2005/2

QUARTERLY AQUATIC ANIMAL DISEASE REPORT (Asia and Pacific Region)

April-June 2005

Published by the

Network of Aquaculture Centres in Asia-Pacific

Suraswadi Building, Department of Fisheries
Kasetsart University Campus, Ladyao, Jatujak
Bangkok 10900, Thailand

Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla
Rome 00100
Italy

October 2005

Network of Aquaculture Centres in Asia-Pacific and Food and Agriculture Organization of the United Nations. October 2005. *Quarterly Aquatic Animal Disease Report (Asia and Pacific Region)*, 2005/2, April-June 2005. NACA: Bangkok, Thailand.

Contents

Foreword

Improved surveillance and transparent reporting-need of the hour

It is widely recognized that systematic and transparent aquatic animal disease reporting will facilitate and assist development of sustainable aquaculture, promote responsible trade and minimize the risk of regional and international spread of pathogens. The quarterly aquatic animal disease (QAAD) reporting system for the Asia-Pacific region, which came into effect from the 3rd quarter of 1998, is contributing significantly towards accomplishing these goals. As of date, a total of 28 QAAD reports have been published and widely disseminated in the region. The reporting system developed and implemented jointly by NACA/FAO/OIE, is one of the important activities of NACA's regional aquatic animal health management program. The quality of reports and epidemiological comments provided by 21 participating countries has improved significantly over the years. The Regional Advisory Group on Aquatic Animal Health has re-emphasized the need to further strengthen regional reporting for a number of reasons such as:

- its scope is not only to report to OIE;
- it is especially relevant to the region;
- fisheries authorities, and not only livestock authorities, are involved in the reporting;
- regional reporting has promoted national surveillance and reporting in some countries ;
- it covers diseases of regional importance even if they are not listed by the OIE;
- it creates awareness of aquatic animal health problems and serves as an early warning system for other countries;
- it highlights the need for capacity building and for prioritization of resources, as well as supporting strategy development; and
- it has significantly contributed to the improvement of disease reporting in the region.

Despite the significant progress made, still considerable efforts are needed to improve surveillance and reporting in the region. Following the inclusion of "infection with KHV" in the regional QAAD list in 2003, increasing number of countries are reporting this disease and few countries have initiated relatively robust surveillance programs. Nevertheless, the disease may be more wide spread than presently reported. On the other hand, some of the emerging diseases that have been included in the regional list (e.g. white tail disease, abalone viral mortality) are known to occur in some of the countries in the region, but are not reported in the QAAD reports.

This is also true with other serious emerging diseases not yet listed in the QAAD (e.g. monodon slow growth syndrome, white body disease in *P.mondon*, streptococcisis, nocardiosis). Under reporting of diseases can have serious consequence to trading partners.

There is a need to revitalize the disease reporting process in some of the countries by embarking on new initiatives and country specific programs. This should specifically address issues of developing a sustainable process to suit the existing resources of the country. Countries should consider to strengthen national aquatic animal health networks, make effective use of the existing information (e.g. research publications, progress reports of research institutions, conference abstracts and proceedings, reports of private sector laboratories), improve communication between national coordinator and aquatic animal health personnel, build capacity and awareness on level I diagnosis and implement simple and practical surveillance systems based on level I diagnosis. Commitment and proactive approaches by participating countries can further strengthen the regional reporting and make it more useful to the region and the world at large.

Reports Received by the NACA Secretariat

Country: Australia Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	-(2004)	-(2004)	-(2004)		1
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	+	-(2005)	-(2005)	II	2
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-(2005)	-(2005)	-(2005)		3
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	-(2001)	-(2001)	-(2001)		4
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	0000	0000	0000		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	-(2004)	-(2004)	-(2004)		5
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	+	+?	-(2005)	III	6
5. Infection with *Perkinsus olseni/atlanticus* [b/])	+	+	+	II	7
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	0000	0000	0000		
3. Yellowhead disease (YH virus, gill-associated virus)	0000/+	0000/+	0000/+	III	8
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	-(2004)	-(2004)	-(2004)		9
5. Infectious hypodermal and haematopoietic necrosis	-(2004)	-(2004)	-(2004)		10
6. Spawner-isolated mortality virus disease	-(?)	-(?)	-(?)		11
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Epizootic haematopoietic necrosis was not reported this period despite passive surveillance, but is known to have previously occurred in Victoria (last year reported 2004), New South Wales (last year reported 2003) and South Australia (last year reported 1992). Targeted surveillance and never reported in Tasmania. Passive surveillance and never reported in Northern Territory, Queensland or Western Australia. Annual occurrence of the disease in the Australian Capital Territory, but no laboratory confirmation.
2	**Viral encephalopathy and retinopathy** **Reported in Queensland** in April 2005. Passive surveillance: **In**; a) 19 day old barramundi (*Lates calcarifer*) b) 90 day+ old barramundi cod (*Cromileptes altivelis*); 1. **Clinical signs-** a. darkening, lying on their sides, abnormal swimming at water surface, and had empty stomachs b. darkening, enlarged abdomens with ascites; 2. **Pathogen-** betanodavirus; 3. **Mortality rate-** a. 90%; b. 400/day; 4. **Economic loss** a. **n/a** b. **n/a** 5. **Geographic extent** a. one tank b. one nursery tank 6. **Containment measures** a. not required, occurrence in endemic area; b. not required, occurrence in endemic area; 7. **Laboratory confirmation** a. Histopathology; b. Histopathology; 8. **Publications-** Unpublished. Not reported this period despite targeted surveillance from New South Wales (last reported first quarter 2005) and South Australia (last year reported 2004). Not reported this period despite active surveillance from Northern Territory (last year reported 2004) and Tasmania (last year reported 2000). Not reported this period despite passive surveillance from Western Australia, but reported this quarter to have occurred in March 2005. Never reported from Victoria despite passive surveillance. No information available in the Australian Capital Territory.

3	Epizootic ulcerative syndrome was not reported during this period despite passive surveillance, but is known to have occurred in New South Wales (last reported first quarter 2005), Northern Territory and Queensland (last year reported 2004) and Victoria (last year reported 2002). Passive surveillance and never reported in South Australia and Tasmania. Not reported this quarter but considered to be endemic in Western Australia. No information available in the Australian Capital Territory.
4	Enteric septicaemia of catfish was not reported this quarter but is known to have occurred in zebrafish (*Brachydanio rerio*) in PC2 containment in Tasmania (last year reported 2001). Never reported in New South Wales, Northern Territory, Queensland, South Australia and Victoria despite passive surveillance. No information available in the Australian Capital Territory and Western Australia
5	*Mikrocytos roughleyi:* Not reported during this period despite passive surveillance, but known to have previously occurred in New South Wales (last year reported 2004) and Western Australia (last year reported 1996). Considered enzootic in Queensland but lack of diagnostic submissions. Active surveillance and never reported in Tasmania. Passive surveillance and never reported in Northern Territory, South Australia and Victoria. No information available in Australian Capital Territory (no marine water responsibility).
6	***Marteilia sydneyi:*** **Reported in New South Wales** in April and possibly continued into May 2005. Ceased by June 2005. Targeted surveillance: 1. **In** approximately 1-4 year old Sydney rock oysters (*Saccostrea glomerata*); 2. **Clinical signs-** mass mortality on affected leases*;* 3. **Pathogen-** *Marteilia sydneyi* 4. **Mortality rate-** up to 100% on affected leases; 5. **Economic loss-** estimated AU$3.2 million standing stock loss; further AU$8 million clean-up cost 6. **Geographic extent-** Hawkesbury River 7. **Containment measures-** Movement of oysters from known infected waterways prohibited. Entire Hawkesbury River closed for movement of oysters out of this system; 8. **Laboratory confirmation-** Diagnosis made by PCR and hemacolour stained imprint; 9. **Publications-** Unpublished. Not reported this period despite passive surveillance, but known to have previously occurred, in Queensland (last year reported 2004) and Western Australia (last year reported 1994). Active surveillance and never reported in Tasmania. Passive surveillance and never reported in Northern Territory, South Australia or Victoria. No information available in the Australian Capital Territory (no marine water responsibility).
7	***Perkinsus olseni/atlanticus*** **Reported in New South Wales** in April, May and June 2005. Targeted surveillance: 1. **In-** wild (but not cultured) black lip abalone (*Haliotis rubra)*; 2. **Clinical signs-** no unusual signs reported*;* 3. **Pathogen-** *Perkinsus olseni*; 4. **Mortality rate-** low, all age classes; 5. **Economic loss-** cumulative estimate ~AU$ 3 million; 6. **Geographic extent-** Port Stephens to Jervis Bay; 7. **Containment measures-** fishing closure of area to prevent translocation of stock; 8. **Laboratory confirmation-** Diagnosis made by Rays thioglycollate media and histopathology; 9. **Publications-** Unpublished. **Reported in South Australia** in April, May and June 2005. Targeted surveillance: 1. **In** wild (but not cultured) black lip abalone (*Haliotis rubra)*. 2. **Clinical signs-** Pustules on epipodium (normal clinical signs of perkinsosis in abalone); 3. **Pathogen-** *Perkinsus olseni*; 4. **Mortality rate-** no mortalities observed, some morbidity associated with infection. Infections are ongoing; 5. **Economic loss-** unknown; 6. **Geographic extent-** known from lower Eyre Peninsula; 7. **Containment measures-** none. Open system with no geographic features to indicate that zoning would be successful; 8. **Laboratory confirmation-** Diagnosed by histology and RFTM. Molecular studies ongoing; 9. **Publications-** Unpublished.

