



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

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# Contents

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Foreword	iv
<b>Reports Received by the NACA and OIE-RRAP</b>	
Australia	1
Chinese Taipei	7
Hong Kong SAR, China	10
India	12
Japan	15
Maldives	19
Mongolia	21
Myanmar	23
New Caledonia	25
New Zealand	27
Singapore	30
Thailand	32
Vietnam	35
French Polynesia	38
List of Diseases under the Asia-Pacific Quarterly Aquatic Animal Disease Report	41
Recent related publications	42
List of NACA National Coordinators and OIE National Focal Points for Aquatic Animals	45
Instructions on how to fill in the <i>Quarterly Aquatic Animal Disease Report</i>	53

## Foreword

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### Disease Advisory: Tilapia Lake Virus (TiLV) – an Emerging Threat to Farmed Tilapia in the Asia-Pacific Region

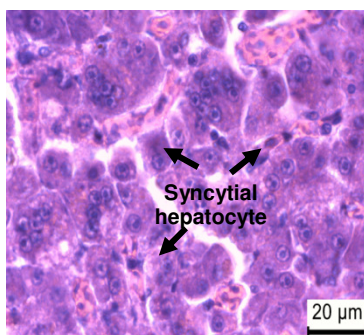
Tilapias are highly important (and inexpensive) source of fish protein in the world and are one of the most popular species for aquaculture in several regions including the Asia-Pacific. The top 10 producing-countries include China, Egypt, Philippines, Thailand, Indonesia, Lao PDR, Costa Rica, Ecuador, Colombia and Honduras. Since 2009, tilapia aquaculture has been threatened by mass die-offs of farmed fish in Israel and Ecuador (Bacharach et al., 2016). The aetiological agent causing this mass die-offs has been described and identified as a novel Orthomyxo-like (RNA) virus named as Tilapia lake virus (TiLV) (Eyngor et al. 2014; 2016; Bacharach et al., 2016). This has been reported as a newly emerging virus that causes syncytial hepatitis of tilapia (SHT). As of 2016, countries affected by this emerging disease of tilapia include Israel, Ecuador, Colombia and Egypt (Eyngor et al., 2014; Ferguson et al., 2014; Bacharach et al., 2016; Tsofack et al., 2016; Del-Pozo et al., 2017; Fathi et al., 2017).

Recently, disease outbreaks among cultured tilapias have occurred in Thailand, wherein high cumulative mortalities (20-90%) were observed and recorded (Dong et al., 2017a). Thirty-two outbreaks were investigated during 2015-2016 involving large number of deaths of unknown cause among farmed tilapia (*Oreochromis niloticus*) and red hybrid tilapia (*Oreochromis* spp.) (Suratchatpong et al., 2017). Histopathology (of the liver showing similar signs to SHT), transmission electron microscopy, in-situ hybridization and high nucleotide sequence identity to TiLV from Israel (Dong et al. 2017b) confirmed that these outbreaks were caused by TiLV.

#### Signs of the Disease

Mass mortality (20-90%) among cultured tilapias is an indicative sign of the disease. Gross signs include multifocal to coalescing dermal erosions and ulcers, ocular alterations including opacity of the lens and shrinkage of the eyes (Eyngor et al., 2014). Diseased fish also exhibit loss of appetite, pale color, gathering in the bottom, slow movement, and stopped schooling prior to death (Dong et al., 2017).

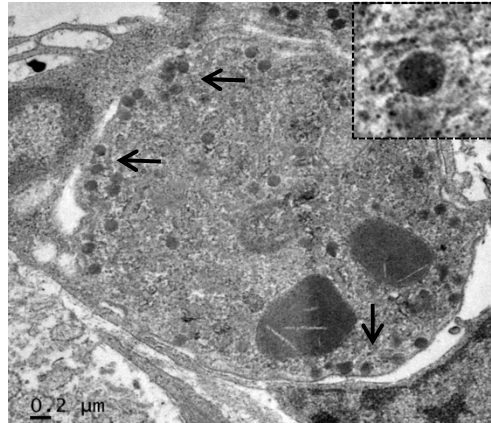
Histopathological lesions of the brain included edema, focal hemorrhages in the leptomeninges, and capillary congestion in both the white and gray matter (Eyngor et al., 2014). For the liver,



**Figure 1.** Photomicrograph of TiLV-infected liver tissue of tilapia revealed typical syncytial hepatitis (H&E). Photo courtesy of H. Dong.

histopathological changes include swollen and dissociated hepatocytes (Dong et al., 2017a) and typical feature of syncytial hepatitis as shown in Figure 1 (Dong et al., 2017b).

Intracytoplasmic viral particles can be observed in the infected tissues using transmission electron microscopy (Figure 2).



**Figure 2.** Transmission electron micrograph of intracytoplasmic viral particles of TiLV (arrows) from liver tissues. Photo courtesy of H. Dong.

### PCR Detection Methods

Detection of the virus in infected tissues of tilapia is highly important in the confirmation of infection or the presence of the virus. Eyngor et al. (2014) developed an RT-PCR method for the detection of TiLV, while Tsofack et al. (2017) described a sensitive nested RT-PCR assay allowing the rapid detection of TiLV in fish organ. An improved PCR detection method for TiLV was published by Dong et al. (2017b) by modifying the nested RT-PCR protocols into a semi-nested RT-PCR by omitting the primer “Nested ext-2” to avoid false positive results. The semi-nested RT-PCR protocol may be used freely for non-commercial applications to detect TiLV. Heavily-infected samples will generate 2 amplicon bands of 415 bp and 250 bp while lightly-infected samples will generate a single 250-bp amplicon band. Please contact Centex Shrimp ([saengchan@biotec.or.th](mailto:saengchan@biotec.or.th)) to obtain a free positive control plasmid (pGEM-415\_bp).

### Other important links:

FAO issues alert over lethal virus affecting popular tilapia fish.

