



Echo Sounders: The Big Questions

We've put together seven commonly asked questions about echo sounders and put them to sounder guru John Adams. John is an ex commercial fisherman with lots of expertise in echo sounders. He is also the author of the book *'How to Use An Echo Sounder / Fish Finder'* and he runs echo sounder workshops at Fremantle Boat School in Western Australia.

Question 1: Which are the best brands of echo sounders on the market?

Answer: It's a question I always avoid answering, because today's manufacturers of echo sounders and transducers all use technology that provides similar outcomes. Sticking with the main brand names you can't go wrong. One option worth considering is to look for brands that

manufacture echo sounders for commercial fishing purposes, which also produce models to suit recreational fishers. It's a good deal, because you will find they use the same software and menu systems in their commercial sounders as they do in their recreational ones.

Question 2: What do you need to consider when buying a sounder for fishing.

Answer: Firstly, look for a sounder specifically designed for that purpose, one that will have functions that can focus on different sections of the water column. An example of one of these functions is a 'bottom follower', which continually records and follows the bottom echo signal in zoom mode (see figure 1). Having a large display screen is a good idea, but for many small boat owners this

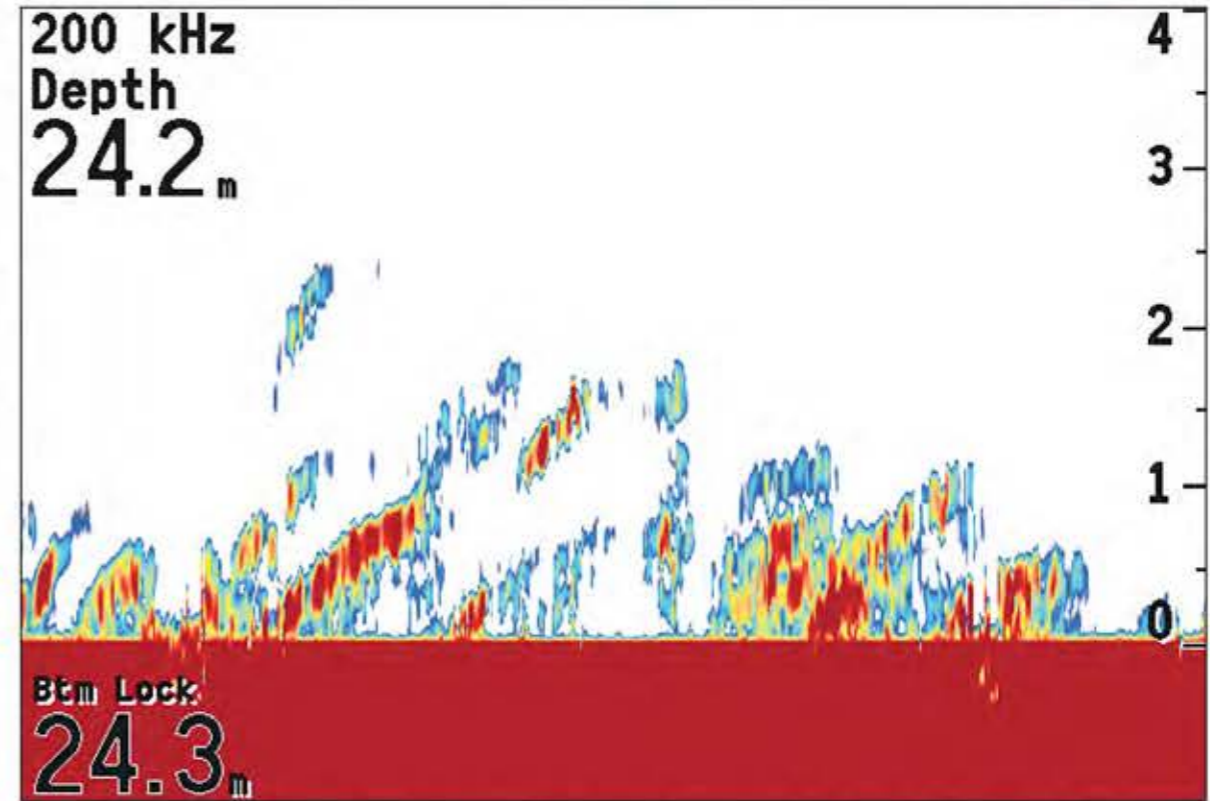
is not a reality because of the cost and room required to fit one. This is not a major issue, because echo sounders designed for fishing will have the display screen viewing options referred to at the beginning of this question, which allow the screen to be enlarged, expanded or zoomed within any section of the water column. Problem solved.