	Not reported this quarter from Western Australia despite targeted surveillance, but known to have previously occurred in wild, but not in cultured *Haliotis* spp. (last year reported 2003). Active surveillance and never reported in Tasmania. Passive surveillance and never reported in Northern Territory, Queensland and Victoria. No information available in the Australian Capital Territory (no marine water responsibility).
8	Yellowhead virus: Active surveillance and never reported in the Northern Territory. Passive surveillance and never reported in New South Wales, Queensland, South Australia, Victoria and Western Australia. No information available from the Australian Capital Territory (no marine water responsibility) and Tasmania (susceptible species not present). **Gill-associated virus** 1. **Reported in Northern Territory** in April, May and June 2005. Active surveillance: 2. **In** *Penaeus monodon* (wild sourced broodstock in captivity); 3. **Clinical signs-** nil; 4. **Pathogen-** gill-associated virus; 5. **Mortality rate-** nil; 6. **Economic loss-** unknown; 7. **Geographic extent-** open marine waters; 8. **Containment measures-** not applicable; 9. **Laboratory confirmation-** PCR; 10. **Publications-** nil. 1. **Reported in Western Australia** in June 2005. Active surveillance: 2. **In** post larvae *Penaeus monodon* (submitted for translocation screening) and broodstock from Joseph Bonaparte Gulf; 3. **Clinical signs-** nil; 4. **Pathogen-** gill-associated virus; 5. **Mortality rate-** nil;` 6. **Economic loss-** not reported; 7. **Geographic extent-** marine waters; 8. **Containment measures-** all stock destroyed. Permits to collect broodstock from Joseph Bonaparte Gulf suspended; 9. **Laboratory confirmation-** diagnosed by 2 step PCR; 10. **Publications-** Unpublished Not reported this period despite passive surveillance, but known to have occurred previously in New South Wales (last year reported 2003). Gill-associated virus is considered endemic in Queensland where the lack of a clear case definition, of readily available detection tests and an apparent role for mixed virus infections, make any conclusion about the incidence of GAV-related epizootics impossible. Passive surveillance and never reported in South Australia and Victoria. No information available in Australian Capital Territory (no marine water responsibility) and Tasmania (susceptible species not present).
9	Spherical baculovirosis: Not reported this period despite passive surveillance, but known to have occurred previously in Queensland (last reported in September 2004), New South Wales and Western Australia (last year reported 2002). Never reported despite passive surveillance in Northern Territory, South Australia and Victoria. No information available in the Australia Capital Territory (no marine water responsibility) and Tasmania (susceptible species not present).
10	Infectious hypodermal and haematopoietic necrosis virus was not reported this period. This virus is known to have previously occurred in Northern Territory (last year reported 2003) and in Queensland (last year reported 2004). No disease has been associated with the virus. The Australian virus is considered to be closest to the avirulent Madagascar strain. Passive surveillance and never reported in New South Wales, South Australia, Victoria and Western Australia. No information available in Australian Capital Territory (no marine responsibility) and Tasmania (susceptible species not present).
11	The lack of a clear case definition, of readily available detection tests and an apparent role for mixed virus infections, make any conclusion about the incidence of SMV-related epizootics impossible.

2. New aquatic animal health regulations introduced within past six months (with effective date): None

Country: Bangladesh Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. *Oncorhynchus masou* virus disease	***	***	***		
4. Spring viraemia of carp	***	***	***		
5. Viral haemorrhagic septicaemia	***	***	***		
6. Viral encephalopathy and retinopathy	***	***	***		
7. Infectious pancreatic necrosis	***	***	***		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	***	***	***		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region	***	***	***		
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	***	***	***		
2. White spot disease	+	+	-	I	1
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	***	***	***		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.*Lernaea* spp				I	2
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	White spot disease occurrence in Penaeid shrimp was reported from Paikgacha, Ashashuni, Koira Upazilla of Southern region during April and May
2	Occurrence of *Larnaea* spp. was first ever reported in the country. It was first observed in ornamental fish in tank and cage in Uzirpur Upazilla of Barisal district. The adjacent nursery pond was also affected with the parasite. The intensity of infestation was heavy. Economic loss was estimated as 1 million taka (15873.11US $) Salt bath was applied as preventive measures. All the tanks and cages were cleaned with disinfectant.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Hong Kong China April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	II	
2. Infectious haematopoietic necrosis	0000	0000	0000	III	
3. *Oncorhynchus masou* virus disease	0000	0000	0000	II	
4. Spring viraemia of carp	0000	0000	0000	III	
5. Viral haemorrhagic septicaemia	0000	0000	0000	III	
6. Viral encephalopathy and retinopathy	+	+	+?	III	1.
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	0000	0000	0000		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	-	+	+	III	2.
11. Enteric septicaemia of catfish	0000	0000	0000	III	
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	(2002)			II	
13. Grouper iridoviral disease	+	+	-	III	3.
14. Infection with koi herpesvirus	-	-	-	III	
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000	II	
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000	II	
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000	II	
4. Infection with *Marteilia sydneyi*	0000	0000	0000	II	
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000	II	
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000	II	
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000	III	
2. White spot disease	-	+?	+?	III	4.
3. Yellowhead disease (YH virus, gill-associated virus)	0000	0000	0000	III	
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000	II	
5. Infectious hypodermal and haematopoietic necrosis	0000	0000	0000	II	
6. Spawner-isolated mortality virus disease	0000	0000	0000	II	
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000	II	
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000	II	
9. Baculoviral midgut gland necrosis	0000	0000	0000	II	
10.White tail disease (MrNV and XSV)	0000	0000	0000	II	
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Three disease cases caused by Nervous Necrosis Virus were identified by virus isolation and/or PCR during the three month period. The species involved were green grouper and giant grouper. NNV was detected in one other case involving red snapper, but there were no disease symptoms referable to NNV infection.
2	There were three cases of disease caused by RSIV by PCR, all involving green grouper.
3	There was one disease case involving green grouper that was caused by Grouper Iridovirus. There was also one case of GIV infection in green grouper but no evidence of disease caused by GIV.
4	White Spot Virus was detected in four cases involving health certification testing of apparently healthy red lobsters intended for the ornamental fish export industry. Health certificate was not issued for infected batches.

2. New aquatic animal health regulations introduced within past six months (with effective date): None

Country: India Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	0000	0000	0000		
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000		
13. Grouper iridoviral disease	0000	0000	0000		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	+()	+()	+()	I	1
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
?	Suspected by reporting officer but presence not confirmed	-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Reported only from very limited areas in the states of Karnataka, Goa and Gujarat

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Indonesia Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. *Oncorhynchus masou* virus disease	***	***	***		
4. Spring viraemia of carp	***	***	***		
5. Viral haemorrhagic septicaemia	***	***	***		
6. Viral encephalopathy and retinopathy	+	+	+	III	1
7. Infectious pancreatic necrosis	***	***	***		
8. Epizootic ulcerative syndrome (EUS)	***	***	***		
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	***	***	***		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	-	-	-		
14. Infection with koi herpesvirus	-	-	+	III	2
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	+	+	+	III	3
2. White spot disease	+	+	+	III	4
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)					
5. Infectious hypodermal and haematopoietic necrosis	+	+	+	III	5
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1. Pink Shrimp (unknown disease)			+		6

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
?	Suspected by reporting officer but presence not confirmed	-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.
c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	VNN disease infected in humpback grouper (*Cromileptes altvelis*) and tiger grouper (*Ephinephelus fuccoguttatus*) reared in hatchery and net cage culture in Situbondo EastJava
2	Due to KHV still detected in Cirata Reservoar, though not so severe (5 – 10 % mortality of Common carp in net cage culture).
3	Samples of *L.vannamei* on post larvae stage which sent by farmer from East Java infected TSV disease and detected by PCR method
4	WSSV was detected in shrimp *P. monodon* in East Java (Bangil, Banyuwangi and Situbondo), and caused moderat mortality in shrimp ponds. WSSV disease also infected in *L. vanamei* on juvenile and post larvae stage. This disease was detected by PCR method.
5	IHHNV was infected in *L. vannamei* at East Java. This disease was detected by Histopatology and PCR method
6	It's called pink disease because the color of shrimp body is pink. This disease was detected in *L. vannamei* culture in Banyuwangi, East Java. Multiple pathogens like IHHNV, HPV and bacterial were detected in several organs by histophatology. Disease caused mild to severe mortality in ponds at day 28-30 post stock

2. **New aquatic animal health regulations introduced within past six months (with effective date): Nil**

Country: Iran Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	-	-	+	III	1
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	-	-	-		
5. Viral haemorrhagic septicaemia	+	-	-	III	2
6. Viral encephalopathy and retinopathy	0000	0000	0000		
7. Infectious pancreatic necrosis	+	-	-	III	3
8. Epizootic ulcerative syndrome (EUS)	0000	0000	0000		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	-	-	+	III	4
3. Yellowhead disease (YH virus, gill-associated virus)	0000	0000	0000		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	-	-	-		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	1. The origin of disease was unknown 2. Only rainbow trout had been affected 3. Clinical signs were, exophtalmia, petechia, Darkness on back of the body, lordosis, Scoliosis, Cast of anal. 4. The patogen was detected by PCR and it's serotype was unknown 5. Mortality rate was %20-%30 and decresing 6. Economic loss was low 7. The disease was happened in a limited area on a province (Nayshabour and Bojnourd), in june 2005. 8. All of the fishes were deleted and the farm was disinfected 9. The samples were sent to C.V.L of I.V.O for confirmation
2	1. The origion of disease was unknown 2. Rainbow trout had been affected 3. Clinical signs were viremia hemoragic, exophtalmia, Ascit, spleenomegelia 4. The patogen was detected by PCR and it's serotype was unknown 5. Mortality rate was low 6. Economic loss was low. 7. The disease was happened in a limited area in saveh (Markazi province). 8. All of the fishes were deleted and the farm was disinfected 9. The samples were sent to C.V.L of I.V.O for confirmation