<http://www.fao.org/news/story/en/item/888884/icode/>

TiLV Technical Disease Card

[http://www.oie.int/fileadmin/Home/eng/International\\_Standard\\_Setting/docs/pdf/Aquatic\\_Commision/A\\_TiLV\\_disease\\_card.pdf](http://www.oie.int/fileadmin/Home/eng/International_Standard_Setting/docs/pdf/Aquatic_Commision/A_TiLV_disease_card.pdf)

Tilapia Lake Virus: Literature Review

[http://pubs.iclarm.net/resource\\_centre/FISH-2017-04.pdf](http://pubs.iclarm.net/resource_centre/FISH-2017-04.pdf)

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[http://www.enaca.org/modules/news/article.php?article\\_id=2077&title=tilapia-lake-virus-in-thailand-improved-pcr-detection-method](http://www.enaca.org/modules/news/article.php?article_id=2077&title=tilapia-lake-virus-in-thailand-improved-pcr-detection-method)
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## **Reports Received by the NACA and OIE-RRAP**

**(Officially prepared by OIE National Focal Points for Aquatic Animals/NACA National Coordinator, and submitted by OIE Delegate)**

Country: AUSTRALIA\*Period: January - March 2017

Item	Disease status <sup>a/</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	-(2016)	-(2016)	-(2016)		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	-(2016)	+	-(2017)	III	3
10. Enteric septicaemia of catfish	-(2014)	-(2014)	-(2014)		4
11. Carp edema virus disease	***	***	***		
<b>MOLLUSC DISEASES</b>	***	***	***		
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>					
2. Infection with <i>Perkinsus olseni</i>	-(2016)	+	-(2017)	III	5
3. Infection with abalone herpesvirus	-(2016)	+	-(2017)	III	6
4. Infection with <i>Xenohaliotis californiensis</i>	-(2011)	-(2011)	-(2011)		7
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>	0000	0000	0000		
6. Infection with <i>Marteilioides chungmuensis</i>					
7. 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)	+ (S.E QLD)	+ (S.E QLD)	+ (S.E QLD)	III	8
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	-(2015)	-(2015)	+	III	9
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	-(2008)	-(2008)	-(2008)		10
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Crayfish plague	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme



AMPHIBIAN DISEASES					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	-(2008)	-(2008)	-(2008)		11
2. Infection with <i>Batrachochytrium dendrobatidis</i>	?	-(2016)	-(2016)		12
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. <i>Hepatopancreatitis</i> in prawns	+	+	+	III	13
2. <i>Tenacibaculum dicentrarchi</i>	+	-(2017)	-(2017)	II	14

**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>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> was not reported this period despite passive surveillance in New South Wales (last reported march 2016), Queensland (last reported 2014), Western Australia (last reported 2013), 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.

<p>3</p>	<p><b>Viral encephalopathy and retinopathy</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in February 2017; passive surveillance;</li> <li>2. <b>Species affected</b> – Queensland groper (<i>Epinephelus lanceolatus</i>) juvenile, 6 months old;</li> <li>3. <b>Clinical signs</b> – subclinical;</li> <li>4. <b>Pathogen</b> – Betanodavirus;</li> <li>5. <b>Mortality rate</b> – one fish;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – one pond;</li> <li>8. <b>Containment measures</b> – N/A;</li> <li>9. <b>Laboratory confirmation</b> – histopathology, IHCT;</li> <li>10. <b>Publications</b> – None.</li> </ol> <p>Viral encephalopathy and retinopathy is known to have occurred previously in NSW (last reported in December 2016), the Northern Territory (last reported 2013), Western Australia (last reported 2013), South Australia (last reported 2010) and Tasmania (last reported 2000). Passive surveillance and never reported in Victoria. No information available this period in the Australian Capital Territory.</p>
<p>4</p>	<p><b>Enteric septicaemia of catfish</b> (<i>Edwardsiella ictaluri</i>) was not reported this period despite pasive surveillance. It was reported from clinically normal fish from a single river in Queensland (October 2014). 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 a 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.</p>
<p>5</p>	<p><b>Infection with <i>Bonamia exitiosa</i></b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Western Australia</b> in February 2017, active surveillance; <b>South Australia</b> in February 2017, passive surveillance</li> <li>2. <b>Species affected</b> – flat oysters (<i>Ostrea angasi</i>);</li> <li>3. <b>Clinical signs</b> – sub-clinical;</li> <li>4. <b>Pathogen</b> – <i>Bonamia exitiosa</i>;</li> <li>5. <b>Mortality rate</b> – N/A in Western Australia; no mortality in South Australia;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – wild oysters and reef restoration project in Western Australia; oyster growing regions (sea-based farms) in South Asutralia;</li> <li>8. <b>Containment measures</b> – N/A;</li> <li>9. <b>Laboratory confirmation</b> – qPCR, PCR and histopathology,</li> <li>10. <b>Publications</b> – nil.</li> </ol> <p>Infection with <i>Bonamia exitiosa</i> was not reported this period despite passive surveillance in Victoria (last reported January 2016). Passive surveillance and never reported in Queensland, New South Wales, Tasmania and Northern Territory. No information available for the Australian Capital Territory (no marine water responsibility).</p>

<p>6</p>	<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 February 2017, active surveillance; <b>South Australia</b> in February 2017, passive surveillance;</li> <li>2. <b>Species affected</b> – farmed greenlip abalone (<i>Haliotis laevis</i>) in Western Australia; wild blacklip abalone (<i>Haliotis rubra</i>) in South Australia;</li> <li>3. <b>Clinical signs</b> – subclinical in Western Australia; clinical in South Australia;</li> <li>4. <b>Pathogen</b> – <i>Perkinsus olseni</i>;</li> <li>5. <b>Mortality rate</b> – N/A in Western Australia; none in South Australia;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – N/A in Western Australia; western zone fisheries in South Australia;</li> <li>8. <b>Containment measures</b> – on-farm in Western Australia; none in South Australia;</li> <li>9. <b>Laboratory confirmation</b> – PCR, RFTM and histopathology;</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), and New South Wales (last reported 2005). Passive surveillance and never reported in the Northern Territory and Tasmania. No information available for the Australian Capital Territory (no marine water responsibility).</p>
<p>7</p>	<p><b>Infection with abalone herpesvirus (abalone viral ganglioneuritis)</b> was not reported this period despite passive surveillance in Tasmania (last reported 2011), 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>
<p>8</p>	<p><b>White Spot Disease</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in January, February and March 2017, targeted surveillance;</li> <li>2. <b>Species affected</b> – giant tiger prawn (<i>Penaeus monodon</i>) 28+ days of culture juveniles, <i>Penaeus</i> spp., crenate swimming crab (<i>Thalamita crenata</i>) wild;</li> <li>3. <b>Clinical signs</b> – mortalities in farmed prawns;</li> <li>4. <b>Pathogen</b> – White spot syndrome virus;</li> <li>5. <b>Mortality rate</b> – total losses of prawns dying and destroyed through eradication;</li> <li>6. <b>Economic loss</b> – &gt; \$20 million;</li> <li>7. <b>Geographic extent</b> – prawn farms on the Logan River catchment, Moreton Bay area;</li> <li>8. <b>Containment measures</b> – no water discharge, quarantine, bird control, destruction of prawns, disinfection of water, movement control orders;</li> <li>9. <b>Laboratory confirmation</b> – PCR, Real-time PCR, sequencing, histopathology;</li> <li>10. <b>Publications</b> – OIE immediate and follow up notifications.</li> </ol> <p>White spot disease was confirmed from a farm on the Logan River Catchment in South East Queensland on 1 December 2016. An emergency disease response to contain and eradicate the disease is ongoing. A movement control order has been implemented over the affected area of South East Queensland. White spot disease has never been reported despite active and passive surveillance in New South Wales, South Australia, Western Australia and Northern Territory. Passive surveillance and never reported in Victoria and Tasmania. No information available for the Australian Capital Territory (no marine water responsibility).</p>

