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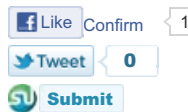
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Dolphin-Inspired Sonar May Be Key To Shallow Water Problem

by Doug Bonderud



A new breakthrough in shallow-water sonar, based on the way dolphins catch their prey, has been shown to outperform traditional sonar methods.



Original sonar [technology](#) was developed prior to the turn of the twentieth century, and saw increasing use through two World Wars and the following Cold War.

The technology comes in two forms - active and passive - with active systems sending out sound pulses and then evaluating the resulting change in the echo to determine what, if anything lies in front of them. Passive systems simply receive sound and compare it to a library of stored [audio](#) signals to figure out just what lies out in the deep.

Both systems were developed for deep-water use, and share the same limitation - bubbles, waves, or the wake from large ships can cause the echos to become distorted and indistinct, effectively "blinding" the sonar. With the end of the Cold War, much sonar use has moved to shallow-water uses and efforts have been made into solving the shallow water problem.

Now, professor Timothy Leighton and his team at the [University of Southampton](#) may have come up with just that solution.

Leighton began his investigations when he noticed that dolphins would often use "bubble nets" to catch prey. These bubbles should have "blinded" the sonar of the dolphins, but that did not seem to be the case. As there was no data on exactly the type of sonar used by dolphins, Leighton set out to design the system he would use, were he to be a dolphin.

The result was the twin inverted pulse sonar (TWIPS) system. Not surprisingly, TWIPS uses two pulses which are inverted replicas of each other. The first pulse in the system is sent out a fraction of a second before the second and the team was able to show, both theoretically and experimentally, that the combination of pulses and echoes were able to enhance target signals and differentiate between bubble clouds and actual objects.

In an actual "moving ship" situation, TWIPS outperformed standard sonar, and Leighton and company aim to refine the system even more to enable to be even more accurate.

And what of the dolphins? While the work was inspired by the fact that they can still "see" through their bubble clouds, no evidence exists to show that they use a TWIPS-like system. Still, they do deserve some of the credit for being not only cute and intelligent, but inspiring.

Source: [National Oceanography Centre](#)





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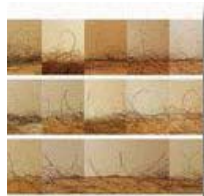
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