Question 3: With so many different display screen options, how are they utilized?

Answer: When I am targeting demersal fish in, say, 40 metres, I will set the display screen on a full screen to start with. In this example this would be 0 - 50 metres. When I detect fish targets or a bottom structure I want to have a closer look at, I switch over to picture zoom, bottom zoom, marker zoom, or Bottom-Lock. With those zoom functions I can have a closer look at the targets recorded on the display screen, before then making a decision whether to drop a line on the spot or not.

When I am fishing for pelagic fish in the upper-mid section of the water column, I will switch over to a screen view that allows me to set the depth-range for a section of the water column, and will set it to 20-80 metres.

In rough weather conditions the recording of the seabed becomes ambiguous, caused by the boat heaving and pitching, rising and falling over the swell and waves. I will then switch over to Bottom-Lock, where fish targets are more clearly recorded above the seabed Bottom-Lock line. Some fishers prefer to use the seabed Bottom-Lock function even in flat,



This screen capture was taken with sounder set on Bottom Lock.

calm conditions; I am also one of them.

Question 4: Which is the optimal frequency to use in shallow and in deep water?

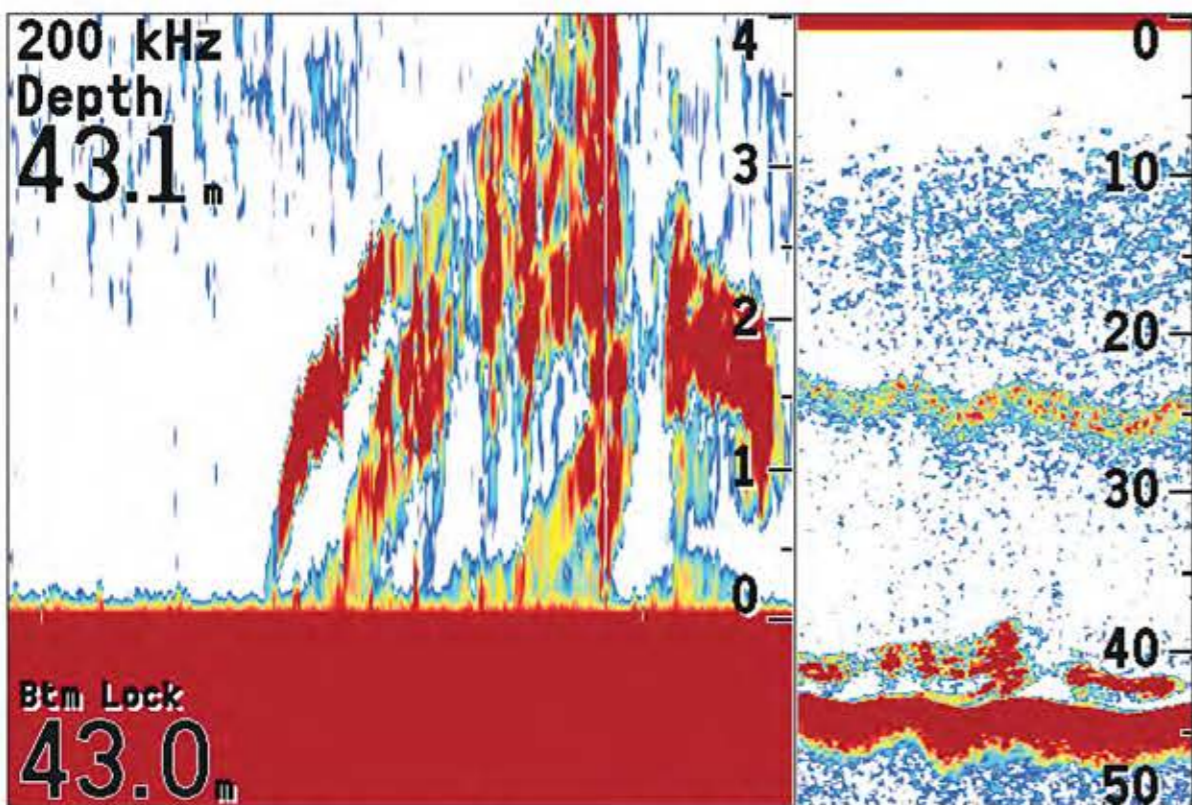
Answer: High frequency (200 kHz) is selected in shallow water-depths, and will produce highly resolved screen pictures. The depth-range at which this frequency can be operated is restricted due to its high acoustic absorption loss through the water during transmission. The frequency operating range is determined by the performance level of the transducer. Sounding in water-depths of 0 - 200 metres will require a medium performance transducer.