3	1. The origion of disease was unknown 2. Only rainbow trout had been affected 3. Clinical signs were, flashing, bilateral exophtalmia, blind, Darkness on back of the body, spiral swim, paile of liver. 4. The patogen was detected by PCR and it's serotype was unknown 5. Mortality rate was %20-%30 6. Economic loss was low. 7. The disease was reported from 3 province in country, ortekand (Khorasan-e-razavi), Saveh (Markazi). Meshkinshahr (Ardabil) 8. All of the fishes were detected and the farm was disinfected 9. The samples were sent to C.V.L of I.V.O for confirmation
4	1. The origion of disease is still unknown, But It may be from water or larve 2. Species affected was *P. Indicus* 3. Clinical signs were stop feeding, slow swimming near the pond's surface, high mortality, white spots on the carapas 4. The patogen was detected by PCR methood 5. Mortality rate was high 6. Economic loss was high 7. The disease happened in Bousher province. 8. All of the affected ponds were disinfected with chlorination. The other sites in country are free of disease 9. The samples were sent to C.V.L of IVO for confirmation

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Japan Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	I	
2. Infectious haematopoietic necrosis	+	+	+	III	
3. *Oncorhynchus masou* virus disease	+	+	-	III	
4. Spring viraemia of carp	0000	0000	0000	I	
5. Viral haemorrhagic septicaemia	-	-	-	I	
6. Viral encephalopathy and retinopathy	-	-	-	I	
7. Infectious pancreatic necrosis	+	+	+	III	
8. Epizootic ulcerative syndrome (EUS)	-	-	-	I	
9. Bacterial kidney disease	+	+	+	III	
10. Red seabream iridoviral disease	+	+	+	III	
11. Enteric septicaemia of catfish	0000	0000	0000	I	
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	+	+	+	II	
13. Grouper iridoviral disease	0000	0000	0000	I	
14. Infection with koi herpesvirus	+	+	+	III	
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000	I	
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000	I	
3. Infection with *Haplosporidium nelsoni*					1
4. Infection with *Marteilia sydneyi*	0000	0000	0000	I	
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000	I	
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	+	+	+	III	
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000	I	
2. White spot disease	-	+	+	III	
3. Yellowhead disease (YH virus, gill-associated virus)	0000	0000	0000	I	
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000	I	
5. Infectious hypodermal and haematopoietic necrosis	0000	0000	0000	I	
6. Spawner-isolated mortality virus disease	0000	0000	0000	I	
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000	I	
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000	I	
9. Baculoviral midgut gland necrosis	0000	0000	0000	I	
10.White tail disease (MrNV and XSV)	0000	0000	0000	I	
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	+	+	+	II	
2. Abalone viral mortality	0000	0000	0000	I	
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	*Haplosporidium nelsoni* was detected at 2% positive in Pacific oyster (*Crassostrea gigas*) spats collected from the North-eastern part of Japan (see OIE Disease Information on the 5 October, 2001 on the OIE internet homepage). However, mortality or disease of Pacific oyster associated with *H.nelsoni* has not been reported at all. Therefore, the symbol is not described at the portion of Haplosporidiosis in this report form.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Malaysia Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000	III	1
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	0000	0000	0000		
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	(1987)	(1987)	(1987)		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000		
13. Grouper iridoviral disease	0000	0000	0000		
14. Infection with koi herpesvirus	0000	0000	0000	III	2
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	-	-	-		
2. White spot disease	-	+	+	III	1
3. Yellowhead disease (YH virus, gill-associated virus)	-	-	-		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	-	-	-		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	-		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Fifty-two pieces of aquarium fishes (Black moor, Colico fantail, Red carp, Red white fantail and gold fish) were examined for presence of SVC using virus isolation and were found to be negative through a survey in UPM from April to June 2005
2	Eight-one pieces of Koi were examined for KHV using PCR through a survey from April to June 2005 in UPM and was found all specimen were found to be negative
3	Two hundred and eighteen cases were screened for white spot disease from April to June in UPM and 4 cases were positive. The positive cases were: 1 case from a grownouts from Tawau, Sabah in April; one case from PL from a Penang hatchery; and 2 cases from *P. vannamei* growthouts from Lukut, N. sembilan but PL were originated from Setiawan, Perak One clinical case were diagnosed in Banting, Selangor by PCR & simple test kit on *Panaeus vannamei.* Mortality rate was high. Sample are taken by officers from the Fish Health Management and Quarantine, KLIA and diagnosed immediately. The origin of naupli is unknown.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Myanmar Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. *Oncorhynchus masou* virus disease	***	***	***		
4. Spring viraemia of carp	***	***	***		
5. Viral haemorrhagic septicaemia	***	***	***		
6. Viral encephalopathy and retinopathy	***	***	***		
7. Infectious pancreatic necrosis	***	***	***		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	***	***	***		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	-	-	-		
2. White spot disease	-	+()	-	III	1
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	***	***	***		
5. Infectious hypodermal and haematopoietic necrosis	-	+()	+()	III	2
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	A total of 42 shrimp samples of *Penaeus monodon* have been tested at PCR lab of DOF of which 9 samples (21.42%) were recorded as WSSV positive.
2	A total of 42 shrimp samples of *Penaeus monodon* have been tested at PCR lab of DOF of which 3 samples (7.14%) were recorded as IHHNV positive

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Nepal Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. *Oncorhynchus masou* virus disease	***	***	***		
4. Spring viraemia of carp	***	***	***		
5. Viral haemorrhagic septicaemia	***	***	***		
6. Viral encephalopathy and retinopathy	***	***	***		
7. Infectious pancreatic necrosis	***	***	***		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	***	***	***		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	***	***	***		
2. White spot disease	***	***	***		
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	***	***	***		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
?	Suspected by reporting officer but presence not confirmed	-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Pakistan Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. *Oncorhynchus masou* virus disease	***	***	***		
4. Spring viraemia of carp	***	***	***		
5. Viral haemorrhagic septicaemia	***	***	***		
6. Viral encephalopathy and retinopathy	***	***	***		
7. Infectious pancreatic necrosis	***	***	***		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	***	***	***		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	***	***	***		
2. White spot disease	***	***	***		
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	***	***	***		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1. Lernaeasis	+	-	-	I	1
2.Fin and Tail rot		+	-	II	2
3. Abdominal Dropsy			+	III	3

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Two cases of lernaeosis were reported from private fish farms (infected area 1.5 acres). Dipterex @ 0.15 ppm was suggested to be used in infected ponds.
2	Seven cases of fin and tail rot was reported from private fish farms (total infected area 12 acres). Bath of choloromycetin 60m/lit for 5 minutes was suggested
3	Three cases of abdominal dropsy (bacterial hemorrhagic septicaemia) were reported from private fish farms (Total infected area 32 acres). Oxytetracycline was suggested for the treatment of disease fish @50mg/kg fish body weight for 5 days.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Philippines Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	-	+	+	III	1
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	***	***	***		
13. Grouper iridoviral disease	***	***	***		
14. Infection with koi herpesvirus	***	+?	+?	III	2
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	+	+	+	III	3
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	***	***	***		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	***	***	***		4
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
?	Suspected by reporting officer but presence not confirmed	-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	*Epinephelus sp*., (grouper) from Iloilo and Kalibo showed positive results for VER by PCR (Nested-Step). Examination conducted by SEAFDEC-AQD, Fish Health Lab.
2	PCR test (May-June) of the gills taken by non-lethal sampling from koi (10 juveniles) contained in the importers quarantine facility showed negative results after 1st step PCR. However, some samples showed positive results for KHV after nested-step PCR. The imported stocks were all apparently healthy (showed no external gross lesions/abnormalities, abnormal manifestations)
3	There were 29 (batches/samples) of *P. monodon* (post larva, juvenile/grow-out stage) that showed positive results for White spot virus by PCR test (two step and Nested-step). Examinations conducted by BFAR-Central Fish Health lab, SEAFDEC-AQD, Fish Health lab. and NPPMCI lab.
4	Information available was in 1998, when samples of *P. monodon* from selected grow-out farms sent to Australia in October 1988 (Dr. L. Owens, James Cook University). Examination of the samples by *in-situ* hybridization using Spawner Mortality Virus (SMV) probe produced positive results.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Republic of Korea Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	-	+	-	III	1
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	?	?	?		
5. Viral haemorrhagic septicaemia	+	+	+	III	2
6. Viral encephalopathy and retinopathy	+	+	+	III	3
7. Infectious pancreatic necrosis	?	+	+	III	4
8. Epizootic ulcerative syndrome (EUS)	0000	0000	0000		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	-(2004)	-(2004)	-(2004)		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000		
13. Grouper iridoviral disease	-	-	-		
14. Infection with koi herpesvirus	(1998)	(1998)	(1998)		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	-(2004)	-(2004)	-(2004)		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	+	+	+		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	-(2004)	-(2004)	-(2004)		
3. Yellowhead disease (YH virus, gill-associated virus)	0000	0000	0000		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	0000	0000	0000		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Infectious haematopoietic necrosis was detected in rainbow trout (*Oncorhynchus mykiss*) in four farms in Gangwon-do and one farm in Gyeongsangbuk-do by RT-PCR during surveillance. Not reported this period despite surveillance in rainbow trout in Chungcheongbuk-do.
2	Viral haemorrhagic septicaemia was detected in flounder (*Paralichthys olivaeceus*) in three farms in Jeollanam-do by RT-PCR during surveillance. Not reported this period despite surveillance in flounder in Gyeongsangbuk-do, Gyeongsangnam-do, Jeju island, Ulsan and Busan.
3	Viral encephalopathy and retinopathy was detected in flounder (*Paralichthys olivaeceus*) in five farms in Ulsan and Busan and one farm in Gyeongsangbuk-do by RT-PCR during surveillance. Not reported this period despite surveillance in flounder in Jeollanam-do, Gyeongsangnam-do and Jeju island.
4	Infectious pancreatic necrosis was detected in rainbow trout (*Oncorhynchus mykiss*) in three farms in Gangwon-do, two farms in Gyeongsangbuk-do and four farms in Chungcheongbuk-do.by RT-PCR during surveillance.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Singapore Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	+	-	-	III	1
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	0000	0000	0000		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	-	-	+	II	2
13. Grouper iridoviral disease	-	-	-		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	***	***	***		
2. White spot disease	-	-	-		
3. Yellowhead disease (YH virus, gill-associated virus)	***	***	***		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	-	-	-		
5. Infectious hypodermal and haematopoietic necrosis	***	***	***		
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	***	***	***		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Viral encephalopathy and retinopathy was diagnosed in one batch of 10,000 8g-bodyweight tiger grouper fingerlings originally imported from Indonesia, by cell culture and RT-PCR. The tiger groupers were clinically healthy at the time of sampling that forms part of a surveillance programme on imported marine food fish fingerlings.
2	Epitheliocystis was diagnosed histologically in a batch of 4-month-old milkfish which was originally imported from Taiwan. This is most likely an incidental infection as the milkfish were clinically healthy and there is very little associated gill pathology.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Sri Lanka Period: January-March 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	0000	0000	0000		
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	(1998)	(1998)	(1998)		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000		
13. Grouper iridoviral disease	0000	0000	0000		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	+	+	+	III	1
3. Yellowhead disease (YH virus, gill-associated virus)	(1998)	(1998)	(1998)		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	0000	0000	0000		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Species affected-*Penaeus monodon*. Disease Characteristics-White spots on the carapace, lesions, mortality. Pathogen-White spot syndrome virus. Mortality rate-high. Preventive measures taken-Screening and destroying positive farms and tanks

