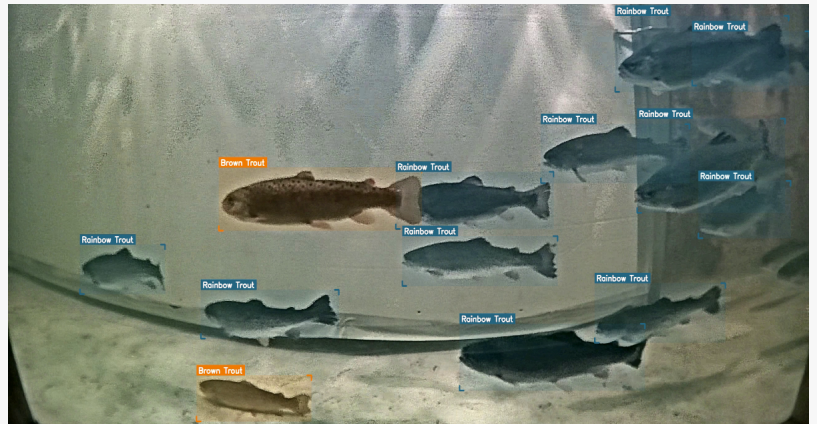


Radmantis AI Identifies Fish Species Mix With 99% Accuracy in Hydropower Study

U.S. DOE-supported study advances real-time fish monitoring, helping hydropower operators balance clean energy production with healthy river ecosystems.

TOLEDO, OH, OH, UNITED STATES,
September 27, 2026 /

EINPresswire.com/ -- Radmantis, a blue technology company developing intelligent underwater biosecurity monitoring, has successfully completed a hydropower research validation study, reconstructing fish species composition with 99% accuracy while detecting fish with 95.5% reliability (mAP50) under complex, high-density movement conditions.



Radmantis' AI underwater vision platform detects and classifies brown trout (orange) and rainbow trout (blue) moving in a dense group during the HyTN fish passage validation study at Verdantas Flow Labs in Holden, Massachusetts. Credit: Radmantis Inc.

The research validation study was conducted in partnership with the [Hydropower Testing Network \(HyTN\)](#), ENERGYWERX in collaboration with the U.S. Department of Energy's Water Power Technologies Office (WPTO), and Verdantas, a leader in hydraulic engineering and fish passage design.

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This validation shows that smart underwater imaging can make hydropower structures both more sustainable and responsive to ecosystem needs.”

*Dr. Robert Huber, CTO,
Radmantis*

“Hydropower is essential to our renewable energy goals, but maintaining fish passage is critical to preserving aquatic biodiversity,” said Dan Giza, Department Lead for Aquatic Resource and Bioengineering at Verdantas Flow Labs. “This collaboration brings new, data-driven tools to better inform fish passage decisions and conservation efforts aimed at protecting endangered species while enabling better management of invasive ones.”

Hydropower provides dependable, carbon-free electricity, but dams can disrupt river connectivity and affect migratory fish movement between upstream and downstream habitats.

Operators must balance energy production with ecological and regulatory requirements related to fish passage, species protection, and aquatic ecosystem management.

Radmantis' monitoring platform addresses this challenge by using embedded underwater vision, AI-based inference and industrial automation to detect and classify fish as they move through aquatic environments. The resulting species-level information can support environmental compliance with population assessment, native species preservation, and invasive species control.

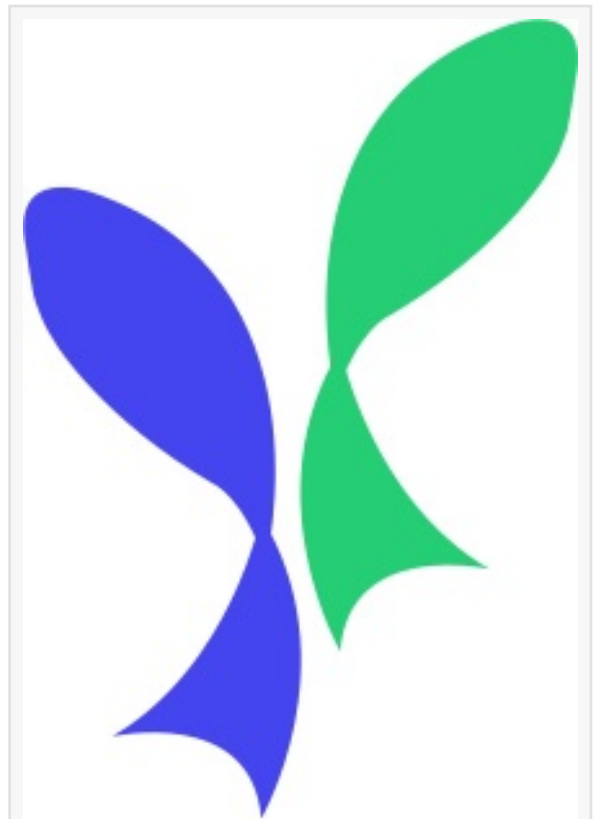
Verdantas Flow Labs led the two-month validation study at the Alden Campus hydraulics laboratory in Holden, Massachusetts. Researchers used varying combinations of rainbow and brown trout because their similar appearance created a rigorous test of the platform's ability to distinguish individual fish, even when they moved in dense groups. Using a held-out validation set, the platform achieved 95.5% detection performance (mAP50), with 89.8% precision and 90.0% recall.