9	<p><b>Infectious hypodermal and haematopoietic necrosis virus (IHHNV)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in March 2017, passive surveillance;</li> <li>2. <b>Species affected</b> – giant tiger prawn (<i>Penaeus monodon</i>) 6 months;</li> <li>3. <b>Clinical signs</b> – mortalities, role of IHHNV unknown;</li> <li>4. <b>Pathogen</b> – IHHN virus;</li> <li>5. <b>Mortality rate</b> – low levels of mortality;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – one pond;</li> <li>8. <b>Containment measures</b> – N/A;</li> <li>9. <b>Laboratory confirmation</b> – PCR;</li> <li>10. <b>Publications</b> – nil.</li> </ol> <p>Infectious hypodermal and haematopoietic necrosis virus was not reported this period despite passive surveillance 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 water responsibility) and Tasmania (susceptible species not present).</p>
10	<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>
11	<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>
12	<p><b>Infection with <i>Batrachochytrium dendrobatidis</i></b> was not reported this period despite passive surveillance in Victoria (last reported October 2016), Tasmania (last reported 2013), New South Wales (last reported 2012), Western Australia (last reported 2008) and Queensland (last reported 2004). Passive surveillance and never reported from the Northern Territory. No information available this period in the Australian Capital Territory and South Australia.</p>
13	<p><b>Hepatopancreatitis in prawns</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Queensland</b> in January, February and March 2017, passive surveillance;</li> <li>2. <b>Species affected</b> – giant tiger prawn (<i>Penaeus monodon</i>) 3+ months;</li> <li>3. <b>Clinical signs</b> – mortalities, subclinical;</li> <li>4. <b>Pathogen</b> – <i>Vibrio</i> sp, containing Pir-related toxin gene;</li> <li>5. <b>Mortality rate</b> – N/A;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – one pond on one farm, 14 ponds on another farm;</li> <li>8. <b>Containment measures</b> – destocking and disinfection;</li> <li>9. <b>Laboratory confirmation</b> – histopathology and PCR;</li> <li>10. <b>Publications</b> – nil.</li> </ol> <p>Passive surveillance and never reported in New South Wales. No information available this period in the Australian Capital Territory, Victoria, Northern Territory, South Australia, Western Australia and Tasmania.</p>

14	<p><b><i>Tenacibaculum dicentrarchi</i></b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in Tasmania</b> in January 2017, passive surveillance;</li> <li>2. <b>Species affected</b> – Atlantic salmon (<i>Salmo salar</i>) 750-1000g;</li> <li>3. <b>Clinical signs</b> –subclinical;</li> <li>4. <b>Pathogen</b> – <i>Tenacibaculum dicentrarchi</i>;</li> <li>5. <b>Mortality rate</b> – N/A;</li> <li>6. <b>Economic loss</b> – N/A;</li> <li>7. <b>Geographic extent</b> – 7 sea cages, 130 000 fish per cage;</li> <li>8. <b>Containment measures</b> – N/A;</li> <li>9. <b>Laboratory confirmation</b> – histopathology;</li> <li>10. <b>Publications</b> – nil.</li> </ol> <p>No information available from the Australian Capital Territory, New South Wales, Victoria, Northern Territory, South Australia and Western Australia.</p>
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**2. New aquatic animal health regulations introduced within past six months (with effective date):**

The Director of Biosecurity, under the Biosecurity Act 2015, made the Biosecurity (Suspended Goods–Uncooked Prawns) Determination 2017, suspending uncooked prawn imports into Australia effective from 9 January 2017. Amendments were issued to exempt certain low biosecurity risk prawn products from this suspension on 3 February 2017 (Biosecurity Amendment (Exceptions) Determination) and 27 February 2017 (Biosecurity Amendment (Exceptions) Determination No. 2).

Queensland and other states and territories have implemented new regulations restricting movement and sale of raw crustaceans such as prawns, crabs, yabbies and marine worms out of the Queensland movement control area.

The Aquaculture Farm Biosecurity Plan was published in January 2017 on the Department of Agriculture and Water Resources website (<http://www.agriculture.gov.au/fisheries/aquaculture/farm-biosecurity-plan>).

Country: **CHINESE TAIPEI**

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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	+	+	+	LDCCs	1
9. Viral encephalopathy and retinopathy	+	+	+	LDCCs	2
10. Enteric septicaemia of catfish	***	***	***		
11. Carp edema virus disease	***	***	***		
<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>Xenohalictis californiensis</i>	***	***	***		
5. Infection with <i>Bonamia ostreae</i>	***	***	***		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	***	***	***		
7. Acute viral necrosis (in scallops)	***	***	***		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	-	-	-		
2. White spot disease (WSD)	-	+	+	LDCCs	3
3. Yellowhead disease (YHD)	-	-	-		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	-	-	-		
5. Infectious myonecrosis (IMN)	***	***	***		
6. White tail disease (MrNV)	-	-	-		
7. Necrotising hepatopancreatitis (NHP)	***	***	***		
8. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***		
9. Crayfish plague	-	-	-		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

AMPHIBIAN DISEASES					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	-	-	-		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	***	***	***		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					

<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	1. Kaohsiung city. 5 outbreak reports from 4 farms. 2. Date: (1) Jan 13, (2) Jan 16, (3) Feb 6, (4) Feb 21, (5) Mar 30. 3. Species: (1) <i>Epinephelus lanceolatus</i> ; (2), (3), (5) <i>Lates calcarifer</i> ; (4) <i>Scatophagus argus</i> . 4. Mortality rate: low. 5. Total number of death: (1) 0/1000, (2) 0/35000, (3), (5) 0/40000, (4) 0/10000.