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Sri Lanka Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	0000	0000	0000		
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-	-	-	I	1
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000		
13. Grouper iridoviral disease	0000	0000	0000		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	0000	0000	0000		
2. White spot disease	+	+	+	III	2
3. Yellowhead disease (YH virus, gill-associated virus)	-	-	-	I	3
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	0000	0000	0000		
5. Infectious hypodermal and haematopoietic necrosis	0000	0000	0000		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

+	Disease reported or known to be present	+( )	Occurrence limited to certain zones
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
		0000	Never reported
?	Suspected by reporting officer but presence not confirmed	-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Suspected cases were reported in last few years. But not confirmed
2	PCR amplification results from laboratories indicate that P.monodon samples (PL and broodstock) from hatcheries and adult stages from farms at North Western province of the country showed positive results. Authorities have been established a monitoring unit for monitoring and extension purposes
3	Suspected cases were reported in last few years. But not confirmed.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Thailand Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	III	
2. Infectious haematopoietic necrosis	0000	0000	0000	III	
3. *Oncorhynchus masou* virus disease	0000	0000	0000	III	
4. Spring viraemia of carp	0000	0000	0000	III	
5. Viral haemorrhagic septicaemia	0000	0000	0000	III	
6. Viral encephalopathy and retinopathy	-	-	-	III	
7. Infectious pancreatic necrosis	(1985)	(1985)	(1985)	III	
8. Epizootic ulcerative syndrome (EUS)	-	-	-	II	
9. Bacterial kidney disease	***	***	***		
10. Red seabream iridoviral disease	0000	0000	0000	III	
11. Enteric septicaemia of catfish	***	***	***		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	0000	0000	0000	II	
13. Grouper iridoviral disease	0000	0000	0000	III	
14. Infection with koi herpesvirus	+	+	+	III	1
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Mikrocytos roughleyi*	***	***	***		
3. Infection with *Haplosporidium nelsoni*	***	***	***		
4. Infection with *Marteilia sydneyi*	***	***	***		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	***	***	***		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	-	+	+	III	2
2. White spot disease	+	-	+	III	3
3. Yellowhead disease (YH virus, gill-associated virus)	-	+	+	III	4
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	?	?	?	II	
5. Infectious hypodermal and haematopoietic necrosis	+	+	+	III	5
6. Spawner-isolated mortality virus disease	***	***	***		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	***	***	***		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	***	***	***		
9. Baculoviral midgut gland necrosis	***	***	***		
10.White tail disease (MrNV and XSV)	0000	0000	0000	I	
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	***	***	***		
2. Abalone viral mortality	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])

Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease

Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*

Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	Seven koi carp companies were affected by KHVD during this report period. The kois with disease clinical signs in 4 companies had been destroyed while kois in the other 3 companies were quarantine as they had no disease clinical signs. After the quarantine, kois had been sampled and re-tested for KHV using nested PCR and results were negative. Koi carps returned from koi contest have been suspected to spread the KHVD. The nested PCR technique of KHV has been developed from Gilad *et al*., (2002) in order to detect healthy carrier kois. No viruses could be isolated from the diseased specimens in KF-1 cells. The Department of Fisheries, a competent authority, has developed and implemented the KHVD control and eradication program immediately in March 2005 as follows; (1) the diseased kois with positive-nested PCR will be destroyed; (2) the healthy kois with positive-nested PCR will be quarantined and re-tested within 10 days; (3) if the second nested PCR result is still positive, the kois will be quarantined for further 30 days; (4) if the third nested PCR result is still positive, the healthy carrier kois will be destroyed. Resulting of the above program, no KHV could be detected and no KHVD has occurred since August 2005. We learned that some affected kois could recover and the herpesviral DNA could not be detected if the kois had been maintained in suitable environments and had no co-infection with other pathogens. Currently, kois in 38 koi production farms designated for exportation that have never been in association with or in contact directly or in-directly with the kois that returned from the koi contest are now still safe and free from KHVD. Bio-security practice has been implementing at different levels in the koi production farms to prevent KHV.
2	A total of 352 shrimp PL samples had been tested at PCR Laboratories of the DOF before stocking in culture ponds under the health management and disease control strategies. 9 specimens or 2.6% were recorded as RT-PCR positive or carrying TSV genes that advised to be destroyed.
3	A total of 2,110 shrimp PL samples had been tested at PCR Laboratories of the DOF before stocking in culture ponds under the health management and disease control strategies. 8 specimens or 0.4% were recorded as PCR positive or carrying SEMBV genes that advised to be destroyed.

4	A total of 106 shrimp PL samples had been tested at 3 PCR Laboratories of the DOF before stocking in culture ponds under the health management and disease control strategies. 6 specimens or 5.6% were recorded as PCR positive or carrying YHV genes that advised to be destroyed.
5	A total of 1,366 shrimp PL samples had been tested at PCR Laboratories of the DOF before stocking in culture ponds under the health management and disease control strategies. 249 specimens or 18% were recorded as PCR positive or carrying IHHNV genes that advised to be destroyed. The tested specimens did not show disease clinical signs and there was no outbreak due to IHHNV infection in the hatcheries.

2. New aquatic animal health regulations introduced within past six months (with effective date): Nil

Country: Vietnam Period: January-March 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	+	+	+	II, III	1
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	-	-	-		
13. Grouper iridoviral disease	-	-	-		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	-	-	-		
2. White spot disease	-	+	+	II, III	2
3. Yellowhead disease (YH virus, gill-associated virus)	-	-	-		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	+	+	+	II, III	3
5. Infectious hypodermal and haematopoietic necrosis	-	-	-		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	VNN was detected in broodstock and grow out in grouper Cat ba, Vung tau. Mortality sometimes observed at small grouper cultured cages. PCR, histopathology and cell cultured methods were used to detect.
2	White spot disease was found in many provinces however at this time, no high mortality observed
3	Spherical baculovirus also detected by PCR and histopathological methods. During this period the disease occurred in some provinces only.

2. New aquatic animal health regulations introduced within past six months (with effective date): None

Country: Vietnam Period: April-June 2005

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	April	May	June		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. *Oncorhynchus masou* virus disease	0000	0000	0000		
4. Spring viraemia of carp	0000	0000	0000		
5. Viral haemorrhagic septicaemia	0000	0000	0000		
6. Viral encephalopathy and retinopathy	+	+	+	II, III	1
7. Infectious pancreatic necrosis	0000	0000	0000		
8. Epizootic ulcerative syndrome (EUS)	-	-	-		
9. Bacterial kidney disease	0000	0000	0000		
10. Red seabream iridoviral disease	0000	0000	0000		
11. Enteric septicaemia of catfish	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
12. Epitheliocystis	-	-	-		
13. Grouper iridoviral disease	-	-	-		
14. Infection with koi herpesvirus	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Mikrocytos roughleyi*	0000	0000	0000		
3. Infection with *Haplosporidium nelsoni*	0000	0000	0000		
4. Infection with *Marteilia sydneyi*	0000	0000	0000		
5. Infection with *Perkinsus olseni/atlanticus* [b/])	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Taura syndrome	+	+	-	III	2
2. White spot disease	+	+	+	II, III	3
3. Yellowhead disease (YH virus, gill-associated virus)	-	-	-		
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	+	+	+	II, III	4
5. Infectious hypodermal and haematopoietic necrosis	-	-	-		
6. Spawner-isolated mortality virus disease	0000	0000	0000		
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	0000	0000	0000		
Non OIE-listed diseases relevant to the region					
8. Necrotising hepatopancreatitis	0000	0000	0000		
9. Baculoviral midgut gland necrosis	0000	0000	0000		
10.White tail disease (MrNV and XSV)	0000	0000	0000		
UNKNOWN DISEASES OF A SERIOUS NATURE					
1. Akoya oyster disease	0000	0000	0000		
2. Abalone viral mortality	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE[c/])
Finfish: Channel catfish virus disease; Infectious salmon anaemia; Piscirickettsiosis; Gyrodactylosis (*Gyrodactylus salaris*); White sturgeon iridoviral disease
Molluscs: Infection with *Bonamia ostreae*; *Marteilia refringens*; *Mikrocytos mackini*; *Perkinsus marinus*; *Candidatus Xenohaliotis californiensis*; *Hapolosporidium costale*
Crustaceans: Crayfish plague (*Aphanomyces astaci*)

a/ Please use the following symbols:

		+( )	Occurrence limited to certain zones
+	Disease reported or known to be present	***	No information available
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	0000	Never reported
		-	Not reported (but disease is known to occur)
?	Suspected by reporting officer but presence not confirmed	(year)	Year of last occurrence

b/ *Perkinsus olseni* and *P.atlanticus* are now considered conspecific. They may have different host species in different regions, and countries are encouraged to provide epidemiological comments where either of these agents occur.

c/ If there is suspicion or confirmation of any of these diseases, they must be reported immediately, because the region is considered free of these diseases.

