# The White Line Function.

By John Adams

This article will give an introduction to the "White Line" function and show the reader how useful this function is. I am often asked "when should the White Line function be turned ON" and, my response is always "when should it ever be turned OFF?" The article will also show how the White Line function can help you to fish for squid and King George whiting.

The White Line function is useful for determining the visual separation of fish targets positioned on or close to the bottom, and also for determining the target strength of an individual fish or school of fish, and for the visual enhancement of the bottom echo signal for bottom discrimination.

The White Line was first patented by Kelvin Hughes in 1956, and was further developed by Furuno in Japan, firstly being used in echo sounders that recorded on to a paper recorder as shown in illus tion (A). Echo Sounders today record in colour, on a display


screen. Both ways of recording achieve similar outcomes. The White Line can be applied to many of the operating functions a colour sounder has; some of these are discussed in this article.

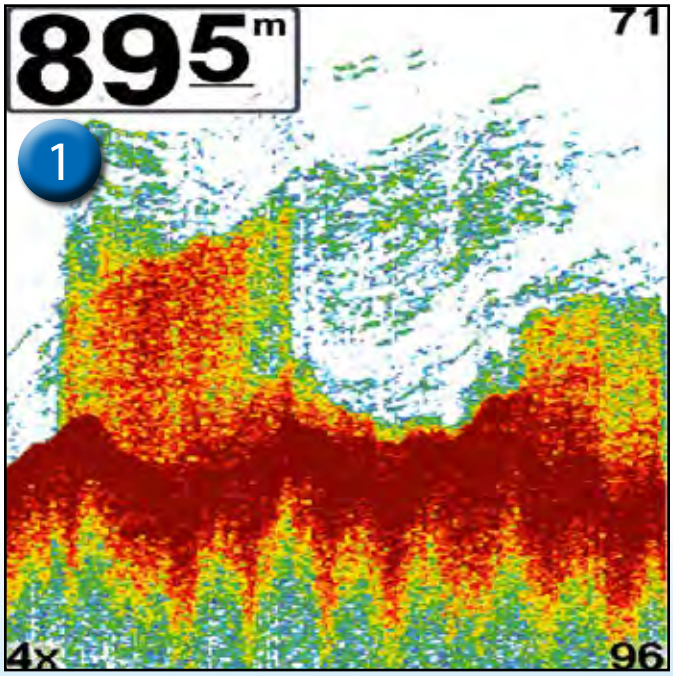
Echo sounders are now manufactured to record in colour, on a display screen. The colours provide information about the target strength of single fish and schools of fish, and the nature of the bottom. Colour palettes can range from 8 to 64 colours, and the colours are proportionally divided into units of signal strength. In most systems, depending on the colour pallet, the darker colours represent stronger signals, and the lighter colours represent the weaker signal. The bottom echo signal will always produce the strongest and most prominent signal recorded on the display screen.

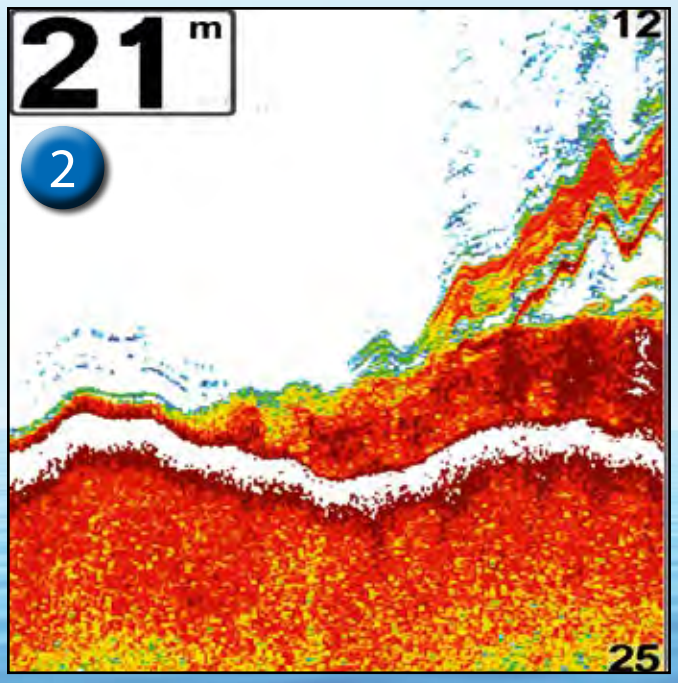
**How the White Line functions works and why we use it**

The White Line function will only be activated, when the transducer receives a signal that has a target strength similar to that of the bottom. When the echo sounder detects the bottom echo signal, the recording is momentarily switched OFF for a few microseconds - consequently a section of the bottom echo signal is not recorded. This leaves a white space or white line on the display screen. Individual fish targets and marine plants do not have sufficient target strength to activate the White Line and are recorded as a normal signal above it.

