



# **QUARTERLY AQUATIC ANIMAL DISEASE REPORT (Asia and Pacific Region)**

**October – December 2015**

Published by the

**Network of Aquaculture Centres  
in Asia-Pacific**

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Bangkok 10900, Thailand

**Food and Agriculture  
Organization of the United Nations**

Viale delle Terme di Caracalla  
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April 2016

Network of Aquaculture Centres in Asia-Pacific and Food and Agriculture Organization of the United Nations. April, 2016. *Quarterly Aquatic Animal Disease Report (Asia and Pacific Region)*, 2015/4, October – December 2015. NACA: Bangkok, Thailand.

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## Foreword

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### New viral disease of farmed tilapia: Tilapia Lake Virus

The aquaculture industry has been swept by several devastating transboundary diseases in almost three decades. Most of these diseases has brought huge economic losses among aquaculture farmers and other related sectors. Most recent of which was the Acute hepatopancreatic necrosis disease (AHPND) of cultured shrimps, which is still affecting 5 countries in the region (China, Vietnam, Malaysia, Thailand and the Philippines). Emerging threats for shrimp aquaculture including Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP) and the Covert mortality disease (CMD) caused by covert mortality nodavirus (CMNV) have become the current concern among shrimp farmers in major shrimp producing countries like Thailand, Vietnam and Malaysia. Cultured shrimps are not the species being affected by a new disease.

Recently, farmed tilapia was reported to be affected by a new viral disease named Tilapia Lake Virus. The below article was taken from [http://www.theatlantic.com/science/archive/2016/04/a-new-fish-virus-shows-how-vulnerable-our-food-supplies-are/476847/?utm\\_source=SFFB](http://www.theatlantic.com/science/archive/2016/04/a-new-fish-virus-shows-how-vulnerable-our-food-supplies-are/476847/?utm_source=SFFB) entitled “The Scary Thing about a Virus that Kills Farmed Fish”, which described the effect of this new virus on farmed tilapia in Israel. This disease will surely bring a great impact in the tilapia industry in the region once it spreads, most probably through transboundary movement.

“In 2005, fishermen pulled out 316 tons of tilapia, a tasty freshwater fish, from the Sea of Galilee in Israel. But four years later, the catch had fallen to just 8 tons. This wasn’t just another story about overfishing, though: Throughout the country, in the summer of 2009, farmed tilapia were also dying en masse.

“Farmers lost 20 to 30 percent of the fish in their ponds, and it was spreading from one pond to the next,” recalls Avi Eldar, a state-employed fish vet, who was called to investigate. The enigmatic die-offs didn’t fit any known parasite, toxin, bacterium, or virus. “We couldn’t diagnose the problem. We suspected that there was a new bug in town.”

Whatever the new infection was, it was only killing tilapia, without harming other fish. That’s a small consolation, though. Tilapia are thought to be the fish that fed multitudes in the New Testament, and they play the same role in the 21st century. Being large, tasty, quick to grow, and phenomenally easy to farm, they’re the core of a 7.5 billion dollar aquaculture industry that provides a critical source of protein for the developing world. Even America, the world’s leading tilapia importer, consumes 225,000 tons of the world’s 4.5 million ton stock.

The point is: “dying en masse” aren’t words you want to hear in relation to tilapia.

With help from Eran Bacharach from Tel Aviv University, Eldar eventually discovered that the tilapia’s woes were caused by a brand new virus, which he called tilapia lake virus, or TiLV. When his team injected it into healthy fish, they reproduced the same symptoms seen in the dying ones: sluggish behavior, reddened skin, and inflamed eyes and brain. And when these infected fish shared water with healthy ones, they passed on their disease, killing off more than 80 percent of their neighbors in a few days.

The mystery may be solved, but the threat isn’t over. Even before anyone knew it existed, TiLV had already spread around the world, triggering similar tilapia die-offs in Ecuador and Colombia. It’s also utterly unlike any virus that we know of, hinting at an entire world of related viruses that could potentially harm our food supplies.

*We should be deeply concerned about such threats, but we're not. By contrast, diseases that affect us directly, such as swine flu, Ebola, and Zika, saturate our headlines, prompt panicked talks of pandemics, and intense quests to develop vaccines and cures. But diseases don't need to infect humans to screw us over: They can also take out the plants and animals that we eat.*

*"It's a matter of food security," says Ian Lipkin from Columbia University, one of the world's foremost virus-hunters. "There's no major investment in the infectious diseases of fish, and that's an error. The losses can be substantial."*

*Lipkin helped Bacharach and Eldar to sequence the genetic material of their new virus, and what he found was very strange. The virus's genome was split into ten different clusters, none of which matched any known viruses. "There really wasn't anything that we could pinpoint that told us what this was," he says. One small segment of the new virus, if you squint at it just right, looks a little like part of influenza virus C, which causes cold-like symptoms in humans—but the resemblance is remote. "It's like forcing a square peg into a round hole," says Lipkin. ”*

Identification and characterization of the virus is available in the following publication:

Bacharach, E. et al. (2016). Characterization of a novel orthomyxo-like virus causing mass die-offs of Tilapia. *mBio* 7(2):e00431-16. doi:10.1128/mBio.00431-16.

