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Fish nutrition database to help combat malnutrition across the globe

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LANCASTER UNIVERSITY

Science Business Announcement

A treasure trove of vital nutritional data about fish species is being made freely available and accessible globally - plugging a knowledge gap that will bolster efforts to tackle malnutrition across the world.

Despite fish being an essential component in the diet of more than 3 billion people around the world, and an essential source of micronutrients for over a billion people in low-income countries, many of these populations lose their very nutritious fish through exports and foreign fishing and, in turn, import lower-quality fish and fish products, creating a net loss of essential nutrients.

In fact, up to 70% of fish caught in the fishing zones along the coasts of African nations such as Namibia and Mauritania are exported or monopolized by wealthier foreign nations.

This is in part due to a traditional view of fish perceived primarily as a source of protein, with less consideration given to the micronutrient composition of different fish species - a perception rooted in a lack of available nutritional knowledge. For example, very small species can often be very nutritious - but because they are not protected for their local food security potential, they are exported and processed into products such as fishmeal animal feeds.

Just a fraction of highly nutritious fish caught off west African waters, which contain omega-3 fatty acids, calcium, iron and zinc, could help to significantly reduce the prevalence of malnutrition-linked conditions such as maternal mortality, stunted growth, and pre-eclampsia.

A highly-cited study on fish and nutrition, published by Nature in 2019, and conducted by an international team of researchers led by Professor Christina Hicks of Lancaster University highlighted the need for fisheries and food policies focused on improving nutrition, rather than increasing volumes of food produced, or revenue generation from exports.

The 2019 study saw the development of a finfish nutrient composition database, which was used to develop predictive models of the availability of nutrients from the world's fisheries.

Now, this crucial empirical and modelled nutrient composition information for more than 5,000 fresh and marine fish species is being made freely available to scientists, policy makers, managers, academics and others involved in developmental work.

The new initiative, launching on June 23, 2021, will see the nutritional data added to FishBase - an online encyclopedia of fish with crucial information on more than 34,000 freshwater and marine species. Available in 14 languages, the database is visited by more than 900,000 people each month, including fisheries biologists, managers, ecologists, and sustainability scientists.

The initiative is driven by an international partnership of leading experts from the Ocean Frontier Institute, FishBase, WorldFish, the Lancaster Environment Centre, the Sea Around Us research unit at the University of British Columbia, the Minderoo Foundation and other organisations.

It is hoped that by adding the information to the 'global commons' it can be used to identify how and where fisheries can help address malnutrition, identify vulnerabilities in food systems, and develop an evidence base to support the protection of local food environments and ecosystems.

Policy makers in individual countries would be able to identify which of their local fish are the most nutritious and need protecting.

Professor Christina Hicks said: "Fish are increasingly recognized as key to addressing malnutrition, but that potential is yet to be realised. We hope by bringing the fisheries and nutrition communities closer together this work can support transitions towards more equitable, sustainable, and healthy food practices."

"The main point of making empirical and modeled values of nutrient composition readily available to researchers through FishBase is to have a clear understanding of the nutrient potential and opportunities from global fisheries catches," said Dr Deng Palomares, the Sea Around Us manager and one of the people behind the new initiative. "This understanding, in turn, should help guide more effective fisheries governance that takes into account the role that fish can play in addressing micronutrient deficiencies- or what we call 'hidden hunger'."

"Making available scientific data that back the argument of the importance of fisheries in addressing global food security challenges has major policy and societal implications," said Professor Daniel Pauly, co-founder of FishBase and the Sea Around Us Principal Investigator. "FishBase is the ideal host for this type of information as it is already a data provider for national systems for the management of fisheries and aquaculture, and the monitoring of biodiversity."

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Launch event

The initiative will be launched by a one-hour event at 2pm-3pm UTC (3pm-4pm BST) on June 23. The launch event, hosted by the Ocean Frontier Institute at Dalhousie University, will include a panel of leading experts including partners from the project such as Professor Daniel Pauly, the world's most highly-cited fisheries scientist, as well as Dr Shakuntala Haraksingh Thilsted, who recently received the World Food Prize for pioneering innovative ways of raising fish rich in micronutrients and fatty acids and incorporating them into diets in developing countries.

The full panel for the launch is:

Dr Pip Cohen, Research Leader, Small-scale Fisheries, WorldFish and CGIAR Research Program on FISH
Professor

Anya Waite, Ocean Frontier Institute, Dalhousie University

Professor Daniel Pauly, FishBase co-founder, Sea Around Us - Institute for the Oceans and Fisheries, University of British Columbia

Dr Deng Palomares, FishBase and Sea Around Us - Institute for the Oceans and Fisheries, University of British Columbia

Dr Shakuntala Thilsted, Global Research Leader, Nutrition and Health, WorldFish and World Food Prize Laureate, CGIAR

Professor Christina Hicks, Lancaster University

Dr Aaron MacNeil, Ocean Frontier Institute, Department of Biology, Dalhousie University

Dr Kendra Travaille, Flourishing Oceans, The Minderoo Foundation

People can attend the launch event by registering at https://us02web.zoom.us/webinar/register/WN_IkSLT_Q8SI-qnae5oVHi-g

FishBase can be found by visiting <http://www.fishbase.org>

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