The echo signals from fish located on or close to the bottom often blend into the echo signals produced by the bottom echo signal. This is also known as target masking. Even though the two signals have different signal strength, they merge together as one colour, making it difficult for the observer to differentiate between the two signals.

In screen capture (1) the White Line is OFF, and it shows how both the signals from a school of fish, and the bottom, have merged and

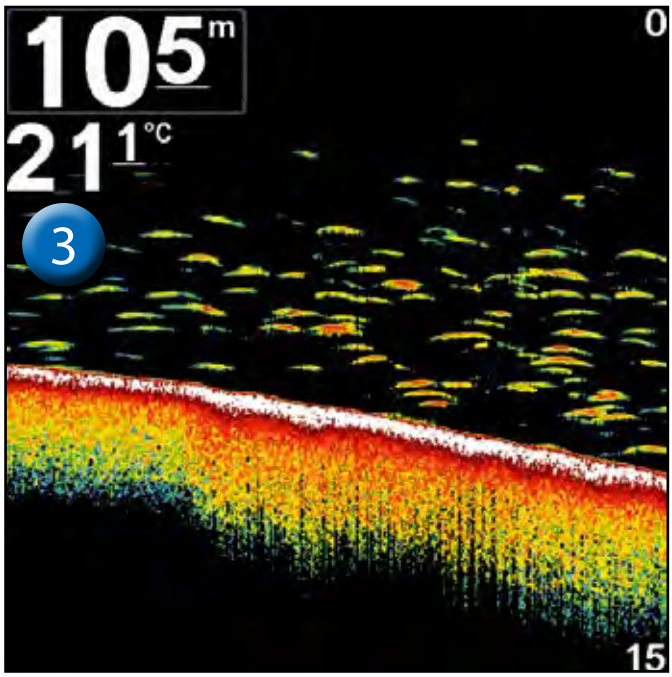


# ine function.

blended together as one signal. Had the White Line function been ON, a visual barrier between the fish and the bottom would have been more clearly visible, as shown in screen capture (2).

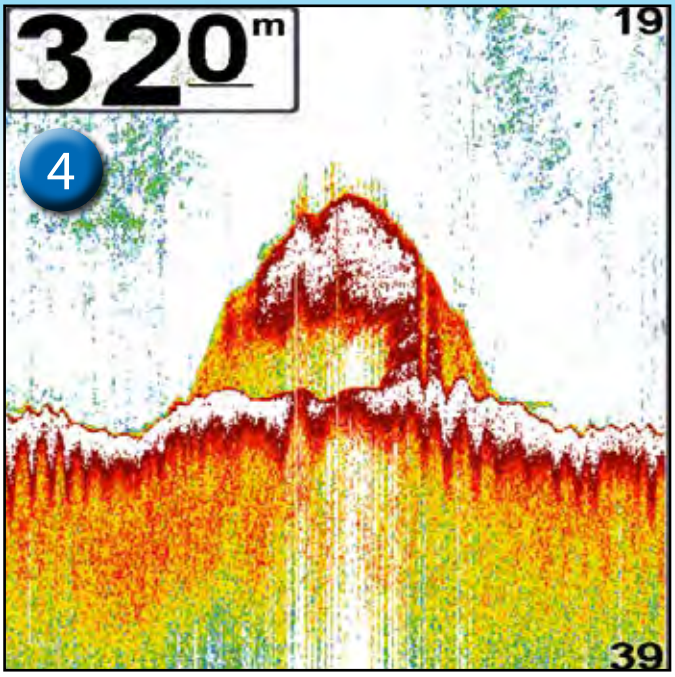
The thickness of the White Line will give an indication as to whether the bottom has a hard or soft surface. An example of this is given in screen capture (3): the section of the bottom in the left side of the screen capture has a thin white line and indicates a typical soft bottom surface; the section of the bottom echo signal in the right side of the screen capture has a thick white line caused by a hard reflective bottom surface, indicating a harder bottom. There is