Link: <http://mbio.asm.org/content/7/2/e00431-16.full.pdf+html>

## **Reports Received by the NACA Secretariat**

Country: AUSTRALIAPeriod: October - December 2015

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
DISEASES PREVALENT IN THE REGION	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	-(2012)	-(2012)	-(2012)		1
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	-(2014)	-(2014)	-(2014)		2
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000		
9. Viral encephalopathy and retinopathy	-(2015)	-(2015)	-(2015)		3
10. Enteric septicaemia of catfish	-(2014)	(2014)	(2014)		4
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000		
2. Infection with <i>Perkinsus olseni</i>	-(2015)	-(2015)	+	III	5
3. Infection with abalone herpesvirus	-(2011)	-(2011)	-(2011)		6
4. Infection with <i>Xenohaliotis californiensis</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
6. Acute viral necrosis (in scallops)	***	***	***		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000		
2. White spot disease (WSD)	0000	0000	0000		
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	-(2014)	-(2014)	+	III	7
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	-(2008)	-(2008)	-(2008)		8
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	0000	0000	0000		
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	-(2008)	-(2008)	-(2008)		9
2. Infection with <i>Batrachochytrium dendrobatidis</i>	-(2013)	-(2013)	-(2013)		10
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. Hepatopancreatitis in prawns		+	+	III	11
2.					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

		?( )	Presence of the disease suspected but not confirmed in a zone
+	Disease reported or known to be present		
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?( )	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	<b>Epizootic haematopoietic necrosis</b> was not reported this period despite passive surveillance in Victoria (last reported 2012), the Australian Capital Territory (last reported 2011), New South Wales (last reported 2009) and South Australia (last reported 1992). Passive surveillance and never reported in the Northern Territory, Queensland, Tasmania and Western Australia.
2	<b>Infection with <i>Aphanomyces invadans</i> (EUS)</b> is known to have occurred previously in Queensland (last reported 2014), Western Australia (last reported 2013), New South Wales (last reported 2012), the Northern Territory (last reported 2012), Victoria (last reported 2012), and South Australia (last reported 2008). Passive surveillance and never reported in Tasmania. No information available in the Australian Capital Territory.
3	<b>Viral encephalopathy and retinopathy</b> is known to have occurred previously in the Queensland (last reported in May 2015), Northern Territory (last reported 2013), Western Australia (last reported 2013), New South Wales (last reported 2010), South Australia (last reported 2010) and Tasmania (last reported 2000). Passive surveillance and never reported in Victoria. No information available in the Australian Capital Territory.
4	<b>Enteric septicaemia of catfish (<i>Edwardsiella ictaluri</i>)</b> has been reported from clinically normal fish from a single river in Queensland (October 2014). This is the only occurrence of <i>E. ictaluri</i> in wild fish populations in Australia. Active surveillance throughout Northern Australia has found no evidence of <i>E. ictaluri</i> in any other wild fish populations. <i>E. ictaluri</i> has been detected previously in association with imported ornamental fish including: Northern Territory in closed aquarium (last reported 2011) and in PC2 containment facilities in Tasmania (last reported 2001) and Queensland (last reported 2008). Passive surveillance and never reported in New South Wales, South Australia, Victoria or Western Australia. No information available this period in the Australian Capital Territory.



5	<p><b>Infection with <i>Perkinsus olseni</i></b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Western Australia</b> in December; active surveillance;</li> <li>2. <b>Species affected</b> – wild greenlip abalone (<i>Haliotis laevis</i>);</li> <li>3. <b>Clinical signs</b> –infections subclinical;</li> <li>4. <b>Pathogen</b> – <i>Perkinsus olseni</i>;</li> <li>5. <b>Mortality rate</b> – nil;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – N/A;</li> <li>8. <b>Containment measures</b> – N/A;</li> <li>9. <b>Laboratory confirmation</b> – RFTM, conventional PCR as described by the OIE (<i>Perkinsus</i> genus and <i>P. olseni</i> specific ITS assays), qPCR (Gauthier 2006);</li> <li>10. <b>Publications</b> – None.</li> </ol> <p><i>Perkinsus olseni</i> was not reported this period despite passive surveillance in Victoria (last reported 2015), Queensland (last reported 2014), South Australia (last reported 2013) New South Wales (last reported 2005) and Western Australia (last reported 2003). Passive surveillance and never reported in the Northern Territory and Tasmania. No information available for the Australian Capital Territory (susceptible species not present and no marine water responsibility).</p>
6	<p><b>Infection with abalone herpesvirus (abalone viral ganglioneuritis)</b> was not reported this period despite targeted surveillance in Tasmania (last reported 2011) and passive surveillance in New South Wales (last reported 2011 and eradicated following detection in contained commercial live-holding facilities), and Victoria (last reported 2010). Passive surveillance and never reported in the Northern Territory, Queensland, South Australia and Western Australia. No information available this period for the Australian Capital Territory (no marine water responsibility).</p>
7	<p><b>Infectious hypodermal and haematopoietic necrosis virus</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in December; passive surveillance;</li> <li>2. <b>Species affected</b> – tiger prawn (<i>Penaeus monodon</i>);</li> <li>3. <b>Clinical signs</b> – lymphoid organ spheroid reaction of grade 2-3 (mild to moderate) in one prawn;</li> <li>4. <b>Pathogen</b> – IHNV;</li> <li>5. <b>Mortality rate</b> – nil;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – N/A;</li> <li>8. <b>Containment measures</b> – harvest; cooked and frozen before leaving the farm;</li> <li>9. <b>Laboratory confirmation</b> – IHNV specific PCR;</li> <li>10. <b>Publications</b> – None.</li> </ol> <p>IHNV was not reported this period but is known to have occurred previously in the Northern Territory (last reported 2003). Passive surveillance and never reported in New South Wales, South Australia, Victoria and Western Australia. No information available this period in the Australian Capital Territory (no marine responsibility) and Tasmania (susceptible species not present).</p>
8	<p><b>White tail disease</b> was not reported this period despite passive surveillance in Queensland (last reported 2008). Passive surveillance and never reported from the Australian Capital Territory, New South Wales, the Northern Territory, South Australia, Victoria and Western Australia. No information available this period in Tasmania (susceptible species not present).</p>
9	<p><b>Infection with ranavirus</b> was not reported this period despite passive surveillance in the Northern Territory (last reported 2008, prior to official reporting for ranavirus). Suspected but not confirmed through passive surveillance in Queensland. Passive surveillance and never reported in Tasmania. No information available this period in the Australian Capital Territory, New South Wales, South Australia, Victoria and Western Australia.</p>