1. Epidemiological comments:

(Comments should include: 1) Origin of the disease or pathogen (history of the disease); 2) Species affected; 3) Disease characteristics (unusual clinical signs or lesions); 4) Pathogen (isolated/sero-typed); 5) Mortality rate (high/low; decreasing/increasing); 6) Death toll (economic loss, etc); 7) Size of infected areas or names of infected areas; 8) Preventive/control measures taken; 9) Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); 10) Published paper (articles in journals/website, etc). and 11) Unknown diseases: describe details as much as possible.)

Comment No.	
1	VNN was detected from broodstock and fries of grouper in Cat ba, Vung tau by PCR, histopathology and cell culture methods. The cell lines SSN1 and E11 were used for VNN detection at RIA1 and RIA2.
2	Only few white leg shrimp samples showed positive with taura syndrome virus both in post larvae and grow out stage. No high mortality observed.
3	The disease found in different provinces culturing *P.monodon* .PCR and histopathology were used to detect WSD. The disease caused different levels of loss for farmers depending location and level of investment.
4	The disease was found in many *P.monodon* cultured areas but did not cause high mortality.

2. New aquatic animal health regulations introduced within past six months (with effective date): None

Hemorrhagic disease of grass carp - Disease card[1]

Jiang Yulin[2]

Pathogen Information

1. Causative Agent

1.1. Pathogen Type
Virus

1.2. Disease Name and Synonyms
Hemorrhagic disease of grass carp

1.3. Pathogen Common Name and Synonyms
Grass carp reovirus (GCRV)
Grass carp hemorrhagic virus (GCHV)
Fish reovirus (FRV)

1.4. Taxonomic Affiliation

1.4.1 Family: Reoviridae

1.4.2 Genus: Aquareovirus

1.5. Description of the Pathogen
Hemorrhagic disease was first discovered in a fish farm of Hubei Province, China, in 1972. It was considered to be a viral disease after etiological studies were reported in 1978. In 1980, virus particles were observed in kidney sections of infected grass carp, and the virus was named grass carp reovirus in 1984. The virus is icosahedral with a diameter of 65-70 nm with double capsids, no envelope, and contains 11 segments of double-stranded RNA. The virus is stable to chloroform treatment, acidic (pH 3) or alkaline (pH 10) conditions and heating at 56ºC for 30 min. Up to now, 2 serotypes have been found in China: GV-873 was found in Hunan province and GV-14 was found in Hubei province. They possess different patterns of 11 segments of dsRNA and different antigenicity.

1.7. Pathogen Environment
Freshwater

2. **Modes and Routes of Transmission**

Horizontal transmission (Water-borne or through ectoparasites). It is proven that the infection is transmitted horizontally from infected fish with clinical signs (such as sick fingerlings of grass carp and black carp) and/or carriers without clinical signs (such as silver carp, bighead carp, common carp and adult grass carp) through the water or through ectoparasites (e.g. *Argulus*)

---

[1] Hemorrhagic disease of grass carp - Disease card. NACA, Bangkok, Thailand. 8 pp

[2] Prof. Jiang Yulin, Director, Laboratory of Aquatic Animal Diseases, Shenzhen Exit and Entry Inspection and Quarantine Bureau, 2049 Heping Road, Shenzhen 518001, China PR Tel: 86-755-25592980, Fax:86-755-25588630
E-mail: szapqbxi@163.net

3. Host Range

3.1. Host Type

Grass carp (*Ctenopharyngodon idella*)
Black carp (*Mylopharyngodon piceus*)
Topmouth gudgeon (*Pseudorasbora parva*)

3.2. Other Known or Suspected Hosts

Bighead carp (*Aristichthys nobilis*), silver carp (*Hypophthalmichthys molitrix*), golden carp (*Carassius auratus*) and commom carp (*Cyprinus Carpio*) can carry virus, but do not show clinical signs and mortalities.

3.3. Affected Life Stage

Fry and one-year-old fingerlings are usually infected. Occasionally, infections occur in older fish (2-3 years).

3.4 Additional comments

The disease is highly contagious, and cumulative mortality can approach more than 80% in affected fingerlings of grass carp. Disease usually occurs at high temperatures and most outbreaks occur when water temperature is between 25 and 28^{o}C

4. Geographic Distribution

In China, this disease was first discovered in 1972 and is now widely prevalent in central, southern and eastern China, especially in areas along Yangzhi River. It is possible that the actual geographical range is wider than the known geographical range. Susceptible species inhabiting waters of low temperature may be carriers and do not show clinical signs and mortality. The disease is also known to occur in Vietnam.

Disease Information

1. Clinical Signs and Case Description

1.1. External observation

- Exophthalmia,
- Body color very dark,
- Hemorrhages at the base of fins, gill covers and mouth cavity,
- High mortalities at 25-28^{o}C.

1.2. Internal observation

- Hemorrhages throughout the musculature
- Enteritis (red intestine)
- Hemorrhagic gills or pale gills
- Internally, hemorrhages in organs such as liver, spleen, kidney and intestine.

1.3. Histopathological changes

- Degeneration and necrosis of liver cells
- Hyperemia and hemorrhages in vessels of liver and spleen.

1.4 Differential diagnosis

It is important to distinguish the disease from bacterial red spot disease in grass carp and other bacterial enteritis. Mixed infection with bacteria or secondary bacterial infection can often lead to similar clinical and pathological changes.

1.5 OIE Status

GCRV is not listed by the OIE

2. Social and Economic Significance

Grass carp is an important freshwater fish in China, which accounts for more than 20% of the total freshwater fishery production. Hemorrhagic disease causes serious losses of fingerlings, and only 30% of the fish survive to reach the market size

3. Zoonotic Importance

No data available

4. Diagnostic Methods

4.1. Screening Methods

4.1.1. Level I

There are no diagnostic signs exhibited by sub-clinical carriers.

4.1.2. Level II

Histopathological lesions in sub-clinical carriers are not detectable.

4.1.3. Level III

Virus isolation using CK cells and RT-PCR can be used for detection of carriers. It is easy to detect virus from carrier or sick fish in summer, specially, when water temperature is 25-28^{o}C. It is difficult to detect virus in winter.

4.2. Presumptive Methods

4.2.1. Level I (gross signs)

Increased number of fingerlings of grass carp and black carp show clinical signs and die in summer (22-30^{o}C). Sick fish exhibit some or all of above clinical signs described in section 1.1 and 1.2 under Disease Information.

4.2.2. Level II (light microscopy)

Degeneration and necrosis in liver cells may be observed in histological sections. Hyperemia and hemorrhages in vessels of liver and spleen is also commonly seen.

4.2.3. Level III

By electron microscopy, virus particles that are orderly arranged in a lattice form could be observed in kidney (head-kidney) sections of infected fish.

4.3. Confirmatory Methods

4.3.1. Level I

There are no pathognomonic signs of infection with GCRV.

4.3.2. Level II

There are no suitable methods.

4.3.3. Level III

Isolation of virus from organs of fish and/or detection of viral RNA directly from organs of fish using PCR.

4.3.3.1. Virus Isolation

For virus isolation, the preferred tissue is kidney, spleen and liver of infected or moribund fish. Isolation using CK cells at 25^{o}C for 7 days and blind passage for 2 times. CPE usually appears 3-5 days after inoculation.

4.3.3.2. Nucleic Acid Assay

Reverse-transcription polymerase chain reaction (RT-PCR) assays can be used for identification of virus in cell culture or for detection of viral RNA in organs of fish. Two pairs of specific primers are presently available.

One set amplifies 697 bp in S10 fragment of GCRV-873 strain:

GV873S10R: 5'-ccccg atcat cacca cgat-3'

GV873S10F: 5'-cgcgt tcgct gatgt aagg-3'

Another set amplifies 320 bp in M6 segment of GCRV-14 strain:

GV14S6R: 5'-agttc tcaaa gctga gacag-3'

GV14S6F: 5'-acgtg cgatt ggaag agctt-3'

4.3.3.3. Immunoassays

ELISA is available to identify whether the virus isolated from cell culture is GCRV.

5. Control Methods

5.1 Vaccination

To reduce the serious losses of grass carp fingerlings due to this disease, vaccination has been successfully used. An inactivated (autogenous) vaccine prepared from organs of infected fish has been applied in China. The vaccine can be easily prepared and is effective. Tissue-culture based vaccine is also available in China. As a result of on farm vaccination programs, the mortality of grass carp fingerlings has been significantly reduced.

5.2 Restrictions on movements and transportation of fish

5.3 Destruction of pathogens

To eliminate contaminated pond water as a source of infection, treat water with chlorine prior to draining (OIE, 2003). Restrict release of water into environment from farms

Selected references

Chen Yanxin and Jiang Yulin 1984. Morphological and physico-chemical characterization of the hemorrhagic virus of grass carp. Chinese Sci. Bull. 29: 832-835.

Chen Yanxin, Gao Hanjiao, Jiang Yulin and Wang Yingxi. 1985. A study of pathogenisis of hemorrhage of grass carp and its immunization with inactivated vaccine. Proceedings of the Asian Symposium on Freshwater Fish Culture. Beijing, China. p. 332-342.