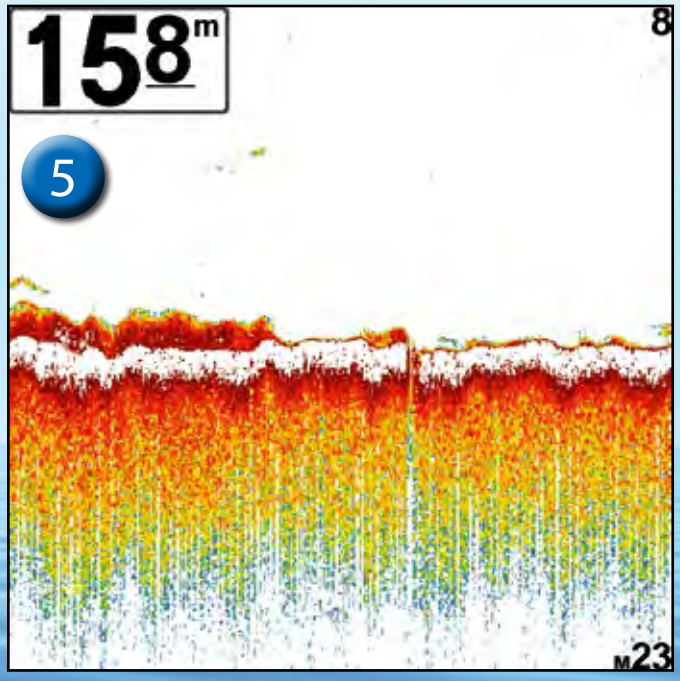

no marine plant life visible above the White Line in this image. Echo signals from large individual fish targets can be seen throughout the water column.

A large school of fish, grouped tightly together, may have the target strength similar to that of the bottom and will activate the White Line. Screen capture (4) shows a school of fish positioned in the middle of the screen view, which has activated the White Line. This indicates that the school has similar signal strength to that of the bottom, and probably contains many tons of fish.

Screen capture 4 also shows how the White Line function enhances the bottom echo signal. Observe how the tails in the left part of the bottom echo signal are different from those to the right. And notice how a small section of the White Line is weaker under the fish school - this is caused by the sheer density of the school, which has weakened the recording of the bottom echo signal. The light blue green scattering of the echo signal in the upper section of the image is from algae or seaweed suspended in the water column, something which could also be seen from the surface. Algae and seaweed often become suspended in the water column after storms that create large ground swells and stir up the bottom. Large single fish targets can also activate the White Line - small white dots will appear within the recording caused by target strength, indicating very big fish.




In some circumstances, the presence of marine growth can be seen above the White Line as indicated in screen capture (5): the White line is ON, the signals above the White Line on the left side of the screen are typical of those from seagrass. The right side of the screen capture represents a typical flat sandy bottom. Seagrass are plants with small flowers that pollinate underwater and have a root system that anchors them to the bottom, thus preventing them from being washed away. They typically grow on sandy bottoms where they can form meadows that help stabilise the seabed and provide food and protection for many marine animals, such as small fish, crabs, and invertebrates. Squid, King George whiting, flathead, wrasse, and gummy sharks are often found feeding on and around this type of bottom.

