

CMFRI develops app to measure fish length and width without touching them



India's fisheries research is getting a digital upgrade, with the ICAR-Central Marine Fisheries Research Institute (CMFRI) developing a smartphone application that can measure the length and width of fish without requiring researchers to physically handle them. Called MatsyaMetri, the application uses image-based measurement technology to capture fish dimensions and automatically generate the length-frequency data required for fisheries stock assessment and resource monitoring. The technology addresses a practical challenge in fisheries research: collecting large volumes of consistent biological data during field surveys. Traditionally, measuring individual fish can be time-consuming and requires repeated handling, recording and subsequent data processing. MatsyaMetri is designed to bring those steps into a single digital workflow.

The application was developed under a project focused on the automated measurement of aquatic resources and generation of standardised length-frequency data. Such data is used to understand fish populations, support stock assessment and monitor changes in aquatic resources. "MatsyaMetri simplifies biological data collection by automatically recording measurements and generating length-frequency datasets," said Dr. Grinson George, Director, ICAR-CMFRI. The application is designed for fisheries scientists, researchers and field survey teams seeking faster and more systematic ways to collect biological information.

The technology also changes how measurements are handled after they are captured. Researchers can measure multiple individuals of the same fish species or aquatic resource within a single sampling session. Once the measurements are complete, MatsyaMetri automatically generates a length-frequency distribution using appropriate class intervals. The system also links measurements with photographs, allowing both to be stored as part of the sampling session. The resulting data can then be exported as a CSV file for further scientific analysis, reducing the need for manual transcription and separate data compilation.

The application was developed by Dr Eldho Varghese, CMFRI Senior Scientist and ICAR-National Fellow. "The application is aimed at simplifying biological data collection during field surveys and supporting more systematic generation of fisheries data for scientific assessment and resource monitoring," Varghese said. MatsyaMetri is built for ARCore-supported Android smartphones. After registering and logging in, users can create a sampling session and point the smartphone camera toward a flat surface. The fish is then positioned within the camera's field of view. The application detects the surface and provides an on-screen measuring guide, enabling the user to estimate the fish's length and width through the smartphone camera. The approach could make biological sampling more practical in situations where researchers need to process large numbers of specimens. By combining image capture, measurement, data storage and dataset generation, the application is intended to reduce the amount of manual work involved in converting field observations into usable fisheries data.

For fisheries management, that matters because stock assessment depends not only on the quantity of fish being caught but also on understanding the composition and characteristics of fish populations. Standardised length-frequency datasets can provide researchers with a more consistent basis for analysing those populations and tracking resource conditions. MatsyaMetri's development is part of a broader push to apply digital technologies to agricultural and fisheries research. Smartphone-based tools can potentially extend data collection beyond specialised laboratories and make structured measurement capabilities available directly to field teams. The project is supported by the Indian Council of Agricultural Research (ICAR) under the Department of Agricultural Research and Education, Government of India, through the ICAR-National Fellow Project. MatsyaMetri represents a relatively simple but potentially important shift: turning a smartphone into a field-level scientific measurement and data-management tool. Its longer-term value will depend on adoption across research and survey programmes, but the technology points toward a fisheries assessment system that is faster, more standardised and increasingly digital.