

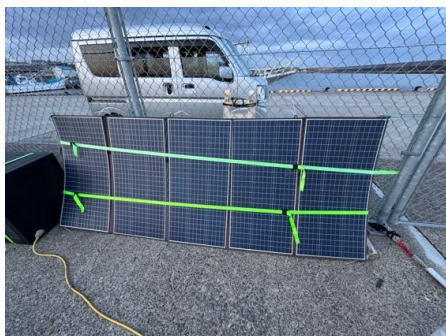


G.K. NeuralX

AI-Based Fish Counting & Biomass Estimation: Multi-Site Field Demonstration for Entry into the Japanese Market

Purpose of the Project

- Supported by a JETRO subsidy, G.K. NeuralX is introducing its AI aquaculture analytics platform to Japan.
- The project focuses on ensuring continuous operation in real-world environments and reproducible accuracy evaluation tailored to Japan's market.
- Japan's aquaculture industry faces challenges like an aging workforce and environmental changes, creating a strong demand for AI solutions.
- The validation addressed local coastal conditions and infrastructure requirements beyond AI model performance alone.
- Testing conducted at three domestic sites and one international benchmark site established a strong foundation for Japan's diverse aquaculture environments.



Details of Demonstration

Project period: August 2025 – January 2026. Demonstrations were conducted at a total of four sites, including 2 domestic sites and 2 international benchmark sites.

- Nakaminato, Ibaraki (mackerel): Built an autonomous AI operational environment — solar power + battery storage + satellite link — at a coastal site with no fixed power or Wi-Fi.
- Shizuoka (Kuruma Tiger Prawn, Shizuoka Institute of Science and Technology): Established an AI-based platform to capture activity and behavior data for a high-value Japanese aquaculture species.
- Kona, Hawaii — BOM Indoor Nursery (kampachi): Established an accuracy improvement cycle at an international benchmark site with established calibration, ground truth acquisition, and SOPs.
- Kona, Hawaii — BOM Offshore Net Cages (kampachi): Conducted fish count evaluation in noisy open-ocean conditions (waves, bubbles, turbulence), targeting Japan's offshore aquaculture deployment.

Data and insights from all four sites are integrated and continuously incorporated into the product improvement cycle for the AI platform targeting the Japanese market.

Project Outcome

- Nakaminato (mackerel): Achieved stable long-term AI operation under Japan's most demanding coastal conditions, demonstrating the practical viability of autonomous infrastructure. Completed ground truth acquisition aligned with harvest timing and validated the accuracy of fish count and biomass estimation — establishing a continuous commercial evaluation framework.
- Shizuoka (Kuruma Tiger Prawn): Overcame species-specific visibility challenges related to transparency and reflection, enabling time-of-day activity analysis and providing a foundation for feed optimization.
- Hawaii BOM Indoor: Established calibration, ground truth acquisition, and SOP workflows, driving a repeatable biomass estimation accuracy improvement cycle — directly transferable to Japanese aquaculture species.
- Hawaii BOM Offshore: Demonstrated fish count evaluation and redundant multi-camera deployment in noisy open-ocean conditions — generating insights directly applicable to Japan's offshore net-cage aquaculture.

Across all four sites, the project established an integrated approach combining AI models, data acquisition infrastructure, and SOPs — creating a validated technical foundation for full-scale entry into the Japanese market.

Challenges and Solutions

- Custom hardware and noise-resistant AI addressed Japan-specific issues such as turbidity fluctuations, saltwater corrosion, and power and communication constraints.
- Effective field deployment depends not only on AI performance, but also on solid data acquisition infrastructure developed with SOPs.
- SOPs ensured consistent evaluations across sites and operators, supporting scalability across diverse aquaculture environments in Japan.
- Continuous durability improvements enhanced reliability for commercial operation.

Future Plans

- NeuralX will launch SaaS-based AI services for major Japanese aquaculture species, building on JETRO support.
- Insights from the Hawaii benchmark sites will continuously inform product improvements for Japan, enhancing AI accuracy and expanding species and environmental coverage.
- Leveraging its success in Japan, NeuralX aims to expand into Southeast Asia and Europe, promoting global data-driven aquaculture.