10	<p><b>Infection with <i>Batrachochytrium dendrobatidis</i></b> was not reported this period despite passive surveillance in Tasmania (last reported 2013), Victoria (last reported 2011) and Western Australia (last reported 2008). Suspected but not confirmed through passive surveillance in Queensland. No information available this period in the Australian Capital Territory, New South Wales, the Northern Territory, and South Australia.</p>
11	<p><b>Hepatopancreatitis in Prawns</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in November and December; passive surveillance;</li> <li>2. <b>Species affected</b> – tiger prawns (<i>Penaeus monodon</i>);</li> <li>3. <b>Clinical signs</b> – hepatopancreas histopathology consistent with that described for acute hepatopancreatic necrosis disease (AHPND), however the disease does not meet the case definition provided for AHPND in the draft OIE Aquatic Manual chapter circulated to OIE members;</li> <li>4. <b>Pathogen</b> – a bacterium isolated from affected prawns has been identified as <i>Vibrio harveyi</i>; PCR tests were positive for Pir A and Pir B genes, however whole genome sequencing indicated that the genes are located in the bacterial genome and not in a plasmid;</li> <li>5. <b>Mortality rate</b> – variable, from negligible to approximately 90%;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – N/A;</li> <li>8. <b>Containment measures</b> – movement controls on water and animals;</li> <li>9. <b>Laboratory confirmation</b> – bacteriology, PCR, gene sequencing, histopathology, nucleotide sequencing;</li> <li>10. <b>Publications</b> – OIE immediate notification reference number 196665 on 2 February 2016.</li> </ol>

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

Country: **HONG KONG SAR, CHINA**

 Period: **October - December 2015**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000	II	
2. Infectious haematopoietic necrosis	0000	0000	0000	III	
3. Spring viraemia of carp (SVC)	0000	0000	0000	III	
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000	III	
5. Infection with <i>Aphanomyces invadans</i> (EUS)	0000	0000	0000	III	
6. Red seabream iridoviral disease (RSID)	-	-	-	III	
7. Koi herpesvirus disease (KHV)	-	-	-	III	
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	-	-	-	III	
9. Viral encephalopathy and retinopathy	-	-	-	III	
10. Enteric septicaemia of catfish	0000	0000	0000	II	
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000	II	
2. Infection with <i>Perkinsus olseni</i>	0000	0000	0000	II	
3. Infection with abalone herpesvirus	0000	0000	0000	II	
4. Infection with <i>Xenohaliotis californiensis</i>	0000	0000	0000	II	
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000	II	
6. Acute viral necrosis (in scallops)	0000	0000	0000	II	
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	III	
2. White spot disease (WSD)	-	-	-	III	
3. Yellowhead disease (YHD)	0000	0000	0000	III	
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000	II	
5. Infectious myonecrosis (IMN)	0000	0000	0000	II	
6. White tail disease (MrNV)	0000	0000	0000	II	
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	II	
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	0000	0000	0000	II	
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	II	
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	0000	0000	0000	II	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	0000	0000	0000	II	
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1.					
2.					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?( )	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+( )	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?( )	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	
2	
3	

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

**Country: INDIA**
**Period: October - December 2015**

Item	Disease status <sup>at</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	-	-	+	III	1
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000		
9. Viral encephalopathy and retinopathy	-	-	-		
10. Enteric septicaemia of catfish	0000	0000	0000		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000		
2. Infection with <i>Perkinsus olseni</i>	-	+	+	II,III	2
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohaliotis californiensis</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
6. Acute viral necrosis (in scallops)	0000	0000	0000		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000		
2. White spot disease (WSD)	+	+	+	III	3
3. Yellowhead disease (YHD)	***	***	***		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	+	-	-	III	4
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	-	-	-		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	-	-	-		
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	0000	0000	0000		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	0000	0000	0000		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1.					
2.					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?( )	Presence of the disease suspected but not confirmed in a zone
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?	Suspected by reporting officer but presence not confirmed	0000	Never reported
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+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	Infection with <i>Aphanomyces invadans</i> (EUS) was observed in Maharajganj District of Uttar Pradesh.
2	Infection with <i>Perkinsus olseni</i> was observed in wild <i>Paphia malabarica</i> from Kozhikode District and <i>Perna viridis</i> from Kasargod District of Kerala.
3	WSSV was detected in <i>Litopenaeus vannamei</i> from Nellore District in Andhra Pradesh; North 24 Pargana districts of West Bengal; Balasore District of Odisha; Nagapattinam, Thoothukudi, Thiruvallur and Cuddalore Districts of Tamil Nadu; Uttar Kannada District of Karnataka; in <i>Penaeus monodon</i> from East Midnapur, North 24- and South 24 Paraganas districts of West Bengal; Allapuzha, Kannur and Thrissur Districts of Kerala; and in <i>P. indicus</i> from Ernakulam District of Kerala, on basis of level III diagnosis.
4	IHHNV was reported from <i>Litopenaeus vannamei</i> in Nellore District of Andhra Pradesh.

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

The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009 has been suitably amended to cover aquatic animal diseases vide the Government of India Notifications No. S.O. 995(E) and No. S.O. 996(E) dated 1<sup>st</sup> April, 2014.

