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Short Communication

A Note on the Need to Expand Fish Food Security in Africa

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Introduction

Presently, the world is affronted by overwhelming association of catastrophes: the post pandemic long-term effects, the ongoing climate changes impacts, and the armed conflicts and violence, which affect millions around the globe. The scores of multiple social risks are worsening and, in most places, progress has been too slow, and is further threatened by the health, economic, and environmental crisis. Natural disasters, large-scale uncontrolled migration, severe instability among some countries, decay of social cohesion, biodiversity loss and ecosystem collapse, severe mental health degradation, collapse of supply chains, are just among several global risks, but on top of all these we rate primarily the rising cost-of-living and food and clean water availability to be the most dramatic, at least in Africa [1]. Africa is struggling with development challenges, particularly chronic food insecurity and widespread poverty. Actually, some 300 million people in the continent experience chronic hunger leading to malnutrition and associated potential health risks. If African diets are basically reasonable covered on energy requirements with staple foods rich in soluble carbohydrates, the protein fraction relies on multiple local bean sources since meat, eggs, fish, and seafood are of more difficult access and expensive for the average indigenous. Fish has been the world's single-most trade value food commodity followed by soybean, wheat and coffee, while for FAO fish is the second most traded food commodity in the world after the collection of all cereals [2].

While few heads of cattle, goats, pigs, and poultry are frequently used by family farmers in Africa, and raised either to sell in local markets or consumption in festive days, a possible good supplier of high quality protein may be through aquaculture production of the African catfishes *Clarias gariepinus* and *Heterobranchus longifilis.* In Sub-Saharan Africa these two species are the most widely distributed fish in Africa and have been produced for a long time; they can be differentiated by the lighter colour and a belly off-white and dark olive brown dorsal of the *H. longifilis.* These are types of freshwater demersal or ground fish, air breathing catfish, sharp tooth scale less mudcat, the most widely distributed in Africa, that exists in the wild but it is also cultivated in ponds, cages, and pens and is of great commercial importance (Figures 1,2). These omnivorous fish with a preference for a planktonic diet, may weigh up to 60 kg and grow to a length of 1.5-1.7m [3]. Being able to survive in shallow mud for very long periods of time, between rainy seasons, this air-breathing catfish with a scale less, bony elongated body, it feeds, relying on vibrations and smells in search of food, on other types of food items such as insects, insect larvae, pupae, fish, detritus, and fish remains [4].

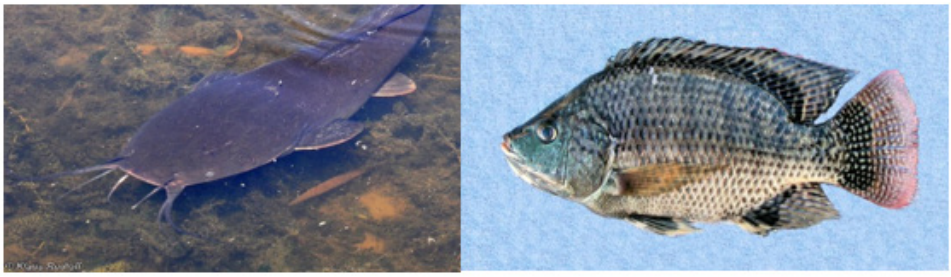

Figure 1: Catfish *Claria gariepinus* on the left and tilapia *Oerochromis mossambicus* on the right

Figure 2: Fresh mud catfish sold fried or after dry-smoking in a Mozambican market.

A similar fish (*Claria batrachus*) exists in Southeast Asia, well known to its ability to "walk" and wiggle across dry land by moving the pectoral fins. Like the African species, lives in stagnant waters in ponds, swamps, streams, and rivers, as well as in flooded rice paddies, or temporary pools that may dry up. Fish products are critical sources of essential micronutrients. The macronutrient percentage proximate composition of catfishes' meat varies widely with major feed ingredient sources, but an average can be expressed as 70.5 – 72.0 moisture, 18.2 – 19.0, crude protein in fillets, 3.6 – 7.2 lipids, and 2.6 – 2.9 ashes [5]. The rearing in aquaculture of this catfish in Africa started in the early 1970s in Central and Western Africa while Tilapia (*Oreochromis niloticus*) was the preferred species in Eastern Africa (*Oreochromis mossambicus*). The two clariid catfish genera may cross and the hybridised F1 has been studied for growth and survival heterosis, and although there were no observed growth performance changes, crossbreeds displayed a positive heterosis for [6] Despite is high nutrient profile, a highly valued and cheap staple to local communities and an ideal aquaculture species, this fish and their products needs attention on its parasite contamination, in order to protect human consumers [7].