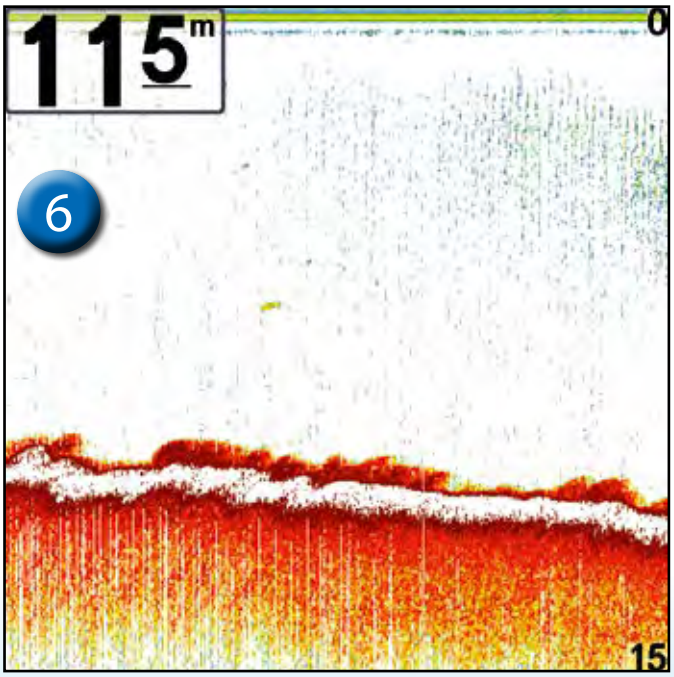


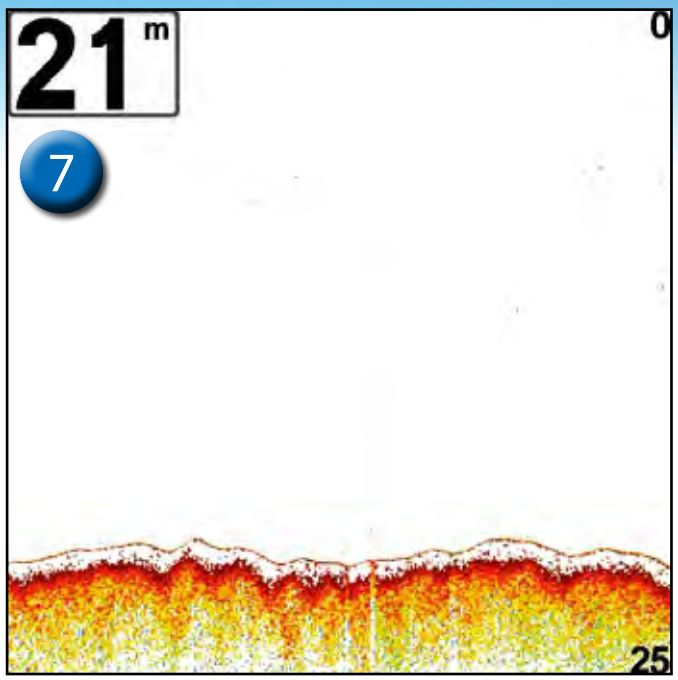
## Fishing for Squid

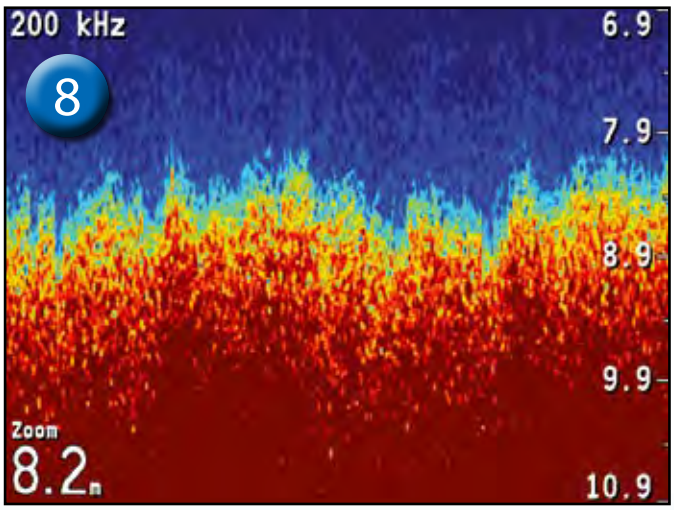
Squid are virtually undetectable using an echo sounder because they do not have sufficient signal strength to record an echo on the display screen. One of the reasons is, that they do not have a single bone in their body, being cephalopods; neither do they have a swim bladder, and the density of their flesh is similar to that of seawater, making them undetectable by echo sounding.