Country: **JAPAN**Period: **October - December 2015**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000	I	
2. Infectious haematopoietic necrosis	+	+	+	III	1
3. Spring viraemia of carp (SVC)	0000	0000	0000	I	
4. Viral haemorrhagic septicaemia (VHS)	-(2015)	-(2015)	-(2015)	I	
5. Infection with <i>Aphanomyces invadans</i> (EUS)	+()	-(2015)	-(2015)	II	2
6. Red seabream iridoviral disease (RSID)	+	+	+()	II,III	3
7. Koi herpesvirus disease (KHV)	+	-(2015)	+?()	III	4
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000	I	
9. Viral encephalopathy and retinopathy	-(2015)	+()	-(2015)	III	5
10. Enteric septicaemia of catfish	-(2010)	-(2010)	-(2010)	I	
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000	I	
2. Infection with <i>Perkinsus olseni</i>	-(2007)	-(2007)	-(2007)	I	
3. Infection with abalone herpesvirus	0000	0000	0000	I	
4. Infection with <i>Xenohaliotis californiensis</i>	-(2015)	+?()	-(2015)	III	6
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	-(2014)	-(2014)	-(2014)	I	
6. Acute viral necrosis (in scallops)	0000	0000	0000	I	
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	I	
2. White spot disease (WSD)	-(2015)	-(2015)	-(2015)	I	
3. Yellowhead disease (YHD)	0000	0000	0000	I	
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000	I	
5. Infectious myonecrosis (IMN)	0000	0000	0000	I	
6. White tail disease (MrNV)	0000	0000	0000	I	
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	I	
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	0000	0000	0000	I	
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	I	
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	-(2012)	-(2012)	-(2012)	I	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	-(2009)	-(2009)	-(2009)	I	
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1.					
2.					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?( )	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	<p><b>Infectious haematopoietic necrosis (IHN)</b></p> <ol style="list-style-type: none"> <li><b>Reported in</b> 12 prefectures;</li> <li><b>Species affected</b> – Amago (<i>Onchorynchus rhodorus</i>), masou (<i>O. masou</i>), rainbow trout (<i>O. mykiss</i>), rainbow trout (4n) x brown trout (<i>Salmo trutta</i>), Iwana (<i>Salvelinus leucomaensis</i>);</li> <li><b>Disease characteristics</b> – mortality; pale gills, liver and kidney (anemia); threadbare fins; ascites; exophthalmia; petechial haemorrhages internally and in the gills; enlargement of the spleen;</li> <li><b>Pathogen</b> – Infectious haematopoietic necrosis virus;</li> <li><b>Mortality rate</b> – 0.2-90%;</li> <li><b>Economic loss</b> –;</li> <li><b>Geographic extent</b> – Hokkaido and Honshu;</li> <li><b>Preventive/control measures</b> – culling of infected fish; disinfection of equipment; feed restriction; movement control; isolation of infected fish;</li> <li><b>Laboratory confirmation</b> – PCR, RT-PCR, cell culture and/or isolation of the virus by prefectural research laboratories;</li> <li><b>Publications</b> – None.</li> </ol>



2	<p><b>Infection with <i>Aphanomyces invadans</i> (EUS)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – ayu (<i>Plecoglossus altivelis</i>);</li> <li>3. <b>Disease characteristics</b> – ulcers on the body;</li> <li>4. <b>Pathogen</b> – <i>Aphanomyces invadans</i>;</li> <li>5. <b>Mortality rate</b> – 8kg/day;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu;</li> <li>8. <b>Preventive/control measures</b> – removal of dead and moribund fish;</li> <li>9. <b>Laboratory confirmation</b> – histopathology by prefectural research laboratory;</li> <li>10. <b>Publications</b> – None.</li> </ol>
3	<p><b>Red seabream iridoviral disease (RSID)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 6 prefectures;</li> <li>2. <b>Species affected</b> – Greater amberjack (<i>Seriola dumerili</i>), chicken grunt (<i>Parapristipoma trilineatum</i>), red sea bream (<i>Pagrus major</i>), striped jack (<i>Pseudocaranx dentex</i>), North Pacific Bluefin tuna (<i>Thunnus orientalis</i>), Japanese amberjack (<i>S. quinqueriata</i>);</li> <li>3. <b>Disease characteristics</b> – mortality; enlargement of spleen; anemia; petechial haemorrhages in the gills and liver;</li> <li>4. <b>Pathogen</b> – Red seabream iridovirus;</li> <li>5. <b>Mortality rate</b> – 0.06-67%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu, Shikoku and Kyushu;</li> <li>8. <b>Preventive/control measures</b> – feed restriction, movement control;</li> <li>9. <b>Laboratory confirmation</b> – histopathology, PCR or immunofluorescence antibody test by prefectural or fisheries cooperative research laboratories;</li> <li>10. <b>Publications</b> – None.</li> </ol>
4	<p><b>Koi herpesvirus disease (KHV)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 4 prefectures;</li> <li>2. <b>Species affected</b> – Koi carp and common carp (<i>Cyprinus carpio</i>);</li> <li>3. <b>Disease characteristics</b> – mortality, red spot on the body;</li> <li>4. <b>Pathogen</b> – Koi herpesvirus;</li> <li>5. <b>Mortality rate</b> – 0-44%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu;</li> <li>8. <b>Preventive/control measures</b> – movement control, disinfection of ponds and equipments, removal of dead fish;</li> <li>9. <b>Laboratory confirmation</b> – PCR by National Research Institute of Aquaculture, Japan Fisheries Resource Conservation Association and/or prefectural research laboratories;</li> <li>10. <b>Publications</b> – website of Ministry of Agriculture, Forestry and Fisheries (MAFF) and prefectures.</li> </ol>

5	<p><b>Viral encephalopathy and retinopathy</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – seven-band grouper (<i>Epinephelus septemfasciatus</i>);</li> <li>3. <b>Disease characteristics</b> – mortality;</li> <li>4. <b>Pathogen</b> – Betanodavirus;</li> <li>5. <b>Mortality rate</b> – 0.2-2.5%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu;</li> <li>8. <b>Preventive/control measures</b> – vaccination; use of fish without history of disease;</li> <li>9. <b>Laboratory confirmation</b> – PCR by prefectural research laboratory;</li> <li>10. <b>Publications</b> – None.</li> </ol>
6	<p><b>Infection with <i>Xenohaliotis californiensis</i></b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – <i>Haliotis diversicolor diversicolor</i>;</li> <li>3. <b>Disease characteristics</b> – none;</li> <li>4. <b>Pathogen</b> – <i>Xenohaliotis californiensis</i>;</li> <li>5. <b>Mortality rate</b> – 0%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu;</li> <li>8. <b>Preventive/control measures</b> –</li> <li>9. <b>Laboratory confirmation</b> – PCR by National Research Institute of Aquaculture, Japan Fisheries Resource Conservation Association;</li> <li>10. <b>Publications</b> – None.</li> </ol>

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

Japan amended the Enforcement Ordinance of the Act on the Production of the Fishery Resources prescribing the disease subject to import quarantine and the animal species, as well as the detention period upon arrival in Japan. The effective date is July 27, 2016.

