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# Gavia Scientific

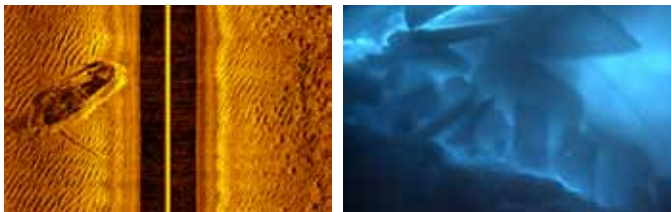


## SCIENTIFIC APPLICATIONS

Oceanography, limnology, habitat assessment, hydrography, bathymetric surveys, archeology, wreck finding and mapping, bottom type classification, mid-water analysis, 3D CTD mapping, current profiling and under ice surveying.

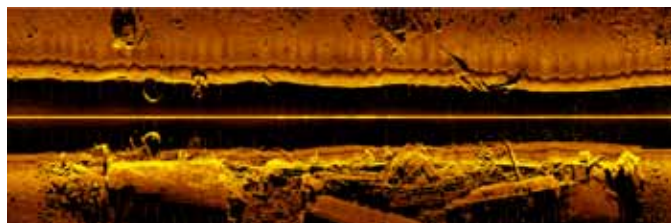
## HIGH QUALITY DATA OUTPUT

All data is kept in manufacturer's original format and readily exportable to a number of post processing packages.



**Left:** Wreck of a small fishing boat captured on a 900kHz side scan.

**Right:** Under ice photograph taken from Gavia AUV while flying inverted looking up at ice from roughly 12m depth.



Wreck of the SS Shirvan captured with a 600 kHz side scan sonar. The Shirvan was hit by two torpedoes and burned for 24 hours before sinking which resulted in considerable damage to the wreck. It was found to be broken into three sections. Despite the damage, the detailed high-frequency sonar imagery meant it was possible to identify the wreck based on several identifiable features, particularly in the better-preserved aft most section.

## MODULAR CONSTRUCTION

The modular construction of the Gavia AUV allows the user to conduct a variety of missions with user changeable modules. Additional Gavia modules can be purchased at a later date to increase capability as mission requirements dictate.



*The Gavia Autonomous Underwater Vehicle (AUV) is a self contained, two-man-portable, modular survey platform capable of delivering high quality data while operating from vessels of opportunity or from the shore.*

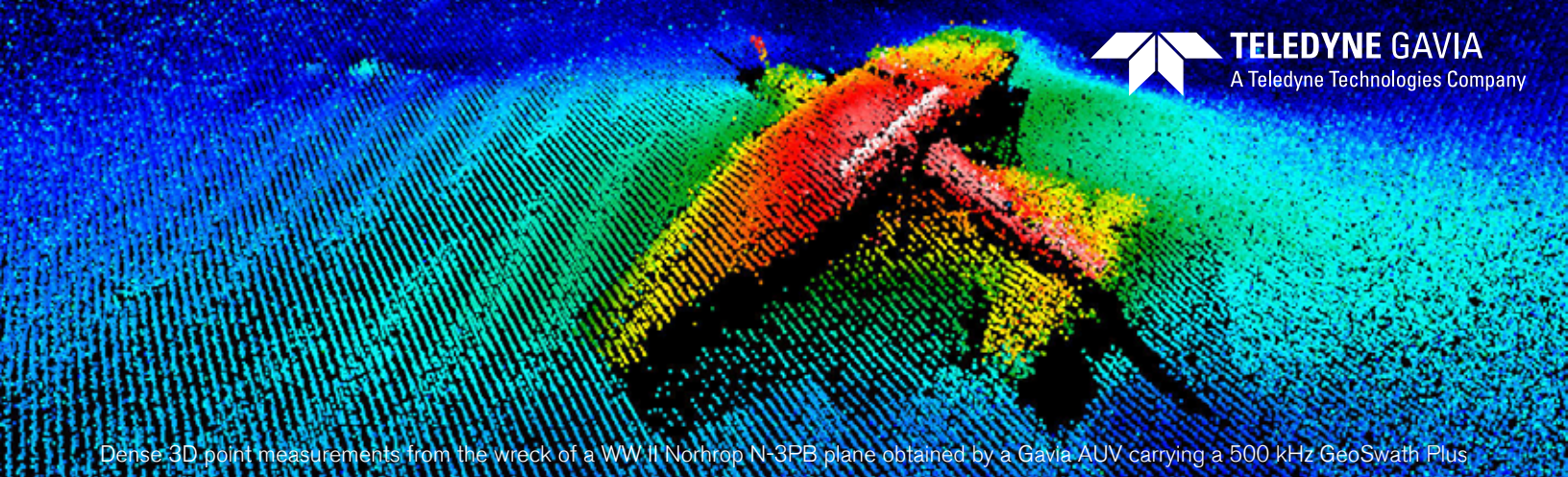
*The Gavia AUV has the ability to carry both user designed payload modules and an array of typical scientific sensors, which makes it the ideal tool for researchers gathering a variety of data in depths up to 1000m.*

