benefits of the latest developments in electronics.

Samson is a fan of Lowrance’s new sonar cursor. “It lets you mark waypoints on fish or structure after you go over it,” he says. “Just scroll back on the sonar display until you see the area you want to mark. It’s a big plus.”

No doubt engineers and manufacturers will continue to push the technological envelope. Tech-loving anglers will keep up, reaping the rewards of progress in the endless quest to get more from sonar.



**WEB Extra:** To learn more of Bruce Samson’s sonar interpretation techniques, click on NAFC Links at [fishingclub.com](http://fishingclub.com).