2	<p>1. Kaohsiung city, Pingtung county. 34 outbreak reports from 26 farms.</p> <p>2. Date: (1), (2) Jan 9; (3) Jan 12; (4), (5) Feb 6; (6) Feb 7; (7), (8) Feb 14; (9) Feb 17; (10), (11), (12) Feb 21; (13), (14) Mar 7; (15), (16), (17) Mar 8; (18), (19), (20), (21), (22) Mar 14; (23), (24), (25) Mar 16; (26), (27) Mar 17; (28) Mar 20; (29), (30) Mar 21; (31), (32) Mar 22; (33) Mar 23; (34) Mar 30.</p> <p>3. Species: (1), (3), (6), (7), (12), (13), (23), (27), (28), (30), (33), (34) <i>Epinephelus malabaricus</i>; (2), (5), (10), (15), (16), (21), (25), (26), (29) <i>Epinephelus lanceolatus</i>; (4), (8), (11), (14), (17), (18), (19), (20), (22), (24), (31), (32) <i>Epinephelus fuscoguttatus</i> x <i>Epinephelus lanceolatus</i>; (9) <i>Lateolabrax japonicus</i>.</p> <p>4. Mortality rate: low.</p> <p>5. Total number of death: (1), (3), (4), (6), (7), (11), (12), (13), (17), (24), (27), (28), (30), (33), (34) 0/10000; (2), (5), (8), (10), (14), (15), (16), (18), (19), (20), (21), (22), (25), (26), (29), (31), (32) 0/1000; (23) 0/20000; (9) 0/3750000.</p>
3	<p>1. Pingtung county, Tainan city. 6 outbreak reports from 6 farms.</p> <p>2. Date: (1), (2) Feb 15; (3) Mar 1; (4), (5) Mar 3; (6) Mar 8.</p> <p>3. Species: (1), (4), (5), (6) <i>Neocardina denticulata sinensis</i>; (2), (3) Ornamental shrimps.</p> <p>4. Mortality rate: low.</p> <p>5. Total number of death: (1) 0/120000; (2) 0/150000; (3) 0/80000; (4) 0/100000; (5), (6) 0/96000.</p>

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



Country: **HONG KONG SAR, CHINA\***

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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	
11. Carp edema virus disease	***	***	***		
<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>Xenohalictis californiensis</i>	0000	0000	0000	II	
5. Infection with <i>Bonamia ostreae</i>	***	***	***		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000	II	
7. 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 (IHNN)	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)	***	***	***	II	
8. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***	II	
9. Crayfish plague	0000	0000	0000	II	
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	0000	0000	0000	II	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	0000	0000	0000	II	
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

<p><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</p>					
<p>a/ Please use the following symbols:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p> </td> <td style="width: 50%; vertical-align: top;"> <p>?() Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p> </td> </tr> </table>				<p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?() Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p>
<p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?() Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p>				
<p>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</p>					

**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: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	+	+	+	II,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		
11. Carp edema virus disease	-	-	+	III	2
<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	3
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohalictis californiensis</i>	0000	0000	0000		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
7. 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	4
3. Yellowhead disease (YHD)	***	***	***		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	+	+	-	III	5
5. Infectious myonecrosis (IMN)	(2016)	(2016)	(2016)		
6. White tail disease (MrNV)	-	-	-		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Crayfish plague	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	+	+	+	III	6
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000		
13. Iridovirus in crayfish	0000	0000	0000		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<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
+?	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	Infection with <i>Aphanomyces invadans</i> was reported from <i>Catla catla</i> , <i>Labeo rohita</i> , <i>L. bata</i> , <i>Cirrhinus mrigala</i> , <i>Puntius gonionotus</i> from Maharajanj and Barabanki districts in Uttar Pradesh; Lakhimpur in Assam; and West Tripura, South Tripura, Khowai, Sepahijala and Unakoti districts in Tripura.
2	Carp edema virus infection was reported in koi carps from Cuttack, Odisha.
3	Infection with <i>Perkinsus olseni</i> reported from farmed <i>Perna viridis</i> from Kasargod, Kannur and Thrissur districts of Kerala; wild samples of <i>Meretrix meretrix</i> and <i>Pinctada sugilatta</i> from Chilika, Odisha; wild samples of <i>Perna viridis</i> and <i>Paphia malabarica</i> from Kozhikode, Kasargod, Kannur and Kayamkulam districts of Kerala.

4	WSSV was detected from <i>P. monodon</i> in Alapuzha, Kollam, Ernakulam districts in Kerala; Uttara Kannada and Udupi districts of Karnataka. WSSV was also detected in <i>Litopenaeus vannamei</i> from Nagapattinam, Ramnad, Kanchipuram, Thiruvallur districts of Tamil Nadu; Thane district of Maharashtra; East Godavari, West Godavari, Srikakulam, Vizianagram and Guntur districts of Andhra Pradesh; Bhadrak district of Odisha; Udupi and Uttara Kannada district of Karnataka.
5	IHHNV was detected in <i>P. monodon</i> from Thrissur district of Kerala; Udupi and Uttara Kannada districts of Karnataka; <i>Litopenaeus vannamei</i> from Udupi and Uttara Kannada districts of Karnataka and East Godavari district of Andhra Pradesh.
6	Hepatopneumatic Microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> was reported in <i>Litopenaeus vannamei</i> from East Godavari, West Godavari, Visakhapatnam, Vizianagram, Srikakulam, Guntur and Nellore districts of Andhra Pradesh; Thoothukudi, Nagapattinam, Ramnad and Pudukkottai districts of Tamil Nadu; Udupi and Uttara Kannada districts of Karnataka.

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

Country: **JAPAN\***

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	-(2016)	+	+	III	2
5. Infection with <i>Aphanomyces invadans</i> (EUS)	-(2015)	-(2015)	-(2015)	I	
6. Red seabream iridoviral disease (RSID)	-(2016)	+	-(2017)	III	3
7. Koi herpesvirus disease (KHV)	-(2016)	+	-(2017)	III	4
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000	I	
9. Viral encephalopathy and retinopathy	+	-(2017)	-(2017)	III	5
10. Enteric septicaemia of catfish	-(2010)	-(2010)	-(2010)	I	
11. Carp edema virus disease	-	-	-	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)	-(2015)	I	
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000	I	
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	-(2014)	-(2014)	-(2014)	I	
7. 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)	+	-(2017)	-(2017)	III	6
3. Yellowhead disease (YHD)	0000	0000	0000	I	
4. Infectious hypodermal and haematopoietic necrosis (IHNN)	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	
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	I	
9. Crayfish plague	0000	0000	0000	I	
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000	I	
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000	I	
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000	I	
13. Iridovirus in crayfish	0000	0000	0000	I	

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	-(2012)	-(2012)	-(2012)	I	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	-(2009)	-(2009)	-(2009)	I	
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

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

### 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> 7 prefectures;</li> <li><b>Species affected</b> – Amago (<i>Onchorynchus rhodorus</i>), yamame (<i>O. masou</i>), hybrid of rainbow trout;</li> <li><b>Disease characteristics</b> – Mortality, anemia, anemia of gills and kidney, anemia of viscera, threadbare fins, petechial haemorrhages;</li> <li><b>Pathogen</b> – Infectious haematopoietic necrosis virus;</li> <li><b>Mortality rate</b> – 1-70%;</li> <li><b>Economic loss</b> –;</li> <li><b>Geographic extent</b> – Honshu;</li> <li><b>Preventive/control measures</b> – feed restriction, disinfection of facilities and tools, notification to concerned authorities;</li> <li><b>Laboratory confirmation</b> – cell culture, Isolation of the virus by prefectural research laboratories;</li> <li><b>Publications</b> – None.</li> </ol>