Country: **KOREA, REPUBLIC OF**

 Period: **October - December 2015**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	-	-	-	III	
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	-	-	-	III	
5. Infection with <i>Aphanomyces invadans</i> (EUS)	0000	0000	0000		
6. Red seabream iridoviral disease (RSID)	+	-	-	III	1
7. Koi herpesvirus disease (KHV)					
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000		
9. Viral encephalopathy and retinopathy	-	-	-	III	
10. Enteric septicaemia of catfish	0000	0000	0000		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000		
2. Infection with <i>Perkinsus olseni</i>	-	-	-	III	
3. Infection with abalone herpes-like virus	0000	0000	0000		
4. Infection with <i>Xenohalotis californiensis</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	-	-	-	III	
6. Acute viral necrosis (in scallops)	0000	0000	0000		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000		
2. White spot disease (WSD)	-	-	-	III	
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	-	-	-	III	
5. Infectious myonecrosis (IMN)	-	-	-	III	
6. White tail disease (MrNV)	0000	0000	0000		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	0000	0000	0000		
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	-	-	-		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	-	-	-		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>**

**LISTED BY THE OIE**

**Finfish:** Infectious salmon anaemia; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

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
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
		-	Not reported (but disease is known to occur)
		(year)	Year of last occurrence

b/ 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	<p><b>RSID</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in:</b> Tongyeong-si, Geoje-si, Namhae-gun, Gyeongsandam-do/Yeosu-si and Jeollanam-do from October to December;</li> <li>2. <b>Species affected</b> – Rock bream (<i>Oplegnathus fasciatus</i>), seabass (<i>Lateolabrax japonicus</i>);</li> <li>3. <b>Clinical signs</b> – dark body coloration, severe anaemia, enlargement of spleen;</li> <li>4. <b>Pathogen</b> – Red seabream iridovirus;</li> <li>5. <b>Mortality rate</b> – low to high,</li> <li>6. <b>Economic loss</b> – \$10,000 worth of dead fish;</li> <li>7. <b>Geographic extent</b> – limited to two areas (Gyeongsandam-do and Jeollanam-do);</li> <li>8. <b>Control measures</b> – prohibition of movement, disinfection of equipment and facilities;;</li> <li>9. <b>Laboratory confirmation</b> – PCR and sequencing by National Institute of Fisheries Science (NIFI);</li> <li>10. <b>Publications</b> – None.</li> </ol>
2	

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

Country: **MYANMAR**

 Period: **October - December 2015**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
DISEASES PREVALENT IN THE REGION	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. Spring viraemia of carp (SVC)	***	***	***		
4. Viral haemorrhagic septicaemia (VHS)	***	***	***		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	***	***	***		
6. Red seabream iridoviral disease (RSID)	***	***	***		
7. Koi herpesvirus disease (KHV)					
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	***	***	***		
9. Viral encephalopathy and retinopathy	***	***	***		
10. Enteric septicaemia of catfish	***	***	***		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	/	/	/		
2. Infection with <i>Perkinsus olseni</i>	/	/	/		
3. Infection with abalone herpesvirus	/	/	/		
4. Infection with <i>Xenohaliotis californiensis</i>	/	/	/		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	/	/	/		
6. Acute viral necrosis (in scallops)	/	/	/		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	-	-	-	III	1
2. White spot disease (WSD)	-	-	-	III	
3. Yellowhead disease (YHD)	-	-	-	III	
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	***	***	***		
5. Infectious myonecrosis (IMN)	***	***	***		
6. White tail disease (MrNV)	***	***	***		
7. Necrotising hepatopancreatitis (NHP)	***	***	***		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	***	***	***		
9. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***		
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	/	/	/		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	/	/	/		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. Parasitic disease					2
2. Bacterial disease					2

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?( )	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	During this period, we have received 20 samples of crustaceans (2 frozen shrimp and 9 soft shell crab for export, and 9 live shrimps) for testing, and found that all samples were negative for WSSV, YHV and TSV.
2	Visited some fish farms in Yangon, Mandalay and Ayeyarwaddy regions during this period. Parasitic infestations ( <i>Dactylogyrus</i> spp; <i>Ergasilus</i> spp., and <i>Sporozoa</i> .) and bacterial disease ( <i>Streptococcus</i> sp.) were found in some farms due to poor water quality.
3	

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

Country: **PHILIPPINES**

 Period: **October - December 2015**

Item	Disease status <sup>at</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000	III	
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	-(2002)	-(2002)	-(2002)	I	1
6. Red seabream iridoviral disease (RSID)	0000	0000	0000	III	
7. Koi herpesvirus disease (KHV)	0000	0000	0000	III	
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	-(2008)	-(2008)	-(2008)	III	
9. Viral encephalopathy and retinopathy	+	+	+	III	2
10. Enteric septicaemia of catfish	***	***	***		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000		
2. Infection with <i>Perkinsus olseni</i>	0000	0000	0000		
3. Infection with abalone herpesvirus	***	***	***		
4. Infection with <i>Xenohaliotis californiensis</i>	***	***	***		
<b>Non OIE-listed diseases</b>	0000	0000	0000		
5. Infection with <i>Marteilioides chungmuensis</i>					
6. Acute viral necrosis (in scallops)	0000	0000	0000		
<b>CRUSTACEAN DISEASES</b>	***	***	***		
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	III	3
2. White spot disease (WSD)	+	+	+	III	4
3. Yellowhead disease (YHD)	-(1999)	-(1999)	-(1999)	III	5
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	+	+	+	III	6
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	7
6. White tail disease (MrNV)	0000	0000	0000	III	
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	III	8
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	****	****	****		
9. Acute hepatopancreatic necrosis disease (AHPND)	+ ( )	+ ( )	+ ( )	I, II, III	9
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	****	****	****		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	****	****	****		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1.					
2.					