Deng Chuxia, Yang Xingqi and Chen Hongxi. 1985b. Susceptibility to grass carp reovirus (GCRV) of several fish cell lines. Acta Hydrobiol. Sini. 9:351-358.

Guo Qionglin and Jiang Yulin. 1993. Histopathological studies of the hemorrhage disease of grass carp infected by two Types of grass carp reovirus. Transactions of Researches on Fish Diseases (No.1). p.7-11.

Jiang Yulin and W.Ahne 1989. Some properties of the etiological agent of the hemorrhagic disease of grass carp and black carp. " Viruses of lower vertebrates " W.Ahne and E.Kurstak (Eds.). Springer-verlag Pub. Berlin, New York, p. 227-240.

Jiang Yulin, Li Yan and Yu Ping. 1991 A preliminary study of immune response of grass carp. Acta Hydrobiol. Sini. 15: 321-326.

Kang Hui, Fan Zhigang, Yang Xiangjiang, Liao xiulin and Huang xiangrong. 1987. Use of vaccination against hemorrhagic of grass carp by bath method. Hunan Fish. 3: 12-14 (in Chinese)

Li, J., T.H.Wang, Y.G. Yi, H.Q.Liu, R.H.Lu and H.X.Chen 1997 A detection method for grass carp hemorrhagic virus (GCHV) based on a reverse transcription-polymerase chain reaction. Dis. Aquat. Org., 29: 7-12

Qiu,T., R.H.Lu, Jiang and Z. Y. Zhu 2001 Complete nucleotide sequence of the S10 genome segment of grass carp reovirus (GCRV). Dis.Aquat.Org., 44:69-74

Section of virus study, 3rd lab, Institute of Hydrobiology, Academia Sinica 1978. Studies on the causative agent of hemorrhage of the grass carp (*Ctenopharymgodon idellus*). Acta Hydrobiol. Sini. 6: 321-330.

Section of virus study, 3rd lab, Institute of Hydrobiology, Academia Sinica 1980. Studies on the causative agent of hemorrhage of the grass carp (*Ctenopharymgodon idellus*): electron microscopic observation. Acta Hydrobiol. Sini. 7: 75-79.

Wang Wei, Chen Yan, Ke Lihua and Cai Yiquan.1990. Fine structure, genome and polypeptides of a grass carp hemorrhage virus isolate from the South Lake in Wuhan. Chinese J. Virol.

Wang Jianwei 1992. Reproductive biology of *Gobiocypris rurus*. Acta Hydrobiol. Sini. 16: 165-174.

Yang Xianle, Xia Chun and Zuo Wengong. 1989 Inactivated vaccine for hemorrhage of grass carp: comparison of immunogenicity and immunizing dose between two strains. J. Fish. China. 13: 138-144.

Yang Xianle and Zuo Wengong 1989 Inactivated vaccine for hemorrhage of grass carp: the best method of inactivation of FRV. Brief News of Fish Diseases No. 2-3: 11-18.

Yang Xianle and Zuo Wengong 1990 Inactivated vaccine for hemorrhage of grass carp: storage of vaccine. Freshw. Fish. 4: 1-3.

Yang Xianle, Xia Chun and Zuo Wengong. 1992 Inactivated vaccine for hemorrhage of grass carp. Freshw. Fish. 1: 3-7.

Yang Xianle and Zuo Wengong 1994 Inactivated vaccine for hemorrhage of grass carp (*Ctenopharyngodon idellus*): the stability of vaccine and influence of adjavants and booster on immune response. Acta Hydrobiol. Sini.

Ye Xueping, Yang Guangzhi, Luo Yizhi, Chen Yinliang and Chen Zhihong. 1992 Large-scale culture of grass carp cell and virus by using bioreactor. J. Fish. China. 16: 1-6.

Zhang Nianci, Yang Guangzhi 1981 The establishment and characteristics of cell line ZC-7901 from the snout tissue of grass carp. J. Fish. China. 5: 111-119.

Zhang Nianci, Cao Jin, Wu Leding, Yin Wenglin and Shi Jianjun. 1990 Supplementary effect of henbane on the bathing immunization of summer fingerlings of grass carp. J.Zhejiang College Fish. 9: 79-84.

Zheng Dechong, Huang Qiyan, Cai Wanqi and Lu Hongda. 1986 Histopathogical studies on the hemorrhage disease of grass carp. J. Fish. China. 10: 151-159.

Zuo Wengong and Yang Xianle. 1984 A cell line derived from the kidney of grass carp (*Ctenopharyngodon idellus*). Freshw. Fish. 2: 38-39.

Zhu Xinling, Jia Lizhu and Zhang Mingying. 1986 Hemopathologic study on hemorrhagic disease of the grass carp fingerlings in the latency and developed period. Proceedings of the Asian Symposium on Freshwater Fish Culture. Beijing, China. P.352-359.

Recent Aquatic Animal Health Related Publications

Australian Aquatic Animal Disease Identification Field Guide: The second, revised edition – Aquatic Animal Diseases Significant to Australia: Identification Field Guide – has recently been released by Australia's Department of Agriculture, Fisheries and Forestry (DAFF). It is very informative and user friendly. The field guide can be downloaded from http://www.disease-watch.com. For further information and copies of the field guide, please contact Alistair Herfort at Alistair.Herfort@daff.gov.au. The field guide provides key field identification tips and differential diagnostic features for all the OIE listed diseases and therefore has considerable regional relevance. Dissemination of the information contained in the field guide to the right stakeholders could contribute significantly to improved surveillance and reporting in the region. DAFF has kindly provided NACA with copies of the field guide for wider dissemination in the region. Those interested to receive copies, please write to NACA at mohan@enaca.org

A Colour Atlas of Diseases of Yellowtail (Seriola) Fish: Written by Dr. Mark Sheppard, Canadian veterinarian, a new publication (in Japanese and originally in English) "A Colour Atlas of Diseases of Yellowtail (Seriola) Fish" is now available. A useful diagnostic field guide for fish farmers, fish health professionals, laboratory technicians and students, this book contains 30 pages of high resolution, detailed pathology photomicrographs of most commonly found diseases of yellowtail. More details can be found at http://oberon.ark.com/~svs/index_files/svsindexfile5.html

Histological Techniques for Marine Bivalve Molluscs and Crustaceans: A new publication by DW Howard, EJ Lewis, BJ Keller and CS Smith of the Cooperative Oxford Laboratory, Center for Coastal Environmental Health and Biomolecular Research, National Centers for Coastal Ocean Science, National Ocean Service, NOAA. This is an invaluable guide to histological techniques of shellfish, principally molluscs and crustaceans which every aquatic animal health researcher should have. Those interested to receive copies, please write to the Librarian, Ms Susie Hines at Susie.Hines@noaa.gov

Aquaculture Health International – A New Magazine for Fish & Shellfish Health Professionals: A high quality magazine produced jointly by Patterson Peddie Consulting Ltd in the UK and VIP Publications Ltd in New Zealand has been launched in May 2005. Initially published on a quarterly basis, 'Aquaculture Health International' will be available in both online (pdf) and printed formats (ISSN 1176-8630). Target readership is broad and includes fish health researchers, academics, veterinarians, fish health biologists, government scientists, pharmaceutical companies, fish farmers (finfish and shellfish) and aquaculture consultants. More details can be found at the magazine website: www.aquaculturehealth.com or get in touch with the editor, Dr Scott Peddie at scott@aquaculturehealth.com.

OIE Handbook on Import Risk Analysis for Animals and Animal Products: Vol. I Introduction and qualitative risk analysis, 2004; Vol. II Quantitative risk analysis, 2004.
Volume I of this handbook introduces the concepts of import risk analysis and discusses qualitative risk analysis while Volume II addresses quantitative risk analysis. The key issues in the discipline are explained within the frameworks provided by the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures and the chapters in both *Codes* on risk analysis. The handbook will provide practical guidance to Veterinary Services confronted with the need to analyse the risks posed by imports, to ensure that stakeholders, risk analysts and decision-makers can be confident that the disease risks posed have been identified and can be managed effectively. The handbook will also be useful as a training aid to address the critical need for capacity building in this discipline.

OIE Aquatic Animal Health Code, 7th Edition, 2004
The aim of the aquatic animal health code is to assure the sanitary safety of international trade in aquatic animals and their products. This is achieved through the detailing of health measures to be used by the competent authorities of importing and exporting countries to avoid the transfer of agents pathogenic for animals or humans, while avoiding unjustified sanitary barriers. The health measures in the aquatic animal health code (in the form of standards, guidelines and recommendations) have been formally adopted by the OIE international committee, the general assembly of all delegates of OIE Member Countries. The Aquatic Animal Health Code is available on http://www.oie.int/eng/normes/fcode/A_00003.htm. The book may be ordered from pub.sales@oie.int

Surveillance and Zoning for Aquatic Animal Diseases.
Subasinghe, R.P., McGladdery, S.E. and Hill, B.J. (eds.). FAO Fisheries Technical Paper. No. 451. Rome, FAO. 2004. 73p. This document contains the recommendations and conclusions of an Expert Consultation on Surveillance and Zoning for Aquatic Animal Diseases' jointly organized by FAO, the Federal Department of Fisheries and Oceans Canada (DFO-Canada) and OIE held in October 2002 at the FAO Headquarters in Rome, Italy. The objective of the consultation was to determine what surveillance options can best support scientifically valid zonation frameworks. Contact: Rohana.Subasinghe@fao.org

The introduction of *Penaeus vannamei* and *P. stylirostris* into the Asia-Pacific Region.
Briggs M., S. Funge-Smith, R. Subasinghe and M. Phillips. 2004. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok. RAP Publication 2004/10.99p.

This report has attempted to gather all of the currently available data on the extent of *P. vannamei* and *P. stylirostris* importation and culture in Asia, its potential problems and benefits, and in this way serve as a source document from which to investigate further the means by which control over this issue might be re-established. Recommendations aimed at controlling the importation, testing and culture of these species have been made for all levels and are included in this report.