Low frequencies (83/50/28 kHz) are selected in deeper water depths, and will produce less resolved screen pictures. The depth-range at which these frequencies can be operated is not as restricted due to their low acoustic absorption loss through the water during transmission. Their op-

erating range is determined by the performance level of the transducer. Sounding in water-depths of 200 - 600 metres will only be achieved by using a high performance transducer.

Question 5: Does the size of the fish affect the size of the echo signal recorded on the display screen:

Answer: When referring to fish size in echo fishing, there are two measurements to consider: its physical size in centimetres and kilograms, and its acoustic size which is a measurement of the strength of the reflected echo (target strength) and is measured in "dB" (decibels). There are different factors which affect a fish's target strength; the physical size of the fish is only one of them. The density of the fish's body is similar to that of water, and because of its elliptical shape a fish does not provide a very good aspect for an echo to reflect off.



A split screen, full screen view with Bottom Lock.

Boating



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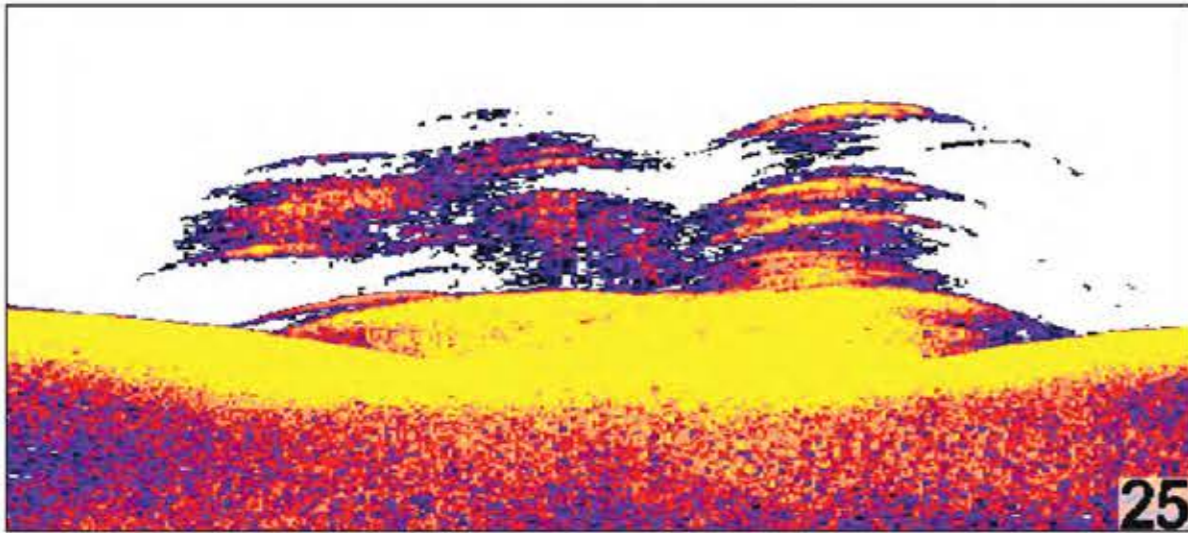
Research suggests that one of the major contributors to the target strength of the fish's body is the swim bladder, which contributes to approximately 50% of the signal strength of the return echo recorded on the display screen, yet the swim bladder represents only 5% of the

fish's body mass.

