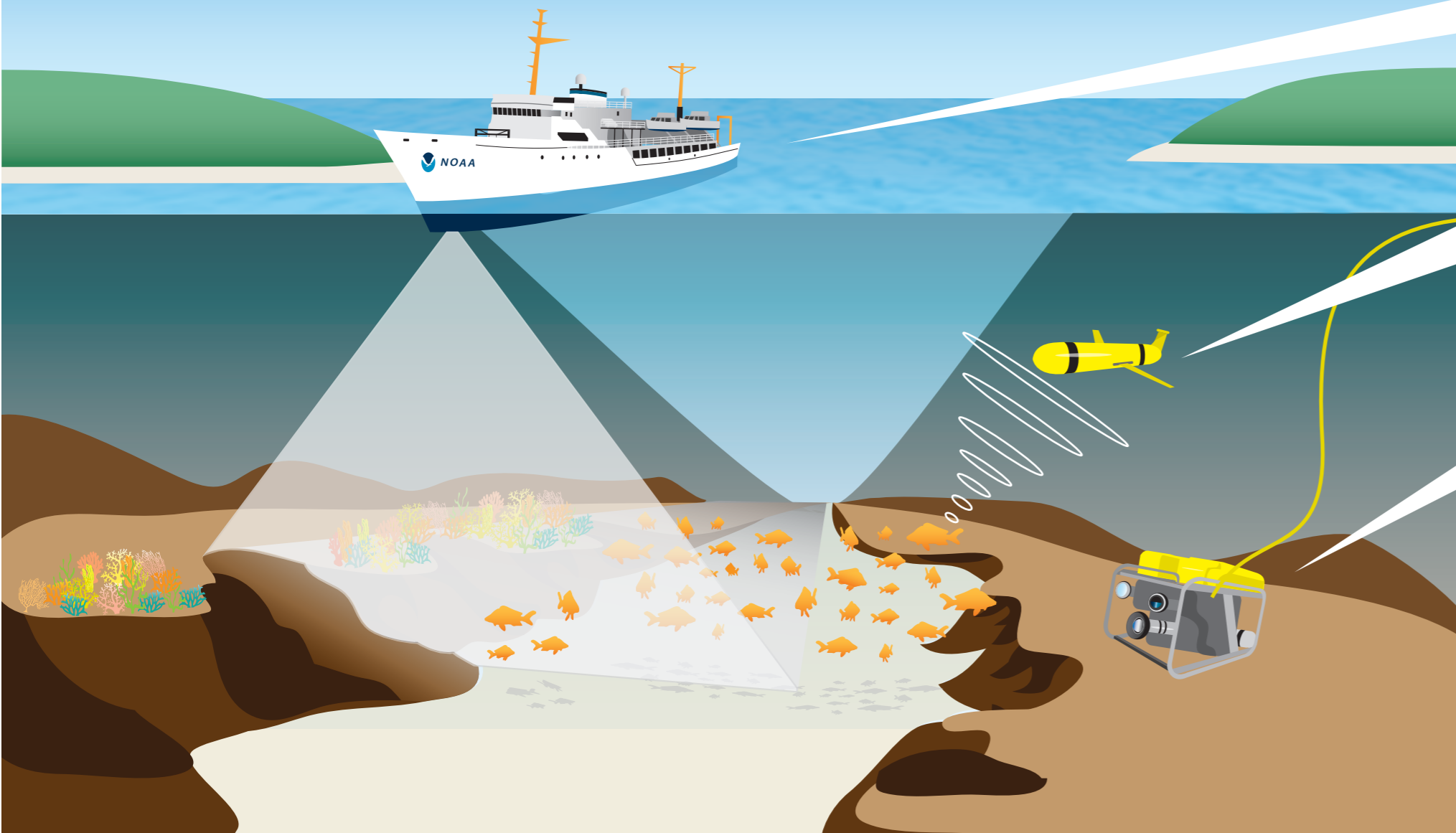


TOOLS OF THE TRADE

How NOAA Scientists Map What Lies Beneath the Waves



WHILE SCIENTISTS USE DIFFERENT METHODS TO MAP WHAT LIES BENEATH THE WAVES, TWO OF THE MOST IMPORTANT TOOLS ARE SONAR AND VIDEO.

1 SHIP Multibeam & Fish Sonar

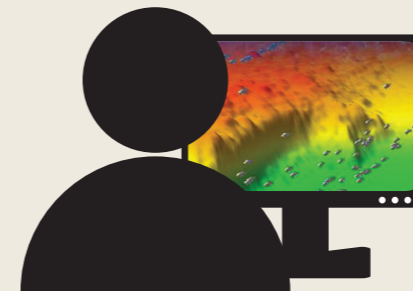
Some NOAA ships are equipped with high-tech sonar systems that use sound to efficiently map large swaths of the ocean. Multibeam sonar is used to 'paint the seafloor with sound' to create highly detailed maps. Scientific grade fish sonar is used to map where fish and other objects are located in the water column.

2 GLIDER Autonomous Ocean 'Robots' Collect Data

Gliders are used for many things, from collecting ocean characteristics such as temperature, to finding where fish are spawning by recording underwater sounds. Once these torpedo-shaped vehicles are launched, they operate independently and report their findings back to the ship.

3 ROV Hi-Def Video

While sound (sonar) is a great way to create detailed underwater maps of large areas of the ocean, remotely operated vehicles (ROVs) are used to take a closer look at what lies below. ROVs equipped with mounted cameras help scientists confirm fish species, find out if corals are healthy, and identify specific objects.



HOW IS THIS INFORMATION USED?

The maps created with these tools allow people to visualize the seafloor, coral reef ecosystems, and fish populations in amazing detail. These data are used to update nautical charts, to help preserve and protect underwater ecosystems, and to simply better understand what lies beneath the waves.