Capacity and Awareness Building on Import Risk Analysis for Aquatic Animals.
J.R.Arthur and M.G. Bondad-Reantaso. (eds.). Proceedings of the workshop held 1-6 April 2002 in Bangkok, Thailand and 12-17 August 2002 in Mazatlan, Mexico. APEC FWG 01/2002, NACA, Bangkok. 203p. The proceedings contains 26 technical presentations, divided into 4 parts: (a) Background for risk analysis, (b) the risk analysis process, (c) Risk analysis and the World Trade Organization: Country experiences and (d) National strategies for aquatic animal health. Available for download from www.enaca.org

Manual on risk analysis for the safe movement of aquatic animals (FWG/01/2002)
Arthur, J.R., M.G.Bondad-Reantaso, F.C.Baldock, C.J.Rodgers and B.F.Edgerton. 2004. APEC/DoF/NACA/FAO, 59p. This manual provides a simplified overview of the risk analysis process to assist responsible individuals in developing countries to begin formulating national policies and approaches to conducting risk analyses. Available for download from www.enaca.org

Shrimp Health Management Extension Manual. 2003
This extension manual summarizes farm level risk factors and practical management practices that can be used to reduce risks of shrimp disease outbreaks and improve farm production. The recommendations are based on a study conducted by NACA in Andhra Pradesh, India. The publication is of particular relevance to Andhra Pradesh, but many recommendations are still of use to farmers from other areas. Available for download at: http://www.enaca.org/Shrimp/manual/ShrimpHealthManual.pdf

Survey Toolbox for Aquatic Animal Diseases: A Practical Manual. 2002
This book written by Cameron, Angus is designed for people working in the aquatic animal diseases and production. The tools presented in the book will be valuable for anybody who needs to collect reliable information about aquatic diseases or production. The structure of the book allows it to be used on three different levels. Planners, Trainers and Field Operational Staff. The prevention, control, and eradication of aquatic animal diseases depend on a good understanding of the disease and its distribution. ACIAR Monograph MN94. Also available at: http://www.aciar.gov.au/web.nsf/doc/JFRN-5J46ZY

Risk Analysis in Aquatic Animal Health, 2001
A publication from the OIE , edited by C.J.Rodgers, gives a very good account on the need for risk analysis, risk analysis methodology, areas of application to aquatic animal health and many case histories. A very good reference book for people interested in knowing more about risk analysis or interested in performing risk analysis (www.oie.int)

List of National Coordinators*

Country	Name and Address
Australia	Dr. Eva -Maria Bernoth Manager, Aquatic Animal Health Unit , Office of the Chief Veterinary Officer Department of Agriculture, Fisheries and Forestry GPO Box 858, Canberra ACT 2601, Australia Fax: 61-2-6272 3150; Tel: 61-2-6272 4328 Email: Eva-Maria.Bernoth@affa.gov.au Mr. Alistair Herfort Aquatic Animal Health Unit , Office of the Chief Veterinary Officer Department of Agriculture, Fisheries and Forestry GPO Box 858, Canberra ACT 2601, Australia Fax: +61 2 6272 3150; tel: +61 2 6272 4009 E-mail: Alistair.Herfort@affa.gov.au
Bangladesh	Dr. M. A. Mazid Director General, Bangladesh Fisheries Research Institute (BFRI) Mymensingh 2201, Bangladesh Fax: 880-2-55259, Tel: 880-2-54874 E-mail: dgbfri@bdonline.com
Cambodia	Mr Hav Viseth Vice Chief, Aquaculture Bureau, Department of Fisheries 186 Norodom Blvd.,P.O. Box 835, Phnom Penh, Cambodia Fax: (855) 23 210 565; Tel: (855) 23 210 565 E-mail: smallfish@online.com.kh
China	Mr Zhuzewen Disease Prevention and Control Division National Fisheries Technique Extension Center (NFTEC) Ministry of Agriculture Mai Zi Dian Street No 18 Chanyang District, Beijing 100026, China Fax: 86-10-65074250; Tel: 86-010-64195073 E-mail:zewenzhu@sina.com
DPR Korea	Mr. Chong Yong Ho Director of Fish Farming Technical Department, Bureau of Freshwater Culture Sochangdong Central District, P.O.Box. 95 , Pyongyong, DPR Korea Fax- 850-2-814416; Tel- 3816001, 3816121
Hong Kong China	Dr Jim Chu Aberdeen Fisheries Office 100 A, Shek Pai Wan Road Aberdeen, Hong Kong Tel: 852-2873833; Fax: 852-28700324 E-Mail: jim_cw_chu@afcd.gov.hk

* The matrix provides a list of National Coordinators and focal points nominated by governments for the *Asia-Pacific Quarterly Aquatic Animal Disease Reports*.

India	Mr Ajay Bhattacharya Joint Secretary (Fisheries) Department of Animal Husbandry and Dairying Ministry of Agriculture Krishi Bhawan, New Delhi 110001 Tel: 91 11 2338 1994; Fax: 91 11 2307 0370 E-Mail: a.bhattacharya@nic.in
Indonesia	Dr Darnas Dana Director for Fish Health and Environment Ministry of Marine affairs and Fisheries Jl. Harsono RM No. 3, Ragunan Pasar Minggu Tromol Pos No.: 1794/JKS Jakarta – 12550 Indonesia Tel: 7804116-119; Fax: 62 21 78835853; 7803196 E-mail: dfhe@indosat.net.id Mr. Agus Sunarto Fish Health Research Laboratory Central Research Institute of Aquaculture Ministry of Marine Affairs and Fisheries Jakarta, Indonesia E-mail: agussunarto@hotmail.com
Iran	Dr. A.E. Maghsodi Fard Manager Director of Aquatic Animal Diseases Department Veterinary Organization Ministry of Jihad – E – Sazandegi Vali-ASR Ave, S.J.Asad Abadi St PO Box 14155 – 6349, Tehran, Iran Tel: 8857007-8857193; Fax: 8857252 E-mail: amaghsodifard@yahoo.com
Japan	Mr. Mahito Masuda Fish and Fishery Products Safety Office Food Safety and Consumer Affairs Bureau Ministry of Agriculture, Forestry and Fisheries 1-2-1, Kasumigaseki Chiyoda-ku, Tokyo 100-8950, Japan Fax: 813-3502-8275; Tel: 813-3502-8098 E-mail: mahito_masuda@nm.maff.go.jp
Lao PDR	Mr. Khampet Roger Fisheries and Livestock Department Ministry of Agriculture, Forestry and Fisheries P.O. Box 811, Vientianne, Lao PDR TeleFax: (856-21) 415674; Tel: (856-21) 416932 E-mail: eulaodlf@laotel.com Mr. Bounma Luang Amath Fisheries and Livestock Department Ministry of Agriculture, Forestry and Fisheries P.O. Box 811, Vientianne, Lao PDR TeleFax: (856-21) 415674; Tel: (856-21) 416932 E-mail: eulaodlf@laotel.com

Malaysia	Dr Siti Zahrah Abdullah National Fish Health Research Centre 11960 Batu Maung Penang, Malaysia Fax: 6-04-6263977; Tel: 6-04-6263922 E-mail: szahrah@fri.gov.my Dr. Ong Bee Lee Head, Regional Veterinary Laboratory Services Department of Veterinary Services, 8th & 9th Floor, Wisma Chase Perdana Off Jln Semantan 50630, Kuala Lumpur, Malaysia Fax: (60-3) 254 0092/253 5804; Tel: (60-3) 254 0077 ext.173 E-mail: ong@jph.gov.my
Myanmar	Ms. Daw May Thanda Wint Assistant Staff Officer, Aquatic Animal Health Section Department of Fisheries Sinmin Road, Alone Township , Yangon, Myanmar Fax: (95-01) 228-253; Tel: (95-01) 283-304/705-547 E-mail: dof@mptmail.net.mm Mr. U.Than Win Assistant Director Export and Import Quality Control Laboratory and Aquatic Animal Health Section Department of Fisheries, Ministry of Livestock and Fisheries Sin Minn Road, Alone Township, Yangon, Myanmar Fax: (95-01) 228-253; Tel: (95-01) 283-304/705-547 E-mail: dof@mptmail.net.mm
Nepal	Mr. Dharani Man Singh Senior Fisheries Development Officer, Chief of Central Fisheries Laboratory, Central Fisheries Building, Balaju, Kathmandu. Nepal. E-mail: dharanimsingh@gmail.com) Mr. Shankar Prasad Dahal Assistant Fisheries Development Officer Directorate of Fisheries Development Central Fisheries Building, Balaju, Kathmandu, Nepal Tel: + 350 662 E-mail: dofd@mail.com.np
Pakistan	Dr. Muhammad Hayat Assistant Fisheries Development Commissioner Livestock Division, Ministry of Food, Agriculture and Livestock 10th Floor, Shaheed-e-Millat Secretariat (Livestock Wing) I Islamabad Fax: 92-51-922 1246; Tel: 92-51-920 8267 ahc@isb.paknet.com.pk
Philippines	Dr. Joselito R. Somga Aquaculturist II, Fish Health Section, BFAR 860 Arcadia Building, Quezon Avenue, Quezon City 1003 Fax: (632)3725055/4109987; Tel:(632) 3723878 loc206 or 4109988 to 89 E-mail: jsomga@bfar.da.gov.ph
Republic of Korea	Dr. Mi-Seon Park Director of Pathology Division National Fisheries Research and Development Institute 408-1 Sirang, Kijang, Pusan 619-900 Korea RO Tel: 82-51-720-2470; Fax: 82-51-720-2498 E-mail: parkms@haema.nfrda.re.kr

