

# Pioneering partnership enables advanced uncrewed ocean exploration



In a collaboration between NOAA's National Centers for Coastal Ocean Science (NCCOS), AUV manufacturer RTsys and subsea imaging technology manufacturer Arctic Rays, the NemoSens SwordFish has been designed to revolutionize ocean exploration and research by enhancing NOAA's efforts to study and understand the seabed.

NCCOS will use these vehicles to collect high-resolution digital images of the seabed as deep as 300 metres inside the United States Exclusive Economic Zone. These unique vehicles fill a technological gap and a growing need to provide sufficient images cost-effectively to characterize ecosystems and inform decisions about offshore energy development, sustainable fisheries and the protection of special places in the ocean.

The advanced micro underwater vehicle will be equipped with SwordFish, an imaging payload developed by [Arctic Rays](#). A fully integrated camera plus lighting solution, SwordFish enables turnkey imaging acquisition for seafloor surveys. The imaging payload features georeferenced digital capture of 4K UHD video and still images with high-output dual-mode lighting and an onboard CPU and SSD storage.

## Combined expertise and shared technology

The payload is integrated into the NemoSens micro AUV, developed by [RTsys](#). The modular vehicle utilizes sustainable energy sources, minimizing its environmental footprint and allowing for extended mission durations.

"We at RTsys are truly honoured to have been chosen by NOAA's National Centers for Coastal Ocean Science to elevate the research in marine biology, oceanography and environmental science," said Pierre-Alexandre Caux, business director at RTsys. "Upgrading NemoSens for studying marine life, mapping ocean floors and collecting data on underwater ecosystems widens once again the capability of this unique and versatile micro AUV. The democratization of our combined expertise and shared technology will definitely lead to a more comprehensive understanding of our oceans and marine environments."

"The spirit of partnership in this project allows us to accomplish much more together," said Dirk Fieberg, general manager at Arctic Rays. "The shared goal of exploring our oceans' seabeds to inform sustainability measures will no doubt prove beneficial to the scientific community."

The new NemoSens SwordFish is tailored to gather crucial baseline data about the seafloor and track changes to these ecosystems over time. It will play a vital role in NOAA's ongoing mission to protect and preserve our oceans and support a vibrant blue economy. This plan is part of the collaborators' commitment to fostering a sustainable future for our planet. By joining forces, NCCOS, RTsys and Arctic Rays aim to better understand our oceans, mitigate climate change and protect marine life.



The NemoSens SwordFish gathers essential baseline seafloor data, tracking ecosystem changes over time. (Image courtesy: Arctic Rays/RTsys)