<p>2</p>	<p><b>Viral Haemorrhagic Septicaemia (VHS)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 2 prefectures;</li> <li>2. <b>Species affected</b> – red sea bream (<i>Pagrus major</i>);</li> <li>3. <b>Disease characteristics</b> – mortality, anemia of gills;</li> <li>4. <b>Pathogen</b> – Viral haemorrhagic septicaemia virus;</li> <li>5. <b>Mortality rate</b> – 1%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Honshu and Shikoku;</li> <li>8. <b>Preventive/control measures</b> – feed restriction, removal of dead fish, notification to concerned authorities;</li> <li>9. <b>Laboratory confirmation</b> – PCR by prefectural research laboratories;</li> <li>10. <b>Publications</b> – None.</li> </ol>
<p>3</p>	<p><b>Red Seabream Iridoviral Disease (RSIVD)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – Bluefin tuna (<i>Thunnus orientalis</i>);</li> <li>3. <b>Disease characteristics</b> – mortality;</li> <li>4. <b>Pathogen</b> – Red seabream iridovirus;</li> <li>5. <b>Mortality rate</b> – 0.1-1%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Kyushu;</li> <li>8. <b>Preventive/control measures</b> – removal of dead fish;</li> <li>9. <b>Laboratory confirmation</b> – PCR by prefectural research laboratories;</li> <li>10. <b>Publications</b> – None.</li> </ol>
<p>4</p>	<p><b>Koi Herpesvirus Disease (KHV)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – Koi carp (<i>Cyprinus carpio</i>)</li> <li>3. <b>Disease characteristics</b> – none;</li> <li>4. <b>Pathogen</b> – Koi herpesvirus;</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> – movement control, culling of infected fish, disinfection of ponds, notification to concerned authorities;</li> <li>9. <b>Laboratory confirmation</b> – PCR by National Research Institute of Aquaculture;</li> <li>10. <b>Publications</b> – none.</li> </ol>



5	<p><b>Viral Encephalopathy and Retinopathy (VER)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – egg of wild olive flounder (<i>Paralichthys olivaceus</i>)</li> <li>3. <b>Disease characteristics</b> – none;</li> <li>4. <b>Pathogen</b> – Betanovirus;</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> – disinfection of eggs;</li> <li>9. <b>Laboratory confirmation</b> – PCR by prefectural research laboratory;</li> <li>10. <b>Publications</b> – none.</li> </ol>
6	<p><b>White Spot Disease (WSD)</b></p> <ol style="list-style-type: none"> <li>1. <b>Reported in</b> 1 prefecture;</li> <li>2. <b>Species affected</b> – Kuruma prawn (<i>Penaeus japonicus</i>)</li> <li>3. <b>Disease characteristics</b> – mortality, white spots on carapace;</li> <li>4. <b>Pathogen</b> – White spot syndrome virus;</li> <li>5. <b>Mortality rate</b> – 77%;</li> <li>6. <b>Economic loss</b> –;</li> <li>7. <b>Geographic extent</b> – Okinawa;</li> <li>8. <b>Preventive/control measures</b> – notification to concerned authorities;</li> <li>9. <b>Laboratory confirmation</b> – PCR by prefectural research laboratory;</li> <li>10. <b>Publications</b> – none.</li> </ol>

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

Country: **MALDIVES \***

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	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	0000	0000	0000		
11. Carp edema virus disease	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>	0000	0000	0000		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohaliotis californiensis</i>	0000	0000	0000		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
7. 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)	0000	0000	0000		
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000		
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	0000	0000	0000		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Crayfish plague	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000		
13. Iridovirus in crayfish	0000	0000	0000		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<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.					

<p><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</p>					
<p>a/ Please use the following symbols:</p> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%; vertical-align: top;"> <p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p> </td> <td style="width: 50%; vertical-align: top;"> <p>?() Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p> </td> </tr> </tbody> </table>				<p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?() Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?() Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p>
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<p>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</p>					

**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: **MONGOLIA**Period: **January - March 2017**

Item	Disease status <sup>at</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	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	0000	0000	0000		
11. Carp edema virus disease	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>	0000	0000	0000		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohalictis californiensis</i>	0000	0000	0000		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
7. 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)	0000	0000	0000		
3. Yellowhead disease (YHD)	0000	0000	0000		
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	0000	0000	0000		
5. Infectious myonecrosis (IMN)	0000	0000	0000		
6. White tail disease (MrNV)	0000	0000	0000		
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Crayfish plague	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000		
13. Iridovirus in crayfish	0000	0000	0000		

AMPHIBIAN DISEASES					
<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.					

<p><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</p>					
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<p>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</p>					

**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: **MYANMAR\***

 Period: **January - March 2016**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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	***	***	***		
11. Carp edema virus disease					
<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>	/	/	/		
5. Infection with <i>Bonamia ostreae</i>					
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	/	/	/		
7. 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)	-	-	-	III	
5. Infectious myonecrosis (IMN)	-	-	-	III	
6. White tail disease (MrNV)	+()	-	+()	III	
7. Necrotising hepatopancreatitis (NHP)	***	***	***		
8. Acute hepatopancreatic necrosis disease (AHPND)	-	-	-	III	
9. Crayfish plague	***	***	***		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps					
12. <i>Spiroplasma eriocheiris</i> infection					
13. Iridovirus in crayfish					

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<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.					

<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			
<u>a/</u> 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	
<u>b/</u> 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 33 samples of crustaceans (5 frozen shrimp and 2 soft shell crab for export, and live PL samples of <i>P. vannamei</i> (14 samples), <i>P. monodon</i> (6 sample), live broodstock of <i>P. monodon</i> (4 samples) and <i>M. rosenbergii</i> (1 PL and 1 adult samples) for import and local use) for testing, and found that all samples were negative for WSSV, IHNV, MrNV, and TSV. Some <i>M. rosenbergii</i> samples were found positive for MrNV.
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>Trichodina</i> spp.) 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: **NEW CALEDONIA**

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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	***	***	***		
11. Carp edema virus disease	***	***	***		
<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>Xenohalictis californiensis</i>	0000	0000	0000	II	
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000	II	
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	***	***	***		
7. Acute viral necrosis (in scallops)	***	***	***		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	III	
2. White spot disease (WSD)	0000	0000	0000	III	
3. Yellowhead disease (YHD)	0000	0000	0000	III	
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	2013	2013	2013	III	
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	
6. White tail disease (MrNV)	0000	0000	0000	III	
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	III	
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	III	
9. Crayfish plague	0000	0000	0000	III	
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000	III	
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000	III	
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		



AMPHIBIAN DISEASES					
<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.					