## GAVIA SCIENTIFIC FEATURES

- » The Gavia AUV is packaged in small cases that are both FedEx shippable and easily transportable in a van or pickup truck to the operational site
- » The Gavia AUV can be operated by two operators and does not require any specialized equipment for launch and recover which is typically done either from the shore or small crafts/boats
- » Quick mobilization / demobilization. No installation or calibration of peripherals required
- » Small logistical footprint with no specialized equipment required to operate the system
- » Easy to use chart-based graphical user interface for mission planning, execution and review
- » Over the horizon communications through Iridium satellite connection
- » A wide array of additional sensors available
- » All data time synchronized and stored in manufacturer's original format, all vehicle logs in an open format
- » Optional payload modules for customer supplied sensors with software development kit
- » Compatible with a variety of third party post processing packages
- » Additional modules can be purchased as mission requirements evolve

## GAVIA SCIENTIFIC PAYLOAD PACKAGE

- » A key feature of the Gavia AUV is the availability of user changeable payload modules to carry custom sensors
- » A payload package consist of the Gavia interface kit and a module controller firmware. The firmware has a serial to the Ethernet port forwarding and serial payload operator software, with configurable serial interfaces that allows serial payload devices to be controlled from within the Gavia user interface
- » Payload modules can be flooded or non flooded depending on user requirements
- » A typical 400mm long payload module has roughly 295 mm usable space with a usable inside diameter of 178mm



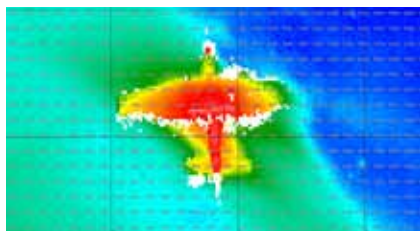
Dense 3D point measurements from the wreck of a WW II Northrop N-3PB plane obtained by a Gavia AUV carrying a 500 kHz GeoSwath Plus

**Northrop Data Sets**

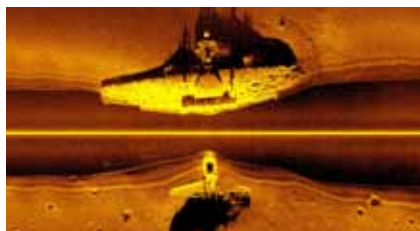
Crashed by Reykjavik Airport during WW2



Northrop N-3PB.



Binned GeoSwath MBES image of target.

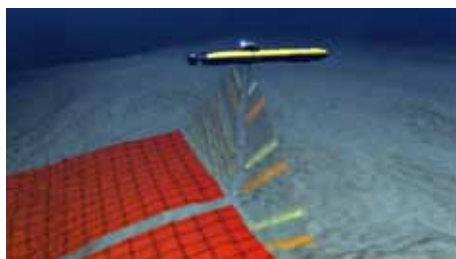


1800 kHz Side Scan Sonar image of target



Detail of bottom hatch from the Gavia camera system.

**Bathymetric Survey**



**GAVIA SCIENTIFIC SPECIFICATIONS**

Length: From 1.8m for base vehicle

Weight in air: From 49 kg for base vehicle

Diameter: 200 mm

Depth rating: 500m or 1000m

Battery module: 1.2 kW lithium ion rechargeable cells per module

Max speed: > 5.5 knots

Endurance: Dependent on speed and exact configuration. Typically around 7 hours with DVL INS and greater when using acoustic positioning. Vehicle can be operated with two batteries for increased endurance (roughly doubled) or batteries can be field swapped for continuous operations

**NAVIGATION**

As standard GPS and Fluxgate Compass

Optional DVL aided Inertial Navigation System (INS)

Optional DVL aided Long Baseline (LBL)

**COMMUNICATION**

Wireless LAN: IEEE 802.11G compliant

Satellite communications

Full global coverage via Iridium link

Acoustic modem: For tracking and status updates

**TYPICAL SCIENTIFIC CONFIGURATIONS**

Gavia base vehicle (500m or 1000m depth rating)

DVL INS or LBL positioning

Side scan sonar and camera

Sound velocity meter

Obstacle avoidance sonar

Sub-bottom profiler

Typical options (others available): CTD (Seabird SBE 49), ADCP, Environmental characterization optics (Wetlabs ECO Pucks), O<sub>2</sub>, Swath bathymetry module, Spare battery module(s) and Custom payload modules for user supplied instrumentation

The Gavia AUV began in 1997 as a joint development effort between the University of Iceland and Hafmynd ehf (now Teledyne Gavia).

Since then, numerous Gavia vehicles have been sold to military, commercial, and scientific users in Iceland, Australia, Denmark, Portugal, United Kingdom, Japan, Canada and the United States.