Singapore	Mr Hanif Loo Jang Jing Programme Executive (Aquaculture) Aquaculture Branch Food Supply & Technology Department Agri-Food & Veterinary Authority of Singapore 5 Maxwell Road, #01-00, Tower Block, MND Complex, Singapore 069110 Tel: 65 – 63257636; Fax: 65 – 63257677 Email: loo_jang_jing@ava.gov.sg Dr. Susan Kueh Head, Aquatic Animal Health Branch Animal and Plant Health Laboratories 6 Perahu Road, Singapore 718827 Tel: 63165140, Fax: 63161090 E-mail: Susan_KUEH@ava.gov.sg
Sri Lanka	Dr S.C.Jayamanne National Aquatic Research and Development Agency Crow Island, Mattakuliya Colombo 15, Sri Lanka Tel/Fax: 094-11-2521932 E-mail: sepalika@nara.ac.lk Mr Mahinda Kulathilaka National Aquaculture Development Authority 758 Baseline Road Colombo 9 Tel: 94 1 2521005; Fax: 94 1 2521932 E-mail: ardaip2@eol.lk
Thailand	Dr. Somkiat Kanchanakhan Fish Virologist, Aquatic Animal Health Research Institute (AAHRI) Department of Fisheries , Kasetsart University Campus Jatujak, Bangkok 10900, Thailand Fax: 662-561-3993; Tel: 662-579-4122, 6977 E-mail: somkiatkc@fisheries.go.th
Vietnam	Dr. Le Thanh Luu Director Research Institute for Aquaculture No. 1 (RIA No. 1) Dinh Bang, Tien Son, Bac Ninh, Vietnam Fax: 84-4-827-1368; Tel: 84-4-827-3070 E-mail: ria1@hn.vnn.vn Ms Phan Thi Van RIA No.1,Dinh Bang , Tien Son, Bac Ninh, Vietnam Fax: 84-4-827-1368; Tel : 84-4-827 - 3070 E-mail: ria1@hn.vnn.vn; phanvan@hn.vnn.vn

List of Diseases in the Asia-Pacific
Quarterly Aquatic Animal Disease Reports (Beginning 2005)

1. DISEASES PREVALENT IN THE REGION	
1.1 FINFISH DISEASES	
OIE-listed diseases	**Non OIE-listed diseases relevant to the region**
1. Epizootic haematopoietic necrosis	12. Epitheliocystis
2. Infectious haematopoietic necrosis	13. Grouper iridoviral disease
3. *Oncorhynchus masou* virus disease	14. Infection with koi herpesvirus
4. Spring viraemia of carp	
5. Viral haemorrhagic septicaemia	
6. Viral encephalopathy and retinopathy	
7. Infectious pancreatic necrosis	
8. Epizootic ulcerative syndrome (EUS)	
9. Bacterial kidney disease	
10. Red seabream iridoviral disease	
11. Enteric septicaemia of catfish	
1.2 MOLLUSC DISEASES	
OIE-listed diseases	**Non OIE-listed diseases relevant to the region**
1. Infection with *Bonamia exitiosa*	6. Infection with *Marteilioides chungmuensis*
2. Infection with *Mikrocytos roughleyi*	
3. Infection with *Haplosporidium nelsoni*	
4. Infection with *Marteilia sydneyi*	
5. Infection with *Perkinsus olseni/atlanticus* [b/])	
1.3 CRUSTACEAN DISEASES	
OIE-listed diseases	**Non OIE-listed diseases relevant to the region**
1. Taura syndrome	8. Necrotising hepatopancreatitis
2. White spot disease	9. Baculoviral midgut gland necrosis
3. Yellowhead disease (YH virus, gill-associated virus)	10.White tail disease (MrNV and XSV)
4. Spherical baculovirosis (*Penaeus monodon*-type baculovirus)	
5. Infectious hypodermal and haematopoietic necrosis	
6. Spawner-isolated mortality virus disease	
7. Tetrahedral baculovirosis (*Baculovirus penaei*)	
1.4 UNKNOWN DISEASES OF A SERIOUS NATURE	
OIE-listed diseases	**Non OIE-listed diseases relevant to the region**
	1. Akoya oyster disease
	2. Abalone viral mortality
2. DISEASES PRESUMED EXOTIC TO THE REGION, BUT LISTED BY THE OIE	
2.1 Finfish	
1. Channel catfish virus disease	
2. Infectious salmon anaemia	
3. Piscirickettsiosis	
4. Gyrodactylosis (*Gyrodactylus salaries*)	
5. White sturgeon iridoviral disease	
2.2 Molluscs	
1. Infection with *Bonamia ostreae*	
2. Infection with *Marteilia refringens*	
3. Infection with *Mikrocytos mackini*	
4. Infection with *Perkinsus marinus*	
5. Infection with *Candidatus Xenohaliotis californiensis*	
6. Infection with *Hapolosporidium costale*	
2.3 Crustaceans	
1. Crayfish plague (*Aphanomyces astaci*)	

New Instructions on how to fill in the
QUARTERLY AQUATIC ANIMAL DISEASE REPORT
(Revised during the Provisional Meeting of the AG[3], Bangkok, Thailand, November 7-9, 2001)

Symbols used in the report are similar to those used by FAO, OIE and WHO for the *Animal Health Yearbook*. Please read these instructions carefully before you fill in the forms.

Under the heading 'Country', please enter your country.

Under the heading 'Period', please enter the reporting quarter (months) and year, e.g. January to March 2002.

Under the heading "Month", please enter months of a quarter in question, e.g. January, February, March.

In "Level of Diagnosis", please enter the Level of Diagnosis used, e.g., I, II, or III. See Section C below.

In "Epidemiological Comment Numbers", please enter the serial numbers, and write your corresponding epidemiological comments on page 2. See Section D below for guidance on the subjects to be covered under Epidemiological Comments.

If an unknown disease of serious nature appears, please fill in the last line of the form, with additional information on "Level of Diagnosis" and "Epidemiological Comment Numbers" as above.

Please do not fail to enter "*******" or "**-**" as appropriate against each disease, which is essential to incorporate your information on the *Quarterly Aquatic Animal Disease Report (Asia and Pacific Region.)*

If you have new aquatic animal health regulations introduced within the past six months, please describe them under Section 2 on page 2.

Please use the following symbols to fill in the forms.

A. Symbols used for negative occurrence are as follows:

*** This symbol means that no information on a disease in question is available due to reasons such as lack of surveillance systems or expertise.

- This symbol is used when a disease is not reported during a reporting period. However the disease is known to be present in the country (date of last outbreak is not always known).

0000 This symbol is used when disease surveillance is in place and a disease has never been reported.

(year) Year of last occurrence (a disease has been absent since then).

B. Symbols used for positive occurrence are shown below.

+ This symbol means that the disease in question is reported or known to be present.

+? This symbol is used when the presence of a disease is suspected but there is no recognised occurrence of clinical signs of the disease in the country. Serological evidence and isolation of the causal agent may indicate the presence of the disease, but no confirmed report is available. **It is important that the species of animals to which it applies is indicated in the "Comments" on page 2 of the form if you use this symbol**.

+( ) These symbols mean that a disease is present in a very limited zone or zones as exceptional cases. It may also include the occurrence of a disease in a quarantine area.

? This symbol is used only when a disease is suspected by the reporting officer, but the presence of the disease has not been confirmed.

[3] Regional Advisory Group on Aquatic Animal Health (AG)

C. Levels of Diagnosis

LEVEL	SITE	ACTIVITY
I	Field	Observation of animal and the environment Clinical examination
II	Laboratory	Parasitology Bacteriology Mycology Histopathology
III	Laboratory	Virology Electron microscopy Molecular biology Immunology

D. Subjects to be covered in the Epidemiological Comments

1. Origin of the disease or pathogen (history of the disease);
2. Mortality rate (high/low or decreasing/increasing);
3. Size of infected areas or names of infected areas;
4. Death toll (economic loss, etc.);
5. Preventive/control measures taken;
6. Disease characteristics (unusual clinical signs or lesions);
7. Pathogen (isolated/sero-typed);
8. Unknown diseases (describe details as much as possible);
9. Samples sent to national or international laboratories for confirmation (indicate the names of laboratories); and
10. Published paper (articles in journals)/web site, etc.

IMPORTANT

Please send the **original report** or the best photocopy thereof to the OIE and/or NACA **by fax** and **registered airmail**. Faxed reports are needed to check whether or not the reports are all right. The deadline for submission of the reports is **two and a half months (75 days)** after the end of the quarterly period.

If you require further explanation, please write to the OIE (Tokyo), NACA (Bangkok) or FAO (Rome) at the following addresses, respectively:

OIE
East 311, Shin Aoyama Building, 1-1-1 Minami Aoyama, Minato-ku,
Tokyo 107-0062, Japan
Tel: +81-3-5411-0520; Fax: +81-3-5411-0526
E-mail: oietokyo@tky.3web.ne.jp

NACA
P. O. Box 1040, Kasetsart Post Office, Bangkok 10903, Thailand
Tel: 66-2-561-1728/9 (ext. 117); Fax: 66-2-561-1727
Dr. C.V. Mohan
E-mail: mohan@enaca.org

FAO
Fishery Resources Division, Fisheries Department
FAO of the United Nations
Viale delle Terme di Caracalla, 00100 Rome
Tel. +39 06 570 56473; Fax + 39 06 570 530 20
E-mail: Rohana.Subasinghe@fao.org

Notes

Published by the Network of Aquaculture Centres in Asia-Pacific and the Food and Agriculture Organization of the United Nations. For inquiries regarding editorial or technical content, please write to NACA, P.O. Box 1040, Kasetsart P.O. , Bangkok 10903, Thailand; Tel. (662) 561- 1728 to 9; Fax: (662) 561-1727; e-mail: **naca@enaca.org or mohan@enaca.org.**
Website: **http://www.enaca.org**

ISSN 1513-6558

Printed by Craftsman Press, Bangkok