<p><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</p>			
<p>a/ Please use the following symbols:</p>			
+	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
<p>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</p>			

**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: **NEW ZEALAND**

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000	III	
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)	0000	0000	0000	III	
7. Koi herpesvirus disease (KHV)	0000	0000	0000	III	
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	0000	0000	0000	III	
9. Viral encephalopathy and retinopathy	0000	0000	0000	III	
10. Enteric septicaemia of catfish	0000	0000	0000	III	
11. Carp edema virus disease	0000	0000	0000	III	
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	- (2016)	- (2016)	- (2016)	III	1
2. Infection with <i>Perkinsus olseni</i>	- (2016)	- (2016)	- (2016)	III	2
3. Infection with abalone herpesvirus	0000	0000	0000	III	
4. Infection with <i>Xenohaliotis californiensis</i>	0000	0000	0000	III	
5. Infection with <i>Bonamia ostreae</i>	- (2016)	- (2016)	- (2016)	III	3
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000	III	
7. Acute viral necrosis (in scallops)	0000	0000	0000	III	
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	III	
2. White spot disease (WSD)	0000	0000	0000	III	
3. Yellowhead disease (YHD)	0000	0000	0000	III	
4. Infectious hypodermal and haematopoietic necrosis (IHNN)	0000	0000	0000	III	
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	
6. White tail disease (MrNV)	0000	0000	0000	III	
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	III	
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	III	
9. Crayfish plague	0000	0000	0000	III	
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000	III	
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000	III	
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000	III	
13. Iridovirus in crayfish	0000	0000	0000	III	

AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	0000	0000	0000	III	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	-(2010)	-(2010)	-(2010)	III	4
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

<p><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</p>			
<p>a/ Please use the following symbols:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p> </td> <td style="width: 50%; vertical-align: top;"> <p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p> </td> </tr> </table>		<p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p>
<p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p>		
<p>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</p>			

**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><i>Bonamia exitiosa</i> occurs in commercial oyster beds in Foveaux Strait, where it is highly prevalent and associated with mortalities in mid to late summer. It occurs intermittently around the South Island and in Wellington Harbour (bottom of the North Island), and has been previously reported in <i>Ostrea chilensis</i> from Hauraki Gulf, Tauranga, the Marlborough Sounds and Wellington Harbour. Annual monitoring of the presence of <i>B. exitiosa</i> infection is undertaken in the flat oyster (<i>O. chilensis</i>) population in the Foveaux Strait.</p>
2	<p><i>Perkinsus olseni</i> was first detected in New Zealand in 1999, in wild wedge shells (<i>Macomona liliana</i>). It was then found in wild populations of New Zealand cockles (<i>Austrovenus stutchburyi</i>), ark shells (<i>Barbatia novaezelandiae</i>) and pipi (<i>Paphies australis</i>) in 2000-2001. In July 2013, <i>P. olseni</i> was detected for the first time in farmed black foot pāua (<i>Haliotis iris</i>), a type of abalone native to New Zealand. Further detections were made in wild <i>H. iris</i> populations in 2014. These mollusc species occur widely around the coast of New Zealand, but to date <i>P. olseni</i> has only been detected in these species from the Auckland region northwards. <i>P. olseni</i> was found for the first time on the South Island in New Zealand green lipped mussels (<i>Perna canaliculus</i>) in a land based aquaculture facility in September 2014, and then in wild New Zealand scallops (<i>Pecten novaezelandiae</i>) in November 2014. Both of these findings were in the Marlborough region, and were incidental and not associated with mortality events.</p>

3	<p><i>Bonamia ostreae</i> was detected for the first time in New Zealand flat oysters (<i>Ostrea chilensis</i>) in January 2015 on one land based aquaculture facility in the upper South Island and on two marine oyster farms in the Marlborough Sounds (in the northern part of the South Island). New Zealand initiated a response with the objectives of restricting the spread and determining the geographical extent of the infection. Movement controls have been established to regulate the movement of susceptible shellfish species from the upper South Island to the key flat oyster areas of Southland, Otago and the Chatham Islands. Ongoing surveillance detected Infection with <i>Bonamia ostreae</i> in wild flat oysters within a movement control area in May of 2016, no clinical signs were associated with the finding.</p>
4	<p>The first isolation of <i>Batrachochytrium dendrobatidis</i> was made in 1999 in New Zealand. Since then the fungus has been detected both on the North and South Islands in both native and introduced frog species. It is not certain what level of population decline if any, is associated with the presence of the fungus in native frogs.</p>

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

Country: **SINGAPORE\***

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	(2016)	(2016)	(2016)		
7. Koi herpesvirus disease (KHV)	(2015)	(2015)	(2015)		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	(2014)	(2014)	(2014)		
9. Viral encephalopathy and retinopathy	(2016)	(2016)	(2016)		
10. Enteric septicaemia of catfish	***	***	***		
11. Carp edema virus disease	***	***	***		
<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>Xenohalictis californiensis</i>	***	***	***		
5. Infection with <i>Bonamia ostreae</i>	***	***	***		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	***	***	***		
7. 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)	(2016)	(2016)	(2016)		
3. Yellowhead disease (YHD)	0000	0000	0000		
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		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Crayfish plague	***	***	***		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	****	****	****		
2. Infection with <i>Batrachochytrium dendrobatidis</i>	(2016)	(2016)	(2016)		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. Megalocytivirus (marine & ornamental fish)	(2016)	(2016)	(2016)	III	1
2. <i>Aeromonas salmonicida</i> (in goldfish)	0000	0000	0000		

<p><b>DISEASES PRESUMED EXOTIC TO THE REGION<sup>b</sup></b>  <b>LISTED BY THE OIE</b>  <b>Finfish:</b> Infection with 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</p>			
<p>a/ Please use the following symbols:</p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="width: 50%; vertical-align: top;"> <p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p> </td> <td style="width: 50%; vertical-align: top;"> <p>?( ) Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p> </td> </tr> </tbody> </table>		<p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p>
<p>+ Disease reported or known to be present</p> <p>+? Serological evidence and/or isolation of causative agent but no clinical diseases</p> <p>? Suspected by reporting officer but presence not confirmed</p> <p>+() Occurrence limited to certain zones</p> <p>+?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone</p> <p>*** No information available</p> <p>0000 Never reported</p> <p>- Not reported (but disease is known to occur)</p> <p>(year) Year of last occurrence</p>		
<p>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</p>			

### 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>Megalocytivirus</b> was detected by real-time PCR in a batch of diseased seabass from a commercial fish farm. The farm had reported low-grade mortalities in this batch of fish. From post-mortem examination, the main findings were those of bacterial involvement; there was no evidence of lesions consistent with Megalocytivirus infection. Hence, it was thought that the PCR detection could possibly have been from previous vaccination.</p>