Across 40 single-blind trials, Verdantas knew the actual species composition while Radmantis independently analyzed the underwater video without that information. The platform reconstructed the brown-to-rainbow mix with 99% accuracy, identifying the true composition exactly in 36 of 40 trials and to within 5 fish in the remaining trials.

"This validation shows that smart underwater imaging can make hydropower structures both more sustainable and responsive to ecosystem needs," said Dr. Robert Huber, Technology Lead at Radmantis. "By providing clear, continuous insight into fish passage, we're helping operators balance clean energy production with healthy river systems."

The ability to identify species within dense, visually complex environments extends beyond fish counting. Because each hydropower site has different species of concern, continuous monitoring can give operators more actionable data to manage native and migratory populations, identify invasive species, and meet environmental requirements.

Radmantis is also applying related technology on the Colorado River in support of invasive species control and native fish recovery efforts.



Radmantis is a blue tech company pioneering underwater imaging, embedded vision and automation systems for aquatic monitoring, aquaculture and energy infrastructure. Credit: Radmantis Inc.

With the HyTN validation study complete, Radmantis is seeking partnership opportunities with hydropower operators and research institutions to continue development and field validation across additional species and operating environments.

About Radmantis

Radmantis is a blue tech company pioneering underwater imaging, embedded vision and automation systems for aquatic monitoring, aquaculture and energy infrastructure. Its technologies deliver real-time analytics to support sustainable operations, ecosystem resilience and environmental compliance in aquatic and marine environments. For more information, visit [www.](http://www.radmantis.com)

[radmantis.com](http://www.radmantis.com).



The validation study test channel at the Verdantas Flow Labs hydraulics laboratory in Holden, Massachusetts, with the Radmantis monitoring station and live underwater video feed at right. Credit: Radmantis Inc.

About Verdantas

Verdantas is a leader in digitally enabled technical consulting solutions for the environment, water and energy transition markets. With more than 2,700 professionals nationwide, Verdantas helps clients solve complex environmental and engineering challenges. Its Flow Labs facility is recognized for fish passage design, research and development supporting hydropower and river infrastructure projects. For more information, visit www.verdantas.com.

About ENERGYWERX and the Hydropower Testing Network (HyTN)

ENERGYWERX administers the Hydropower Testing Network in collaboration with the U.S. Department of Energy's Water Power Technologies Office. The program connects technology developers with leading testing facilities to validate innovative solutions that improve hydropower performance, strengthen environmental stewardship and support a more reliable, resilient electric grid.

Media Resources

High-resolution images, partner logos, and video are available for editorial use with credit.

Species tracking - baseline: Real-time detection and tracking of individual trout moving through the field of view.

https://drive.google.com/file/d/157Z8agq7nlf-OdsUg6CO_qW4zeD_mSWu/view?usp=drive_link

Species tracking - high-density scene: Tracking individual trout through a dense, visually complex group, tracing each fish's path over time with a visual trail.

https://drive.google.com/file/d/1-8zIVasrHQ-ruFxU7jYZdZ4CH6XVHie/view?usp=drive_link

[Full press kit](#) (logo, high-resolution assets, captions and credits):

https://drive.google.com/file/d/1rsEMtAFWS9p7sryPE9M1XNcRdcINcykS/view?usp=drive_link

Credit: Radmantis Inc. Please contact us for additional footage, high-resolution images or interviews.

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