<b>DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup></b>			
<b>LISTED BY THE OIE</b>			
<b>Finfish:</b> Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with <i>Gyrodactylus salaris</i> .			
<b>Molluscs:</b> Infection with <i>Bonamia ostreae</i> ; <i>Marteilia refringens</i> ; <i>Perkinsus marinus</i> .			
<b>Crustaceans:</b> Crayfish plague ( <i>Aphanomyces astaci</i> ).			
<b>NOT LISTED BY THE OIE</b>			
<b>Finfish:</b> Channel catfish virus disease			
a/ Please use the following symbols:			
+	Disease reported or known to be present	?()	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence
b/ 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 hundred (300) samples of <i>Anguilla spp.</i> were negative for <b>Infection with <i>Aphanomyces invadans</i> (EUS)</b> by gross morphological examination. Samples were from Laguna, Agusan del Norte, Antipolo City, Cotabato, Parañaque and General Santos. Examinations were conducted by the Bureau of Fisheries and Aquatic Resources (BFAR), Central Office Fish Health Laboratory.
2	Fifteen (15) samples of <i>Epinephelus spp.</i> , <i>Trachinotus spp.</i> , <i>T. blochii</i> , <i>L. calcarifer</i> , arapaima and sweet lip emperor were analyzed using PCR test. All samples showed negative results for <b>Viral Encephalopathy and Retinopathy</b> . The positive samples were collected from Camarines Norte and Iloilo. Examinations were conducted by BFAR Central Office and Asian Fisheries Development Center/ Aquaculture Department (SEAFDEC-AQD) Laboratories.
3	One hundred six (106) samples (62 <i>P. vannamei</i> , 42 <i>P. monodon</i> and 1 banana prawn and 2 wild shrimp) of different stages were analyzed using PCR test. All samples showed negative results for <b>Taura Syndrome</b> . The samples were collected from Cebu, Bacolod, Sorsogon, Catanduanes, Zambales, Oriental Mindoro, Benguet, Dagupan, Camarines Norte, Pangasinan, Sultan Kudarat, Tacloban and Marinduque. Examinations were conducted by BFAR Central Office and SEAFDEC-AQD Laboratories.
4	Five hundred eighty one (581) samples of <i>P. vannamei</i> , <i>P. monodon</i> , <i>P. indicus</i> , crab, annelids and oysters of different stages (fry, juvenile, adult and brood stock) were tested using PCR. Forty eight (48) were positive for <b>White Spot Syndrome Virus</b> . The positive samples were from Samar, Misamis Occidental, Zamboanga del Sur, Zamboanga del Norte, Zamboanga Sibugay, Sarangani Province, Agusan del Norte, Marinduque, Davao del Sur, Catanduanes, Butuan City, Dagupan, Surigao City and Capiz. Examinations were conducted by BFAR Central Office, SEAFDEC-AQD and Negros Prawn Producers Cooperative (NPPC) Laboratories.



5	<p>Twenty seven (27) samples (7 <i>P.vannamei</i>, 18 <i>P.monodon</i> and 2 wild shrimp) of different stages were analyzed using PCR test. All samples showed negative results for <b>Yellowhead Disease</b>. The samples were collected from Cebu, Marinduque, Oriental Mindoro, Banguet, Dagupan, Camarines Norte, Sorsogon, Pangasinan, Sulatan Kudarat, Zamboanga del Sur, Zamboanga Sibugay, Tacloban and Iloilo. Examinations were conducted by BFAR Central Office and SEAFDEC-AQD Laboratories.</p>
6	<p>One hundred twenty four (124) samples of <i>P.vannamei</i>, <i>P.monodon</i>, <i>S. Serrata</i>, crab, annelids and oysters of different stages (broodstock, adult, fry and juvenile) were analyzed using PCR test. Four <i>S.serrata</i> samples showed positive results for <b>Infectious hypodermal and haematopoietic necrosis (IHHN)</b>. The samples were collected from Surigao, Camarines, Samar, Aklan, Marinduque, Agusan del Norte, Catanduanes, Pangasinan, Zambales, Batangas, Oriental Mindoro, Sorsogon, Zamboanga Sibugay, Zamboanga del Sur and Iloilo. Examinations were conducted by BFAR Central Office and SEAFDEC-AQD Laboratories.</p>
7	<p>Nineteen (18) samples (9 <i>P.vannamei</i>, 9 <i>P.monodon</i>) of different stages were analyzed using PCR test. All samples showed negative for <b>Infectious Myonecrosis (IMN)</b>. The samples were collected from Aklan, Iloilo, Cebu, Roxas City and Batangas. Examinations were conducted by BFAR Central Office Laboratory.</p>
8	<p>Thirty one (31) samples of <i>P.vannamei</i> and <i>P.monodon</i> of different stages were analyzed using PCR test. All samples showed negative results for <b>Necrotising hepatopancreatitis (NHP)</b>. The samples were collected from Cebu, Misamis Occidental, Marinduque, Bataan, Dagupan, Agusan del Norte, Catanduanes, Pangasinan, Iloilo, Aklan and Oriental Mindoro. Examination was conducted by BFAR Central Office Laboratory.</p>
9	<p>Samples of <i>P.monodon</i> and <i>P.vannamei</i> from grow-out ponds in Bohol that experienced mortality with clinical signs including weakness, pale to white discoloration and atrophy of the hepatopancreas revealed manifestations of typical <b>AHPND</b> pathology in the histological sections of hepatopancreas stained with H&amp;E. Results of PCR test (IQ2000 AHPND Toxin 1) also showed the presence of toxin-producing strain of <i>V.parahaemolyticus</i>. Examinations conducted by SEAFDEC-AQD.</p> <p>For hundred seventy two (472) samples of <i>P.vannamei</i>, and <i>P.monodon</i> of different stages (fry, juvenile and adult) were tested using PCR.. Twenty nine (29) samples 19 <i>P.monodon</i>, 9 <i>P.vannamei</i> and 1 wild shrimp were positive for <b>Acute Hepatopanearectic Necrosis Disease</b>. The positive samples were from Iloilo, Leyte, Cebu, Davao del Sur, Marinduque, and Oriental Mindoro. Examinations were conducted by BFAR Central Office, SEAFDEC-AQD and NPPC Laboratories.</p>