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

Country: **THAILAND\***

 Period: **January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<b>FINFISH DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Epizootic haematopoietic necrosis	0000	0000	0000	III	
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)	(2009)	(2009)	(2009)	II	
6. Red seabream iridoviral disease (RSID)	0000	0000	0000	III	
7. Koi herpesvirus disease (KHV)	(2011)	(2011)	(2011)	III	
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	***	***	***		
9. Viral encephalopathy and retinopathy	+( )	-	+( )	III	1
10. Enteric septicaemia of catfish	0000	0000	0000	II	
11. Carp edema virus disease	***	***	***		
<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	0000	0000	0000		
4. Infection with <i>Xenohalictis californiensis</i>	0000	0000	0000		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
7. Acute viral necrosis (in scallops)	***	***	***		
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	(2015)	(2015)	(2015)	III	
2. White spot disease (WSD)	+( )	+( )	+( )	III	2
3. Yellowhead disease (YHD)	+( )	+( )	+( )	III	3
4. Infectious hypodermal and haematopoietic necrosis (IHNN)	+( )	-	-	III	4
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	
6. White tail disease (MrNV)	(2016)	(2016)	+( )	III	5
7. Necrotising hepatopancreatitis (NHP)	-	-	-	III	
8. Acute hepatopancreatic necrosis disease (AHPND)	+( )	+( )	+( )	III	6
9. Crayfish plague	0000	0000	0000	III	
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	+( )	+( )	+( )	III	7
11. Viral covert mortality disease (VCMD) of shrimps	-	-	-	III	
12. <i>Spiroplasma eriocheiris</i> infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

\*Member of NACA’s Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus	(2016)	(2016)	(2016)	III	
2. Infection with <i>Batrachochytrium dendrobatidis</i>	0000	0000	0000		
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1. Tilapia lake virus (TiLV)	+	-	-	III	8

DISEASES PRESUMED EXOTIC TO THE REGION <sup>b</sup> LISTED BY THE OIE			
<b>Finfish:</b> Infection with 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> ).			
NOT LISTED BY THE OIE			
<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	A total of 828 fish samples from fish farms had been tested at PCR Laboratories of the DOF under active surveillance. 63 specimens or 7.61% recorded as PCR positive for <b>Viral Encephalopathy and Retinopathy (VER)</b> . Fish farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
2	A total of 3,881 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 38 specimens or 0.98% recorded as PCR positive or carrying <b>White Spot Syndrome Virus (WSSV)</b> genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
3	A total of 3,881 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 52 specimens or 1.34% recorded as PCR positive or carrying <b>Yellow Head Virus (YHV)</b> genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.



4	A total of 3,881 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 36 specimens or 0.93% recorded as PCR positive or carrying <b>Infectious Hypoderma and Haematopoietic Necrosis Vrus (IHHNV)</b> genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
5	A total of 105 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 60 specimens or 57.14% recorded as PCR positive or carrying <b>Macrobrachium rosenbergii Nodavirus (MrNV)</b> genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
6	A total of 3,881 shrimp samples from shrimp farms had been tested by PCR assay at the DOF's laboratories under active surveillance, 156 specimens or 4.02 % recorded as PCR positive for <b>Acute Hepatopancreatic NecrosisDisease (AHPND)</b> . Shrimp farms with positive testing results have been subjected to shrimp health management control and pond improvement.
7	A total of 3,881 shrimp samples from shrimp farms had been tested by PCR assay at the DOF's laboratories under active surveillance, 927 specimens or 23.89% recorded as PCR positive for <b>Hepatopancreatic Microsporidiosis caused by Enterocytozoon hepatopenaei (HPM-EHP)</b> . Shrimp farms with positive testing results have been subjected to shrimp health management control and pond improvement.
8	<p>Since October 2015 tilapia farms have experienced extensive losses, most losses occurred 1 month after transferring from hatchery to grow-out cages. The affected fish exhibited pale color, loss of appetite, gathering in the bottom, slow movement, stopped schooling and eventually died with cumulative mortality 20-90%. The diseased fish samples tested by RT-PCR were positive for TiLV (Orthomyxo-like virus), however most of them were also infected by bacteria and/or external parasites. Until now TiLV disease both in red tilapia (<i>Oreochromis</i> sp.) and Nile tilapia (<i>O. niloticus</i>) have been reported in 11 provinces namely Phetchaburi, Angthong, Chinat, Kanchanaburi, Nakhonratchasrima, Pathumthani, Chachoengsao, Ratchaburi, Samutsongkhram, Phitsanulok and Khonkaen (Dong et al., 2017; Surachetpong et al., 2017). To prevent the spread of the virus, biosecurity is encouraged to accomplish.</p> <p><b>Publications</b>  Dong, H.T., Siriroob, S., Meemetta, W., Santimanawong, W., Gangnonngiw, W., Pirarat, N., Khunrae, P., Rattanaojpong, T., Vanichviriyakit, R. and Senapin, S. 2017. Emergence of tilapia lake virus in Thailand and an alternative semi-nested RT-PCR for detection. <i>Aquaculture</i>, doi: 10.1016/j.aquaculture.2017.04.019</p> <p>Surachetpong, W., Janetanakit, T., Nonthabenjawan, N., Tattiyapong, P., Sirikanchana, K. and Amonsin, A. 2017. Outbreaks of tilapia lake virus infection, Thailand, 2015-2016. <i>Emerging Infectious Diseases</i>, <a href="https://dx.doi.org/10.3201/eid2306.161278">https://dx.doi.org/10.3201/eid2306.161278</a></p>

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

Country: VIETNAM\*

Period: January - March 2017

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
DISEASES PREVALENT IN THE REGION	January	February	March		
<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, III	1
11. Carp edema virus disease	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>	-	-	-		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with <i>Xenohalictis californiensis</i>	0000	0000	0000		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000		
7. 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		
8. Acute hepatopancreatic necrosis disease (AHPND)	+	+	+	I, III	3
9. Crayfish plague	0000	0000	0000		
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		
12. <i>Spiroplasma eriocheiris</i> infection	0000	0000	0000		
13. Iridovirus in crayfish	0000	0000	0000		

\*Member of NACA's Asia Regional Aquatic Animal Health Programme

AMPHIBIAN DISEASES					
<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>					

<p><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</p>			
<p><u>a/</u> Please use the following symbols:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p> </td> <td style="width: 50%; vertical-align: top;"> <p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p> </td> </tr> </table>		<p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p>
<p>+ Disease reported or known to be present                      +? Serological evidence and/or isolation of causative agent but no clinical diseases                      ? Suspected by reporting officer but presence not confirmed                      +( ) Occurrence limited to certain zones                      +?( ) Confirmed infection/infestation limited to one or more zones of the country, but no clinical disease</p>	<p>?( ) Presence of the disease suspected but not confirmed in a zone                      *** No information available                      0000 Never reported                      - Not reported (but disease is known to occur)                      (year) Year of last occurrence</p>		
<p><u>b/</u> 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</p>			