Family fish farmers and the private sector do face major constraints, such as lack authorities support, lack of seed and quality feed for general aquaculture, and the use of public low oxygen inland ponds and other available muddy waters for catfish production [8]. Feeds for livestock and farmed fish that are fed rely largely on the same crops. The use of medicinal plants as feed additives, as promising alternative to enhance growth performance, disease resistance and reproduction in fish, in aquaculture diets of Mozambique tilapia (*Oreochromis mossambicus*) and the African Sharp tooth catfish (*Clarias gariepinus*) in Southern Africa, has been studied in order to try and minimize costs and risks for the consumer [9].

The preview of global changes in attitudes towards the production and consumption of fish in Sub-Saharan Africa, and namely the sustainability of artisanal fisheries in the context of food security and poverty eradication, has been regularly reported by [10] Nevertheless, due to the profound differences between countries and local constraints, the process for elaborating national aquaculture strategic frameworks has been rather slow [11]. In any animal production system, feed cost is the major variable operating cost associated with production and with catfish is the same if explored in intensive aquaculture settings. Some authors concluded that catfish food have traditionally been fed relatively high-protein diets (32–35%), but they grow just as fast and convert feed as efficiently on diets containing as low as 24% protein [12]. In Africa, various traditional methods are employed to preserve and process fish for

consumption and storage. These include smoking, drying, salting, frying, and fermenting and various combinations of these [13,14]. In most African countries, smoking is the most widely practiced method of conservation. In Mozambique, the preservation of the mud catfish has been by dry-smoking, since there are no cold storage facilities.

Concluding Remarks

One of the most pressing challenges facing Africa's food systems is access to quality protein. Catfish production may contribute to ensure a healthy and sustainable diet available to billions of Africans, which is often overlooked in development research, policy and investment. The development of this sector will provide employment, investment opportunities, and cover nutrient requirements of African people. African government policies need to provide adequate incentives in this domain.

References

1. Adeyeye SAO, Oyewole OB (2016) An Overview of Traditional Fish Smoking In Africa. Journal of Culinary Science & Technology 14(3): 198-215.
2. Ahmed I, Jan K, Fatma S, Dawood MAO (2022) Muscle proximate composition of various food fish species and their nutritional significance: A review. Journal of Animal Physiology and Animal Nutrition 106(3): 690–719.
3. Anchor Environmental. (2017) African sharptooth catfish: Clarias gariepinus. Publications.
4. Ataguba GA, Annune PA, Ogbe FG (2010) Growth performance of two African catfishes Clarias gariepinus and Heterobranchus longifilis and their hybrids in plastic aquaria. Livestock Research for Rural Development 22(2).
5. Chan CY, Tran N, Cheong KC, Sulser TB, Cohen PJ, et al. (2021) The future of fish in Africa: Employment and investment opportunities. PLOS ONE 16(12): e0261615.
6. FAO (2021) Trade in Fisheries and Aquaculture Products: A Major International Commodity (Issue 38).
7. FAO. (2023) Report on the nineteenth session of the Committee for Inland Fisheries and Aquaculture of Africa – Lilongwe, Malawi, 30 November–2 December 2021. Rapport de la dix-neuvième session du Comité des pêches continentales et de l'aquaculture pour l'Afrique – Li.
8. Grebmer K, von Bernstein J, Wiemers M, Reiner L (2023) Global Hunger Index. The power of youth in shaping food systems.
9. Khedkar GD, Khedkar CD, Jadhav BV, Chavan NN (2003) Demersal Species of Tropical Climates. In B. Caballero, L. C. Trugo, & P. M. Finglas (Eds.), Encyclopedia of food sciences and nutrition. Academic Press.
10. Mbokane EM, Moyo NAG (2022) Use of medicinal plants as feed additives in the diets of Mozambique tilapia (Oreochromis mossambicus) and the African Sharptooth catfish (Clarias gariepinus) in Southern Africa. Frontiers in Veterinary Science 9: 1072369.
11. Moehl J, Brummett R, Kalende MB, Coche A (2006) Guiding principles for promoting aquaculture in Africa - Benchmarks for sustainable development.
12. Odedeyi D (2007) Survival and Growth of Hybrid (Female Clarias gariepinus (B) and Male Heterobranchus longifilis (Val.) Fingerlings: Effect of Broodstock Sizes. American-Eurasian Journal of Scientific Research 2(1).
13. Robinson EH, Li MH (2007) Catfish Protein Nutrition: Revised.
14. Truter M, Hadfield KA, Smit NJ (2023) Review of the metazoan parasites of the economically and ecologically important African sharptooth catfish Clarias gariepinus in Africa: Current status and novel records. In Advances in Parasitology 119: 65–222.