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

Country: **SINGAPORE**

 Period: **October - December 2015**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	0000	0000	0000		
6. Red seabream iridoviral disease (RSID)	(2015)	(2015)	(2015)		
7. Koi herpesvirus disease (KHV)	(2012)	(2012)	(2012)		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	(2014)	(2104)	(2104)		
9. Viral encephalopathy and retinopathy	+	(2015)	(2015)	III	1
10. Enteric septicaemia of catfish	***	***	***		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	***	***	***		
2. Infection with <i>Perkinsus olseni</i>	***	***	***		
3. Infection with abalone herpes-like virus	***	***	***		
4. Infection with <i>Xenohaliotis californiensis</i>	***	***	***		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	***	***	***		
6. Acute viral necrosis (in scallops)	***	***	***		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000		
2. White spot disease (WSD)	(2015)	(2015)	(2015)	III	
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000	III	
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	
6. White tail disease (MrNV)	***	***	***		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	***	***	***		
9. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	***	***	***		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	+	(2015)	+	III	2,3
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. Infection with spleen and kidney necrosis virus (ISKNV) (marine and ornamental fish)	+	(2015)	(2015)	III	4
2. <i>Aeromonas salmonicida</i> (in goldfish)	0000	0000	0000		

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?()	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	<b>Viral nervous necrosis virus (VNNV)</b> was detected via real-time RT-PCR in a batch of diseased Asian seabass fry from a farm on RAS that reported sudden high mortality. The affected stock was destroyed and the systems disinfected..
2	<b>Batrachochytrium dendrobatidis (Bd)</b> was detected by real-time PCR in two batches of imported food frogs (American bull frogs) from Taiwan in October. Bd was last detected at the same farm in September 2015. All the bull frogs were humanely euthanized for food.
3	<b>Batrachochytrium dendrobatidis (Bd)</b> was detected by real-time PCR in skin swabs of two wild frogs ( <i>Hylarana guentheri</i> ) as part of joint wildlife Chytrid study with the National Park Board. <i>Hylarana guentheri</i> is an invasive alien species to Singapore with its presence confirmed in 2011. It is now commonly found in many urban parks and rural areas.
4	<b>Infectious spleen and kidney necrosis virus (ISKNV)</b> was detected by PCR and histological examination in diseased Asian seabass from a coastal fish farm in October. The farm was informed of the disease detection and advised to explore options of vaccination against iridovirus for the seabass.

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

**Country: VIETNAM**
**Period: October - December 2015**

Item	Disease status <sup>at</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	October	November	December		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with <i>Aphanomyces invadans</i> (EUS)	-	-	-		
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000		
9. Viral encephalopathy and retinopathy	0000	0000	0000		
10. Enteric septicaemia of catfish	+()	-	-	I, II	1
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000		
2. Infection with <i>Perkinsus olseni</i>	-	-	-		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohalotis californiensis</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
5. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
6. Acute viral necrosis (in scallops)	0000	0000	0000		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000		
2. White spot disease (WSD)	+	+	+	I, III	2
3. Yellowhead disease (YHD)	-	-	-		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000		
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	-	-	-		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
8. <i>Monodon</i> slow growth syndrome	-	-	-		
9. Acute hepatopancreatic necrosis disease (AHPND)	+	+	+	I, III	3
<b>AMPHIBIAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	0000	0000	0000		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	0000	0000	0000		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					

**DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup>  
LISTED BY THE OIE**

**Finfish:** Infection with HPR-deleted of HPR0 salmon anemia virus, Infection with salmon pancreas disease virus; Infection with *Gyrodactylus salaris*.

**Molluscs:** Infection with *Bonamia ostreae*; *Marteilia refringens*; *Perkinsus marinus*.

**Crustaceans:** Crayfish plague (*Aphanomyces astaci*).

**NOT LISTED BY THE OIE**

**Finfish:** Channel catfish virus disease

a/ Please use the following symbols:

+	Disease reported or known to be present	?()	Presence of the disease suspected but not confirmed in a zone
+?	Serological evidence and/or isolation of causative agent but no clinical diseases	***	No information available
?	Suspected by reporting officer but presence not confirmed	0000	Never reported
+()	Occurrence limited to certain zones	-	Not reported (but disease is known to occur)
+?()	Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease	(year)	Year of last occurrence

b/ 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	<p><b>Enteric Septicaemia of Catfish (<i>Edwardsiella ictaluri</i>)</b></p> <p>Infection found in intensive catfish (<i>Pangasius micronema</i>, <i>P. hypophthalmus</i>) farms. The disease occurred in Dong Thap provinces.</p>
2	<p><b>White Spot Disease (WSD)</b></p> <p><b>Pathogen:</b> White spot syndrome virus (WSSV)  <b>Species affected:</b> <i>Penaeus monodon</i> and <i>Litopenaeus vannamei</i> (10-100 DOC)  <b>Name of affected area:</b> reported in 14 provinces (total area 461.83 ha) including Hai Phong, Nge Anh, Ha Tinh, Khanh Hoa, Ho Chi Minh, Ba Ria-Vung Tau, Long An, Tien Gang, Ben Tre, Tra Vinh, Kien Gang, Soc Trang, Bac Lieu and Ca Mau.  <b>Mortality rate:</b> average to high, 100% in some cases within 10 d.  <b>Clinical signs:</b> lethargic or moribund shrimps aggregated at pond surface and edges, slow to erratic swimming behavior, overall body color often reddish, minute to large (0.5-2.0 mm diameter) white inclusions embedded in the cuticle;  <b>Control measures:</b> early harvest, strict isolation of infected ponds from movement, strengthened control of transportation, disinfection of infected ponds using Calcium hypochlorite (chlorine).</p>

