

# **Current Status of Transboundary Fish Diseases in Cambodia: Occurrence, Surveillance, Research and Training**

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## **I. Current Status of Koi Herpesvirus Disease (KHVD) in the Production of Common Carp and Koi**

### **I-1. Production of Common Carp**

*Cyprinus carpio* (common carp) is regarded as one of the most important freshwater fish and considered prized food in Asia. This species was introduced into Cambodia in 1982 from Vietnam for aquaculture in ponds and rice field. The fish can grow to 700-1,200 grams during the first year of culture. Common carp culture in Cambodia is small scale and products are solely for local consumption. There is no information about annual productivity of common carp in the country. Common carp are not found in natural water bodies like rivers and streams.

For cultured stocks, sources of spawners or brood stock, and fingerlings are the two hatcheries of the Department of Fisheries located at:

- Research Station, Kilometer No. 9; and
- Batié Prey Veng.

### **I-2. Production of Koi**

Information on koi culture is not available in Cambodia.

### **I-3. Koi Herpesvirus Disease (KHVD) of Common Carp and Koi**

There is no information KHVD in common carp and koi in Cambodia.

## II. Current Status of Viral Diseases in the Production of Shrimps and Prawns

### II-1. Production and Viral Diseases of Shrimps

Shrimps, *Penaeus monodon* and *P. merguensis*, are cultured in brackishwater ponds. Shrimp culture activities are conducted in two provinces: Kompot and Koh Kong. Culture methods used are traditional extensive, modern extensive and intensive systems (Table 1).

**Table 1.** Shrimp farming in Cambodia when it started in 1993

Farming Systems	No. of Farms	Location	Total Area (ha)	Species cultured
Traditional extensive	2	Kompot	20	<i>P. merguensis</i>
Modern extensive	2	Koh Kong	10	<i>P. monodon</i>
Intensive: Small (<5 ha)	6	Koh Kong	23	<i>P. monodon</i>
Medium (5-20 ha)	15	Koh Kong	164	<i>P. monodon</i>
Large (>20 ha)	3	Koh Kong	76	<i>P. monodon</i>

From 1993-1998, shrimp farming in Koh Kong Province increased tremendously until a total of 740 ha was developed. Table 2 shows shrimp production from 1994 to 1998. In 1999, there were problems with white spot syndrome virus (WSSV), monodon baculovirus (MBV), and yellow-head disease (YHD) causing farmers to stop culture. At present, shrimp farming is going on in extensive ponds in significantly smaller area (around 20 ha remaining in operation).

**Table 2.** Shrimp production record in Cambodia from 1994 to 1998

Species	Yearly Production (MT)				
	1994	1995	1996	1997	1998
<i>P. monodon</i>	560	731	600	266	197

## III. Surveillance, Monitoring and Diagnosis of Diseases of Aquatic Animals

### III-1. Responsible Facility and Personnel

The main institute that is responsible for diagnosis and inspection services of aquatic animal diseases is the Laboratory of Fish Disease of the Department of Fisheries located in the following address:

Department of Fisheries  
 Inland Fisheries Research Development Institute  
 Laboratory of Fish Disease  
 No. 186, Norodom Blvd., Sankat Tonle Bassac  
 Khan Chamcar Mon, Phnom Penh  
 Cambodia

### III-2. Diagnostic Capabilities and Major Diseases of Aquatic Animals

Based on the levels of diagnosis described below, diagnostic procedures used are between Levels II and III, although only PCR method is the only Level III method that is currently available. The laboratory is starting to develop capability in virology, especially in cell line culture and maintenance.

- Level I: Diagnostic activity limited to observation of animal and the environment, and clinical examination (On site or Field Diagnosis)
- Level II: Diagnostic activity includes Parasitological, Bacteriology, Mycology, and Histopathology (Laboratory Diagnosis)
- Level III: Diagnostic activities include Virology, Electron microscopy, Molecular biology and Immunology (Laboratory Diagnosis)

The table below lists government-, private-, and university-based Fish Health laboratories and their level of diagnostic capability.

No.	Name of Laboratory	Diagnostic Level	Address
1	Department of Fisheries	II	# 186 Norodom Blvd, Chamchamon, Phnom Pen, Cambodia Tel/Fax: (855-23) 215 470 E-mail: catfish@camnet.com.kh
2	Faculty of Fishery Royal University of Agriculture	II	Royal University of Agriculture (Chamcha Daung) Cambodia Tel. (855-12) 887 864
3	Pasteur Institute	III	Monivong Blvd, Khan Toul Kok, Cambodia Tel/Fax: (855-12) 814 276

Following is the list of economically–important diseases in Cambodia, the species that are affected, and the level of diagnosis used to investigate them.

No.	Name of Diseases/Agent	Affected Animals	Level of Diagnosis
1	EUS	<i>Clarias macrocephalus</i> <i>Trichogaster pectoralis</i> <i>Anabas testudineus</i> <i>Trichogaster microlepis</i> <i>Channa striata</i>	II II II II II
2	Fungi	<i>Puntius goniotus</i>	II
3	MBV	<i>Penaeus monodon</i>	II
	WSSV	<i>Penaeus monodon</i>	II and III

## **IV. Quarantine Services to Prevent Entry of Diseases of Aquatic Animals**

### **IV-1. Responsible Agency and Personnel**

The Department of Fisheries is responsible for quarantine of aquatic animals. When aquatic animals arrive in the country, they are quarantined at the airport until the importing company passes the quarantine standard. The Fish Health inspector will inspect the animals at the quarantine zone and samples will be taken and sent to the laboratory for pathogen detection. Inspection will be conducted by the Fish Quarantine Inspector at the point of entry or at the quarantine zone at the importing the farm.

### **IV-2. Procedures and Requirements for Importation**

Following are steps that importers follow when they want to bring in live aquatic animals into the country:

1. Pre-arrival: file an application for animal importation.
  - a. Provide a photo or drawing to describe the species to be imported.
  - b. Describe the biological characteristics and provide data on the positive economic effect of species to be imported
2. Animal arrival at the point of entry: Fish should be accompanied by a health certificate from the exporting country
  - a. Fish will be examined for pathogens.
  - b. If quarantinable pathogens are found, treatment will be applied for those with known treatment.

### **IV-3. List of Quarantinable Diseases of Aquatic Animals**

There is a need to improve human resource capability and laboratory facilities in order to come up with the list of Quarantinable Diseases of Aquatic Animals, and to comply with the disease reporting system in the Asian region.

Specifically, there is a need for the following:

- Diagnostic capability for viral diseases (MBV, TSV, WSSV, YHD and VNN);
- Capacity building in risk analysis, procedures for monitoring and disease surveillance;
- Establishment of a laboratory in the Department of Fisheries with modern equipment and trained manpower for disease identification;
- Strengthen the exchange of information in transboundary aquatic animal pathogens between countries; and
- Develop national reporting systems of aquatic animal diseases.

## **V. Research and Training of Fish Health Staff for Quarantine, Diagnosis, and Surveillance of Diseases of Aquatic Animals**

A training or workshop on how to conduct proper diseases surveillance, and reporting for the region is needed.