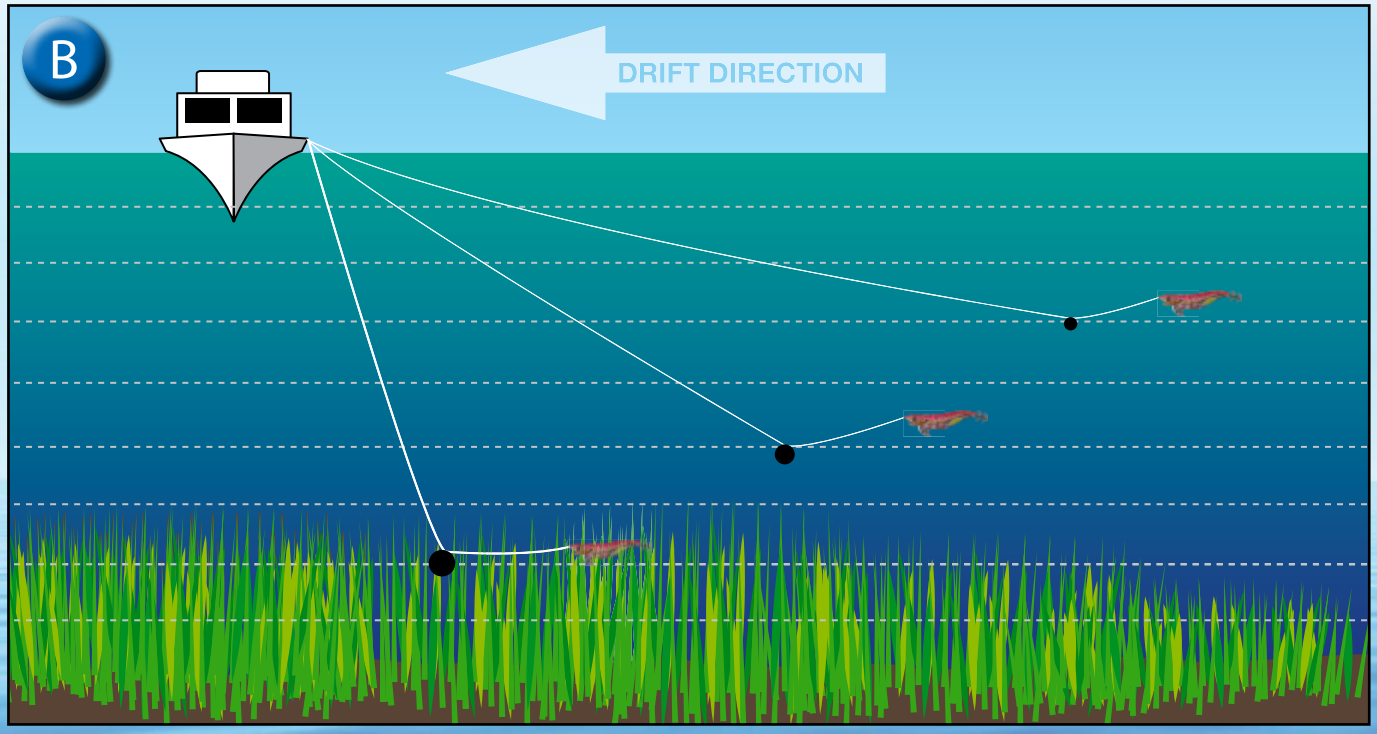
When I am targeting squid, I use the sounder to find seagrass, because that is where squid are commonly found. The water depth I like to fish for squid in, is generally between 6 to15 metres, and I use the echo sounder to find that type of bottom covered in seagrass.

With the White Line ON, screen capture (6) shows an image of a bottom covered in seagrass. Now look at screen capture (7), which shows an image of a sandy bottom without seagrass above it. Notice the difference between the two recordings. In screen capture (8), with the White Line OFF, the bottom echo signal has been zoomed and shows an image of a bottom covered in seagrass.



Using the zoom function is another way to detect seagrass.

The method I use to catch squid is shown in illustration (B). I drift over the seagrass with a series of jigs, set at different depth within the water column. If the wind increases I put larger sinkers on, to weigh the jigs down, so they stay nearer the bottom were the seagrass is - because that is where my best catches come from. I leave the sounder on the whole time I am drifting, and when I drift off the seagrass, I pull up the jigs, relocate back to where the seagrass is, and the whole process starts all over again.
The body of the squid is called a mantle; it has eight arms and two long soft feeding tentacles, with paddles and suckers at each end. They use these tentacles like whips to catch their prey, and then haul them in towards their beak. When a squid feels its feeding tentacles hooked up onto a jig, its first initial response will be to try and escape. They do this by rapidly propelling themselves backward through the water by sucking water into their mantle and then squeezing it out through a siphon tube. Octopus has a similar propulsion system, but cannot match the rapid acceleration of the squid in full flight. For this reason, when a squid is hooked, the retrieval rate of the line must be slow, otherwise it could result in the jig breaking the soft tentacles.

Before using a jig, I check that it has neutral buoyancy in the water. I do this by attaching the jig to a line and sinker, and lowering the rig into the water to check it sits horizontal. If the jig sinks, my experience has been that it won't catch that well, and that it could become snagged in the seagrass as I am drifting the jig just above the bottom.

When purchasing a jig I check to see that the small feathers attached to the side of its body are firm robust and stick out. I have noticed that the ones with the feathers that firmly protrude outward whilst in the water are my best catchers.

After a session of catching squid, I will often fish for King George whiting, which can be found on sandy bottoms adjacent to bottoms containing seagrass. A good example of such a bottom is shown in screen capture (5) (S00463). Whiting use their long snouts to forage for worms and other small invertebrates that live in and around sandy bottoms. When fishing for them, if their stomachs are full of sand worms, they often won't bite and are difficult to catch, because they are so full. Like all fish with a full stomach, they become fussy eaters. That's why I like to use coral prawns for bait, as crustaceans are part of their natural diet.

From the conversations I have had with fishers I believe that the White Line function is one of the most under-utilized functions of the echo sounder. Once understood, this function will open up a whole new world into understanding echo fishing.

To learn more about echo fishing, readers can purchase my book "How to Use an Echo Sounder/Fish-finder" by going to: www.howtouseafishfinder.com

I hope you will enjoy learning about echo fishing as much as I have.

John Adams.
Fremantle Boat School.