3	<p><b>Acute Hepatopancreatic Necrosis Disease (AHPND)</b></p> <p><b>Pathogen:</b> <i>Vibrio parahaemolyticus</i> with Phage A3</p> <p><b>Species affected:</b> <i>Penaeus monodon</i> and <i>Litopenaeus vannamei</i> (10-45 DOC)</p> <p><b>Name of affected area:</b> reported in 14 provinces and caused losses in total shrimp culture area of 764.26 ha. Affected provinces include Quang Ninh, Nghe An, Ha Tinh, Khanh Hoa, Ho Chi Minh, Ba Ria-Vung Tau, Ninh Thuan, Tien Giang, Tra Vinh, Ben Tre, Kien Giang, Soc Trang, Bac Lieu and Ca Mau.</p> <p><b>Mortality rate:</b> could reach 95% in intensive and semi-intensive farms;</p> <p><b>Clinical signs:</b> shrimps become lethargic with soft, darkened shells, mottling of the carapace. Pathology is limited to hepatopancreas.</p> <p><b>Control measures:</b> strict isolation of infected ponds from movement and transport controls, disinfection of infected ponds using Calcium hypochlorite (chlorine).</p>
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2. New aquatic animal health regulations introduced within past six months (with effective date): None

## List of Diseases in the Asia-Pacific Quarterly Aquatic Animal Disease Report (Beginning 2015)

1. DISEASES PREVALENT IN THE REGION	
<b>1.1 FINFISH DISEASES</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Epizootic haematopoietic necrosis	1. Grouper iridoviral disease
2. Infectious haematopoietic necrosis	2. Viral encephalopathy and retinopathy
3. Spring viraemia of carp (SVC)	3. Enteric septicaemia of catfish
4. Viral haemorrhagic septicaemia (VHS)	
5. Infection with <i>Aphanomyces invadans</i> (EUS)	
6. Red seabream iridoviral disease (RSID)	
7. Koi herpesvirus disease (KHV)	
<b>1.2 MOLLUSC DISEASES</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Infection with <i>Bonamia exitiosa</i>	1. Infection with <i>Marteilioides chungmuensis</i>
2. Infection with <i>Perkinsus olseni</i>	2. Acute viral necrosis (in scallops)
3. Infection with abalone herpesvirus	
4. Infection with <i>Xenohalotis californiensis</i>	
<b>1.3 CRUSTACEAN DISEASES</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Taura syndrome (TS)	1. Monodon slow growth syndrome
2. White spot disease (WSD)	2. Acute hepatopancreatic necrosis disease (AHPND)
3. Yellowhead disease (YHD)	
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	
5. Infectious myonecrosis (IMN)	
6. White tail disease (MrNV)	
7. Necrotising hepatopancreatitis (NHP)	
<b>1.4 AMPHIBIAN DISEASES</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Infection with Ranavirus	
2. Infection with <i>Bachtracochytrium dendrobatidis</i>	
2. DISEASES PRESUMED EXOTIC TO THE REGION	
<b>2.1 Finfish</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Infection with HPRdeleted or HPR0 salmon anaemia virus	1. Channel catfish virus disease
2. Infection with salmon pancreas disease virus	
3. Infection with <i>Gyrodactylus salaris</i>	
<b>2.2 Molluscs</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Infection with <i>Bonamia ostreae</i>	
2. Infection with <i>Marteilia refringens</i>	
3. Infection with <i>Perkinsus marinus</i>	
<b>2.3 Crustaceans</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Crayfish plague ( <i>Aphanomyces astaci</i> )	

## Recent Aquatic Animal Health Related Publications

**OIE Aquatic Animal Health Code, 18<sup>th</sup> Edition, 2015.** The OIE Aquatic Animal Health Code (the Aquatic Code) sets out standards for the improvement of aquatic animal health and welfare and veterinary public health worldwide, including through standards for safe international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products. The health measures in the Aquatic Code should be used by the veterinary authorities of importing and exporting countries to provide for early detection, reporting and control of agents pathogenic to aquatic animals and, in the case of zoonotic diseases, for humans, and to prevent their transfer via international trade in aquatic animals and aquatic animal products, while avoiding unjustified sanitary barriers to trade. The health measures in the Aquatic Code have been formally adopted by the World Assembly of OIE Delegates, which constitutes the organisation's highest decision-making body. The 18th edition includes an updated version of the table of contents, user's guide and glossary, and revised text in the following chapters: diseases listed by the OIE, import risk analysis, control of pathogenic agents in aquatic animal feed, general obligations related to certification, certification procedures, infection with *Batrachochytrium dendrobatidis*, infection with ranavirus and infection with *Perkinsus olseni*. In addition, the text in Articles X.X.7. and X.X.11. of disease-specific chapters has been merged, and some amendments have been made in Articles 10.4.4. and 10.4.6. The 18th edition also includes two new chapters: Recommendations for surface disinfection of salmonid eggs (4.4.) and Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in aquatic animals (6.5.). The Aquatic Animal Health Code is available for free download <http://www.oie.int/en/international-standard-setting/aquatic-code/access-online/>

**OIE Manual of Diagnostic Tests for Aquatic Animals, 2015.** The purpose of this manual is to provide a uniform approach to the detection of the diseases listed in the OIE *Aquatic Animal Health Code*, so that the requirements for health certification in connection with trade in aquatic animals and aquatic animal products can be met. It includes bibliographical references and a list of the OIE Reference Laboratories for amphibian, crustacean, fish and mollusc diseases. The manual is available for free download at <http://www.oie.int/international-standard-setting/aquatic-manual/access-online/>

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**Instructions on how to fill in the  
QUARTERLY AQUATIC ANIMAL DISEASE REPORT**

(Revised during the Provisional Meeting of the AG<sup>1</sup>, 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.

+?() These symbols mean that confirmed infection/infestation is limited to one of more zones of the country, but no clinical disease.

?() These symbols mean the presence of the disease suspected but not confirmed in a zone.

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<sup>1</sup> 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:

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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: [info@enaca.org](mailto:info@enaca.org) or [eduardo@enaca.org](mailto:eduardo@enaca.org).  
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**ISSN 1513-6558**