

Application – Freshwater & Marine Science

Collecting Environmental Data and Imagery

Remotely operated vehicles (ROVs) are essential tools for freshwater and marine scientists, allowing them to explore rivers, lakes and oceans while avoiding the risks and limitations of using divers or manned submersibles. With a compact, battery-operated ROV, researchers can explore remote environments and reach depths otherwise difficult or impossible to access.

The lightweight, portable Boxfish ROV platform offers improved methods to perform environmental surveys and collect data up to 1,000 metres deep. A team of two can launch the battery-powered ROV by hand for deployment from a research vessel or platform of opportunity.

Boxfish ROVs enable scientists to capture 4K (Boxfish ROV/Alpha) and up to 8K (Boxfish Luna) ultra-high-definition videos, collect samples, and measure environmental data, providing valuable insights into underwater ecosystems. The highly stable ROVs can move in any direction at any orientation, allowing users to perform various tasks with integrated sensors and accessories.

The autonomous-capable Boxfish ROV platform is upgradeable, offering maximum deployment flexibility. The capacity for autonomous operations in the future opens new avenues for studying biology, geology, and hydrology and monitoring the impacts of climate change and human activities on the aquatic environment.



Still from Boxfish ROV footage of seabed at 675m depth.



Boxfish ROV being deployed in Antarctica.

Why Use a Boxfish ROV Platform for Scientific Research

Add Environmental Sensors and Accessories

Boxfish ROVs support a large payload allowing scientists to add up to eight sensors or accessories (Boxfish ROV/Luna). These include USBL, DVL, sonar, laser scaler, fluorometer, grabber and coupled CTD and pCO₂ sensors for measuring temperature, pH, conductivity, and partial pressure of CO₂ in water columns.

Deploy to 1,000m in Extreme Conditions

Safety, temperature, and depth restrict the use of divers in marine and freshwater science, while work-class ROVs also have limitations. The Boxfish ROV platform can be deployed up to 1,000 metres deep while working in temperatures of -10° to +45° Celsius.

Extended Runtime for Data Collection

Boxfish ROVs can run for up to 15 hours, depending on the model and conditions. A fast-charge option allows users to recharge batteries in 30-45 minutes if mains power is available in the field.

Photogrammetry

Precise ROV positioning and high-resolution information from 4K or 8K video allow marine scientists to use photogrammetry to create 3D models of underwater environments, such as coral reefs. With the help of these models, scientists can gain new perspectives on a reef's biodiversity, nutrient recycling, and how oceanic events may impact its health.