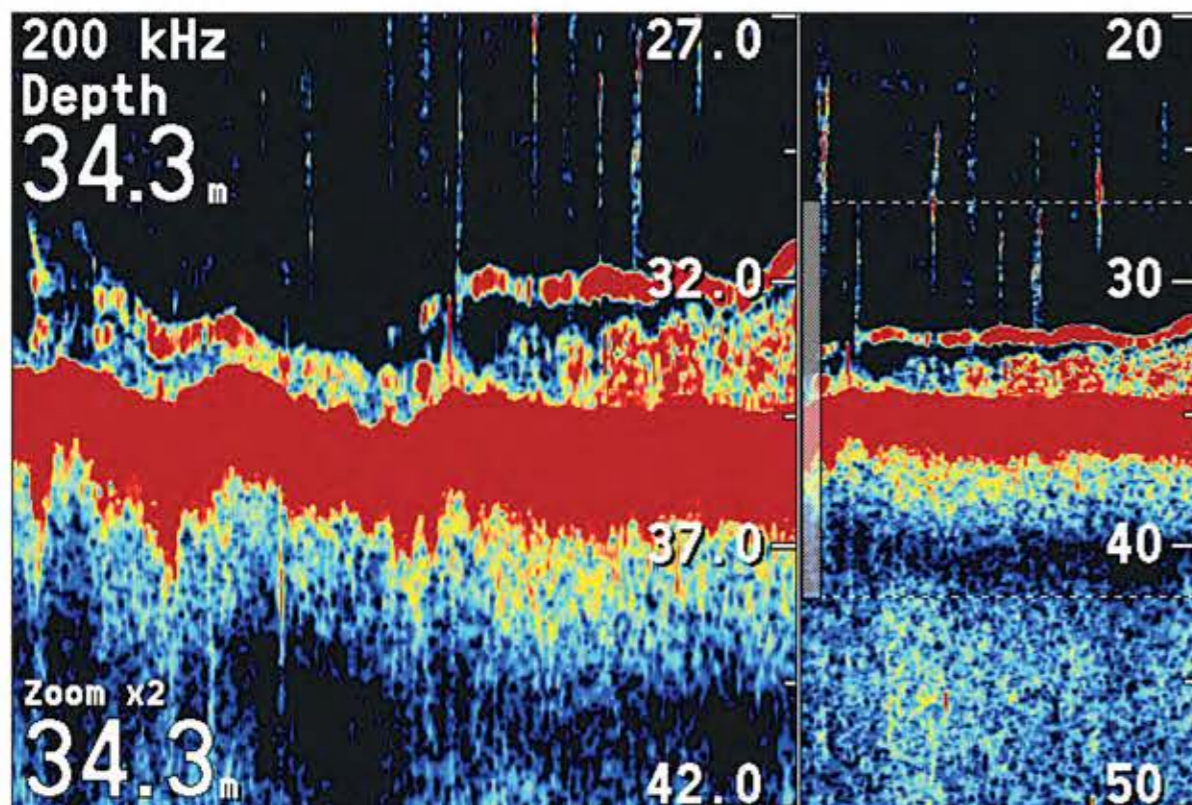
The aspect of a fish in the beam and where the fish is located in the beam (centre or edge of the beam) also affect target strength.

Question 6: How do you know where the fish are relative to the boat's position?

Answer: Good question. You don't.



