

Country reports

Viet Nam national report on alien species

Le Thanh Luu
and Nguyen VanThanh

Presently, alien species are dominant in freshwater aquaculture contributing to more than 50% of the total freshwater aquaculture product in Viet Nam

A LIST OF ALIEN SPECIES AND GENOTYPES CURRENTLY IN USE IN THE COUNTRY.

A REVIEW OF THE INFORMATION CURRENTLY AVAILABLE IN DIAS

Compared with the information available in the Database of Introduction of Alien Species (DIAS) of FAO, the number of alien aquatic species introduced to Viet Nam is increasing. According to our records, there are five species that are recent introductions to Viet Nam for research and aquaculture purposes (see table). They are: *Colossoma brachypomum*; tilapia *O. aureus*; red drum *Sciaenops ocellatus*; white shrimp *P. vannamei* and Pacific oyster *Crassostrea gigas*. Some species are imported by the private sector through commercial channels based on an official application (in the case of tilapia *O. aureus* and *P. vannamei*), but some are initially imported by the farmers living along the boarder with China (in case of *Colossoma brachypomum*), and latterly by research institutes for study.

KNOWN IMPACTS OF INTRODUCTIONS, MANAGEMENT STRATEGIES, CURRENT PLANS TO INTRODUCE NEW ALIEN SPECIES

Positive impacts

Aquaculture in Viet Nam is challenging with very limited numbers of domestic species being economically significant. To address this issue, for the last four decades, several alien species have been introduced in aquaculture practice. The introduced species have usually obtained good growth and high productivity. Presently, alien species are dominant in freshwater aquaculture contributing to more than 50% of the total freshwater aquaculture product in Viet Nam. For example, it is estimated that the volume of Chinese (three species) and Indian (two species) carps is sharing about 40-45% of freshwater production which is accounted approximately 600 000 MT last year. Alien species are stocked in all water bodies/ponds such as paddy fields, reservoirs, ponds and cages. In brackishwater and



marine aquaculture alien species have not had a significant role. To date, very few species have been introduced, mainly trials and experiments such as red drum, Pacific oyster through the private sector or government arrangements. *Penaeus vannamei* has also been imported.

Cases of large scale reproduction of alien species in the wild, and competition for food with local species have not been recorded so far. On the other hand, most of alien species are unable to reproduce in nature. The seed mainly is produced artificially in fish hatcheries for aquaculture purposes, or for restocking to improve the productivity of natural water bodies.

Negative impacts

To date, the research and assessment on negative impacts of introduced species have not been carried out. On the other hand, there was not any complaint from farmers about harmful or negative impacts from the introduced fish.

Transboundary issues concerning aquatic animal pathogens, impacts of transboundary pathogen issues and management strategies

Up to date, there has not been records of any serious disease among alien species or transmitted from alien species to other native species. Information on aquatic animal pathogens introduced through transboundary movement is limited, although the country has faced some serious aquatic animal disease outbreaks that may be due to introduced disease causing organisms (eg white spot syndrome virus of shrimp). There is a lack of systematic survey, however, an inadequate evidence to identify any issue concerning the aquatic animal pathogens and their affect on indigenous species.

Brief review of national legislation governing the use of alien species including health
The government of Viet Nam is not specifically strict on using alien species for culture purposes. Since 1989, the government has issued regulations on protection of aquatic resources in which it has permitted the Ministry of Fisheries to develop guidelines for use of alien species (for example, aquaculture, ornamental, gene pool exchange...). In 1990, the Ministry of Fisheries published guidelines that provide instructions on procedures for import of alien species for aquaculture or ornamental purposes. The guidelines strictly ban import of exotic species without quarantine and do not permit introduction of imported species to aquaculture practices without proper trial and risk analysis.

The initial step in this procedure is submission of an application to the Department of Aquatic Resource Protection, with a brief description about the biology of the species, distribution, aquaculture characteristics, possible risks including feed competition, diseases and pathogens. Any private sector or organization can submit an application for import of aquatic exotic species. The application is considered with advice of the concerned agencies such as the Department of Science and Technology and research institutions. Permission is given in the case when conditions are satisfied. Besides, the Ministry of Fisheries also requests research institutions to take responsibility on research and risk analysis of imported species before introduction to aquaculture practice. The testing period at least will take two-three years with all necessary research on feed, growth, diseases, aquaculture characteristics such as stocking density in different systems, survival rate in hatchery, incubation, rearing stage, and others. An annual scientific report should be prepared and presented to the committee for assessment. The committee will then make a decision to permit use of the species for aquaculture when the scientific assessment is positive.

