

Status of Aquatic Animal Health Activities in Lao PDR

Vonsamay Dalasaen^{1*} and Bouakeo Vong Amnath²

¹*Fisheries Division, Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, P.O. Box 6644, Vientiane, Lao People's Democratic Republic*

** dalasaen@hotmail.com*

²*Namxouang Aquaculture Development Center, Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, P.O. Box 6644, Vientiane, Lao People's Democratic Republic*

Abstract

Lao PDR's National Strategy for Fisheries stipulates the expected outcomes, work plan, and framework aimed at attaining the implementation of current plans and long-term projects up to 2020. Government estimates percent per capita consumption of aquatic animals and aquatic animal products at 15 kg per annum, i.e. accounting for about 40% of the animal protein intake, and targets to increase its per capita availability of fish to 23 kg by the year 2020.

Lao PDR does not have areas for shrimp culture but researches on the migration pattern and reproductive biology of indigenous shrimp species found in the rivers have been undertaken. Inspection of documents for import, transit and export of live aquatic animals at international checkpoints before entry into Lao PDR has been likewise implemented. With regard to importation, permission of import-export (final destination and origin country), certificate of pedigree, and certificate of sanitary quality are being required. In addition, disease-free status (especially those notifiable to the World Organization of Animal Health [OIE]) of imported shrimps and other aquatic organisms is mandatory at international checkpoints before entry into Lao PDR. For shipments suspected to harbor diseases, samples are sent for analysis at the Namxouang Aquaculture Development Center (NADC), Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, Vientiane, Lao PDR.

Introduction

Lao People's Democratic Republic (Lao PDR) is a landlocked country with an area of 236,800 km². With no direct access to the sea, capture fisheries are based on water resources ecosystems such as Mekong River and tributaries, large reservoirs, shallow lakes, small natural pools, peat swamps, wetlands, irrigation reservoirs and weirs, rice-fields, small streams and floodplains (Phonvisay, 2013). Tilapia, carp, and catfish are the major species commonly produced in various fish production systems, or caught in reservoirs and natural bodies of water (Theungphachanh, 2004).

Fishing is important not only for the poor, but is essential for all households regardless of socioeconomic group (Garaway, 2005) because

fish and other aquatic animals are necessary components of Lao diet. In particular, fish is needed to complement what is lacking in the rice-based diet like essential amino acids, vitamins or minerals. Fish and other aquatic animals also provide additional income and employment through fishery-related activities (Phonvisay, 2013). Moreover, aquatic animals have the highest percentage consumption by weight of animal product (37%) in the diet of surveyed families. This is followed by poultry and livestock at 24% and 23%, respectively (Funge-Smith, 1999).

Aquaculture plays a significant role in sustaining food consumption in the country. When capture fisheries are inaccessible or over-exploited, it serves as an alternative source for fish and other aquatic animals. Farmers

are attracted to fish culture since it requires a relatively low entry cost. Ponds can be self-constructed and species like tilapia and carp can be bred in perennial waters rendering farmers to have access to fingerlings. Fish culture is also considered as supplementary activity to small livestock production (Funge-Smith and Dubeau, 2002). Together with capture fisheries, aquaculture plays an essential economic role by contributing 14% to gross domestic product (GDP) of Lao PDR.

Status of fish diseases

Lao PDR has by far not been seriously confronted with issues pertinent to fish diseases compared with other countries in Southeast Asia. However, there were unpublished reports on the occurrence of diseases caused by parasites (*Learnea* sp., *Dactylogyrus* sp., *Gyrodactylus* sp., *Ichthyophthirius multifiliis*, *Trichodina* sp., *Cryptocaryon* sp., *Epistylis* sp., and *Oodinium* sp.) and bacterium (*Edwardsiella tarda*) (Theungphachanh, 2004). Farmers have also reported some ulcerated bodies of catfish or snakeheads whose clinical signs were apparently consistent with epizootic ulcerative syndrome (EUS) (Funge-Smith and Dubeau, 2002). In 1996, diseased snakeheads from Lao PDR were confirmed to be EUS-positive by the Aquatic Animal Health Research Institute (AAHRI), Bangkok, Thailand (Kar, 2016). By and large, comprehensive information on bacterial, fungal, parasitic and viral diseases of freshwater fishes in Lao PDR are not currently available. However, even cases that are deemed as minor diseases, are reported by Lao PDR's focal point to the World Organization of Animal Health (OIE) or Network of Aquaculture Centers in Asia-Pacific (NACA).

Prevention and control of transboundary aquatic animal diseases

Lao PDR imports 24,000 metric tons (MT) per year of seafood products from Thailand and Viet Nam (Phomsouvanh, 2015). Fish seeds are also imported from adjacent countries like Thailand, Viet Nam and China since the demand could not be supplied by in-country production (Funge-Smith, 1999). With regard

to importation of live fish and other aquatic animal products, Lao PDR has implemented stringent requirements to prevent the entry and consequential spreading of transboundary aquatic animal diseases into its natural bodies of water. Imported animals and/or products are inspected at the international checkpoint. At present, checking includes detection of diseases, contaminants, and antibiotic residues. Importation requires permit for import-export, certificate of pedigree, and certificate of sanitary quality. The checkpoint ascertains that imported shrimps and other aquatic animals are disease-free especially from infectious diseases listed in the OIE. For shipments suspected to harbor diseases, the Namxouang Aquaculture Development Center (NADC), Department of Livestock and Fisheries, Ministry of Agriculture and Forestry has been assigned to analyze the samples. The laboratory of NADC has the capacity to conduct level II diagnosis, i.e. bacterial, fungal, and parasitic diseases of fish and crustaceans. However, level III diagnostic procedures such as immunological (e.g. enzyme-linked immunosorbent assay [ELISA]) and molecular (e.g. polymerase chain reaction [PCR]) diagnostic tests are not currently available in the center.

Way forward

Lao PDR should take into account the lessons learned by other countries that have been severely affected by transboundary aquatic animal diseases. These information may serve as basis in the formulation of intervention and mitigation strategies aimed at preventing and controlling the inadvertent occurrences of infectious diseases of aquatic organisms as Lao PDR gradually ventures into intensive fish culture to meet the demand of the increasing population. It is therefore imperative that the level of diagnostic capability of Lao PDR's National Fish Health Laboratory has to be continually updated through upgrading of various laboratory equipment and facilities. Importantly, to be adept with the holistic knowledge and skills on fish health management, fish health staff should continually undergo hands-on training on disease diagnosis, quarantine, and surveillance.

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