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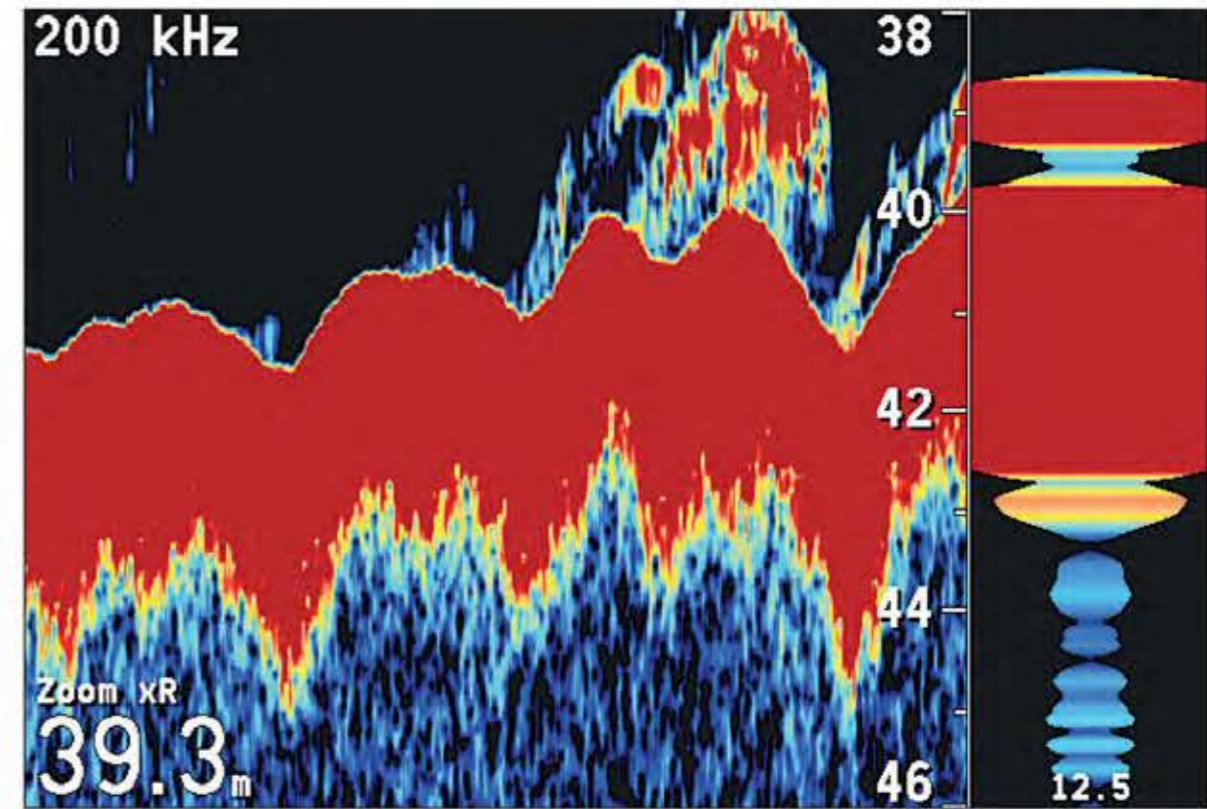
Bottom zoom using a bottom follower.

It is not possible to know the exact position of the fish relative to the boat's position. To explain this further: it is important to understand what the transducer's vertical beam angle represents, as this allows the operator to estimate the size of the detection area under the boat within the depth-range being fished. For example, fishing in a depth of 200 metres with a 45 degree beam angle will produce a detection area directly under the boat of approximately a 157 metre diameter; therefore, a fish detected on the display does not necessarily mean the fish is directly under the boat.

It is a common situation, to detect a school of fish on the display, then immediately turn the boat around to locate them, only to find they have disappeared. In this situation two things could have occurred: (1) the fish moved outside the circumference of the beam, they swam off; or (2) the position of the fish at the time of detection could have been to the front, rear or either side of the boat. Remember, the circumference of the beam may cover a much bigger area than the boat, and the display screen does not show you where in the beam a fish is located. A signal on the display screen only tells that there is a fish somewhere in the detection area of the beam.

Question 7: Have you ever been out fishing with an echo sounder and not caught any fish?

Answer: Yes, lots of times!! Peter Golding (The Fishing School) and I recently went on a fishing trip off the Western Australian coast. We launched the boat off the beach and headed out to some of the best fishing grounds Western Australia has to offer, abundant with dhu fish, pink



Depth set with in upper and lower depth range limits.

snapper, belching groper and samson fish; and I know this particular ground really well. The day was perfect for fishing, with 5-10 knot winds and low swell. Using the echo sounder we found a section of bottom structure in 43 metres of water, the boat was anchored above it, and we could see the echo signals from large fish on the display screen. We were right on the fishes' peak feeding time. The lines were baited with octopus and whole sardines and dropped over the side. When the sinker touched the bottom we waited for a bite. Without any results! The boat was moved to several different locations over a period of three hours, with the same result. We were both determined not to go home without a fish, but in the end we went home empty-handed, with a fairly bruised ego. The next day a five metre swell hit the coast, with winds to 30 knots. We both knew it had something to do with why the fish weren't biting.

Considering buying or upgrading?

If you currently own an echo sounder or are considering buying or upgrading your existing sounder, this article will give you some food for thought. Buying a very expensive sounder is not necessarily going to guarantee you will catch fish? Looking for the perfect sounder is something that does not exist. However, as previously mentioned in question 1, stick with the main brands and you won't go wrong.

To head out fishing and not understand the basic principles of how your echo sounder works will lead to frustration. But, once understood, your echo sounder will become your eyes under the sea, and the information recorded on the display screen will help you to detect the fish and the bottom structure you are seeking, and then the skills of catching fish can be applied.

To learn more about echo fishing, readers can purchase my book by going to: howtouseafishfinder.com