Identification of the national agency responsible for managing the use of alien species and the name of the contact person in this agency

At this stage, the Department of Aquatic Resource Protection under the Ministry of Fisheries is responsible for managing the use of alien aquatic species. The department is responsible for looking at the justification for the application, identification and verification of biological characteristics and capacity of the applicant to testify the new species and evaluation of the potential use of introduced species to aquaculture practice. The department is responsible for issuing a permission to allow import of the alien species and verifying the quarantine process of the applicant.

Future plans and recommendations at the national level and also for regional cooperation

The Government of Viet Nam has not developed any specific plan on introduction of exotic species, however the movement and use of alien species is obvious and unavoidable as people living along the border informally exchange seed of new species with neighboring countries. As well as private sector farmers, companies are always interested in this matter. The government has collaborated with FAO to develop a “Health management strategy” for Viet Nam concerning transboundary movement of aquatic animals. The draft has been circulated for comments. Further, the government plans to give more focus on control mechanism to introduction of exotic species as well as create awareness on the possible impacts and pathogen risks from use of alien species.

The recommendations

- ▶ It is recommended that the Vietnamese government should develop a strategic plan for use of alien species. The existing technical guidelines should be further improved with a focus on control mechanism and responsible use of alien species.
- ▶ It is recommended that the exchange of information between countries should be strengthened. Technical guidelines on the control and responsible use of alien species at regional level should be developed in consultation with the participating countries.

Table 1. Information on Viet Nam from the FAO Database of Introductions of aquatic species

Genus	Species	Origin	Year of first introduction	Reason for introduction	Who was responsible	Ecological effect	Socio-economic effect
<i>Ameiurus</i>	<i>nebulosus</i>	USA probably	unknown	unknown	unknown	unknown	unknown
<i>Carassius</i>	<i>auratus</i>	China	unknown	aquaculture	unknown	unknown	unknown
<i>Catla</i>	<i>catla</i>	Lao PDR	1984	aquaculture	inter.	undecided	undecided
<i>Cirrhinus</i>	<i>mrigala</i>	Lao PDR	1984	aquaculture	inter. organization		
<i>beneficial</i>	<i>beneficial</i>						
<i>Clarias</i>	<i>garipepinus</i>	Central Africa	1974	aquaculture	private sector	beneficial	beneficial
<i>Ctenopharyngodon</i>	<i>idella</i>	China	1958	aquaculture	government	beneficial	beneficial
<i>Cyprinus</i>	<i>carpio</i>	Hungary	1969, 1975	aquaculture	government	beneficial	beneficial
<i>Hypophthalmichthys</i>	<i>molitrix</i>	China	1958	aquaculture	government	beneficial	beneficial
<i>Hypophthalmichthys</i>	<i>nobilis</i>	China	1958	aquaculture	government	beneficial	beneficial
<i>Labeo</i>	<i>rohita</i>	Lao PDR	1982, 1984	aquaculture	inter. organization	beneficial	beneficial
<i>Mylopharyngodon</i>	<i>piceus</i>	China	unknown	aquaculture	unknown	unknown	unknown
<i>Oreochromis</i>	<i>niloticus</i>	Taiwan islands province of China, Philippines, Thailand	1973, 1989, 1994	aquaculture	inter. organization	beneficial	beneficial
<i>Oreochromis</i>	<i>mossambicus</i>	Africa, Philippines	1951, 1955	aquaculture	private		
<i>Pomacea</i>	<i>canaliculata</i>	Asia	1988	ornamental	unknown		
<i>Colossoma</i>	<i>brachypomum</i>	China	1999	aquaculture	farmers/ private	unknown	unknown
<i>Sciaenops</i>	<i>ocellatus</i>	China	1999	research/ aquaculture	government	unknown	unknown
<i>Crassostrea</i>	<i>gigas</i>	China, Australia	2002	research/ aquaculture	government	unknown	unknown
<i>Penaeus</i>	<i>vannamei</i>	America, China	2001	aquaculture	private	unknown	unknown
<i>Oreochromis</i>	<i>aureus</i>	China	2002	research	government	unknown	unknown