

Amphibians as a Component of Sustainable Development

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Amphibians are cold-blood animals and make the transition between aquatic and terrestrial animals. They suggest a natural living bridge and play an important role in the environment by regulating and maintaining the equilibrium of biodiversity. They have also relations with people with regard to ecological, socio-economic and cultural aspects.

First, the amphibians, as a component of the organized biotic systems, represent a key link in the trophic chain by regulating the insect populations on which they feed. They destroy indeed pests of medical and agricultural importance.

Feeders as anthropophilic biota, such as *Bufo regularis* and related species, destroy large amount of housing insects. Some of these insects are major vectors of several dangerous diseases to human and livestock. In this way the amphibians can play a major role in biological control programmes of pests.

The socio-economic role is less known, although amphibians enter in the socio-economic circuit when used as food. Amphibians are consumed by indigenous societies and the following genera contain consumable species in Zaire, *Rana*, *Pyxicaphalus* and *Xenopus*.

Delicious leg flesh is expensively sold in some restaurants all over the world.

The food shortage which is facing the Developing Countries is one of several problems due to the increase of human populations. More food and new sources of food are needed. Therefore, the promotion of amphibian rearing and farming in tropical areas to produce more animal protein to fight the malnutrition may be one of additional solutions to solve this problems if undertaken on a sustainable basis.

Research and practical programmes are in progress to promote amphibian farming but these enterprises need funding to reach the assigned objectives. In this way, BEDIM, a Belgian organization has proposed minilivestock to enhance the production of more protein from amphibians to supplement the diet of people suffering from malnutrition under the tropics, especially in Africa where also refugees are very numerous.

Economically speaking, it is possible to make profitable such an enterprise by using local resources like natural ponds in swampy spaces, which however must be submitted to scientific monitoring to offer and maintain appropriate ecological conditions.

Zaire (Central Africa) with its variety of amphibian species (more than 200 species) and its undisturbed rainforest offers good conditions to realize the first African "Experimental Amphibian Farm". Exportation of frog legs can be expected as well as local consumption of frog meat.

The cultural role is often overlooked. Along with the mythological and legendary tales, culture of people has been built on linkage between human and the nature. This thought consolidates the cohesion of indigenous communities.

Little is known about the use of amphibians in folklore, yet it is a useful tool for getting rough ideas of wildlife distribution and its incidence in human life. It is just known that amphibians are used as totemic elements and ingredients in traditional medicine.

Tropical raniculture is an innovative approach, it deserves high interest. A small test frog plot could be easily launched, based on local informations, and indigenous knowledge is a good way to reach interesting results. This concept needs well-planned activities, humid sites and ecoethological acquaintance to be followed up by farmer. Natural models must be used in feeding and reproduction of species.

Presently this new activity is not yet documented but it has already drawn attention of indigenous people who must understand this activity as a development project based on fundamental and applied research on a sustainable basis of renewable resources in tropical rainforest and related humid zones.

Any frog farming process should be accompanied by appropriate observations and monitoring. Notes and records should be kept of the taxa and their biology (reproductive cycle, mating systems, laying and hatching periods, metamorphosis, growth, survival rate), of the hunting period and the indigenous methods of hunting, of preys (molluscs, insects, worms) and predators (birds, snakes, fishes and adult frogs) and of contagious diseases which affect the population dynamics.

It is evident that a frog farm ought to be based on local consumable species and local conditions of production (water supply, feed, flora,...) with the aim of becoming self-sufficient (in tadpoles supply) and supplier for the market soon. The European demand should quickly be analysed also in order to meet the expectations of the consumers.

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