**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 An Giang and Dong Thap province (16.6 ha).</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 16 provinces (total area 838.89 ha) including Nghe An, Ha Tinh, Quang Tri, Thua Thien Hue, Quang Nam, Ho Chi Minh, Ninh Thuan, Ba Ria-Vung Tau, Long An, Tien Giang, Ben Tre, Tra Vinh, Kien Giang, 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  <b>Species affected:</b> <i>Penaeus monodon</i> and <i>Litopenaeus vannamei</i> (10-45 DOC)  <b>Name of affected area:</b> reported in 12 provinces and caused losses in total shrimp culture area of 543.76 ha. Affected provinces Quang Ninh, Nghe An, Quang Tri, Quang Nam, Ho Chi Minh, Tien Giang, Ben Tre, Tra Vinh, Kien Giang, Soc Trang, Bac Lieu and Ca Mau.  <b>Mortality rate:</b> could reach 95% in intensive and semi-intensive farms;  <b>Clinical signs:</b> shrimps become lethargic with soft, darkened shells, mottling of the carapace. Pathology is limited to hepatopancreas.  <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

**Country: FRENCH POLYNESIA**
**Period: January - March 2017**

Item	Disease status <sup>al</sup>			Level of diagnosis	Epidemiological comment numbers
	Month				
<b>DISEASES PREVALENT IN THE REGION</b>	January	February	March		
<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)	***	***	***	III	
7. Koi herpesvirus disease (KHV)	***	***	***		
<b>Non OIE-listed diseases</b>					
8. Grouper iridoviral disease	***	***	***		
9. Viral encephalopathy and retinopathy	(2005)	(2005)	(2005)	III	1
10. Enteric septicaemia of catfish	***	***	***		
11. Carp edema virus disease	***	***	***		
<b>MOLLUSC DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Infection with <i>Bonamia exitiosa</i>	0000	0000	0000	III	2
2. Infection with <i>Perkinsus olseni</i>	+	+	+	III	2
3. Infection with abalone herpesvirus					4
4. Infection with <i>Xenohaliotis californiensis</i>	***	***	***		
5. Infection with <i>Bonamia ostreae</i>	0000	0000	0000	III	2
<b>Non OIE-listed diseases</b>					
6. Infection with <i>Marteilioides chungmuensis</i>	0000	0000	0000	II	2
7. Acute viral necrosis (in scallops)					
<b>CRUSTACEAN DISEASES</b>					
<b>OIE-listed diseases</b>					
1. Taura syndrome (TS)	0000	0000	0000	III	3
2. White spot disease (WSD)	0000	0000	0000	III	3
3. Yellowhead disease (YHD)	0000	0000	0000	III	3
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	(2008)	(2008)	(2008)	III	3
5. Infectious myonecrosis (IMN)	0000	0000	0000	III	3
6. White tail disease (MrNV)	0000	0000	0000	III	3
7. Necrotising hepatopancreatitis (NHP)	0000	0000	0000	III	3
8. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***		
9. Crayfish plague					4
<b>Non OIE-listed diseases</b>					
10. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)					4
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. <i>Spiroplasma eriocheiris</i> infection					
13. Iridovirus in crayfish	***	***	***		

AMPHIBIAN DISEASES					
<b>OIE-listed diseases</b>					
1. Infection with Ranavirus					4
2. Infection with <i>Batrachochytrium dendrobatidis</i>					4
<b>ANY OTHER DISEASES OF IMPORTANCE</b>					
1.					
2.					

<p><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</p>			
<p>a/ Please use the following symbols:</p>			
+	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
<p>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</p>			

### 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>Viral encephalopathy and retinopathy</b> was first diagnosed in the breeders of <i>Lates calcarifer</i> (1989). In 2004, the disease caused mass mortality in <i>Platus orbicularis</i> and <i>Polydactylus sexifilis</i> breeders. Since 2005, the experimental hatchery of <i>P. orbicularis</i> is biosecured. Only broodstock (sourced from the wild) free of nodavirus are maintained. Annual check of all broodstok and larvae is made. Since 2005, no sample was found positive.</p>
2	<p><b>Bonamiosis and Marteiliosis:</b> not reported since the start of active surveillance in 2003 in <i>Pinctada margaritifera</i>.</p> <p>Since January 2012, pearl oyster network has been extended to giant clam and <i>Perkinsus olseni</i> was detected by PCR in wild specimen of <i>Tridacna maxima</i> (PYF 06-12-12 OIE Alert). <i>P. olseni</i> was also detected in <i>Pinctada margaritifera</i> (OIE Report 13451, May 14<sup>th</sup> 2013).</p>

3	<p>In 2008 and 2010, a survey of all production units was conducted and samples (30/unit) were sent out for analysis to Aquaculture Pathology Laboratory, University of Arizona (Prof. Lightner). None of the important shrimp viruses was detected. Positive isolation was last reported in 2001 in <i>Penaeus vannamei</i>, a non-indigenous species which is no longer cultivated in the country and considered extinct since 2005. Similar survey was done in 2011 and 2012. In 2013, detection for TS, WSD and IHNN were done in the country, and all results were negative. No mortality was observed in <i>Litopenaeus stylirostris</i> during this period.</p>
4	<p>Susceptible species are not present in the country.</p>

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

## List of Diseases in the Asia-Pacific

### *Quarterly Aquatic Animal Disease Report (Beginning 2017)*

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)	4. Carp edema virus disease
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>	
5. Infection with <i>Bonamia ostreae</i>	
<b>1.3 CRUSTACEAN DISEASES</b>	
<b>OIE-listed diseases</b>	<b>Non OIE-listed diseases</b>
1. Taura syndrome (TS)	1. Hepatopancreatic microsporidiosis caused by <i>Enterocytozoon hepatopenaei</i> (HPM-EHP)
2. White spot disease (WSD)	2. Viral covert mortality disease (VCMD) of shrimps
3. Yellowhead disease (YHD)	3. <i>Spiroplasma eriocheiris</i> infection
4. Infectious hypodermal and haematopoietic necrosis (IHHN)	4. Iridovirus in crayfish
5. Infectious myonecrosis (IMN)	
6. White tail disease (MrNV)	
7. Necrotising hepatopancreatitis (NHP)	
8. Acute hepatopancreatic necrosis disease (AHPND)	
9. Crayfish plague	
<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>Marteilia refringens</i>	
2. Infection with <i>Perkinsus marinus</i>	



## Recent Aquatic Animal Health Related Publications

**OIE Aquatic Animal Health Code, 20<sup>th</sup> Edition, 2017.** The OIE Aquatic Animal Health Code (the Aquatic Code) sets out standards for the improvement of aquatic animal health and welfare of farmed fish worldwide, and 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 Competent Authorities of importing and exporting countries for early detection, reporting and control of agents pathogenic to aquatic animals and to prevent their transfer via international trade in aquatic animals and their products, while avoiding unjustified sanitary barriers to trade. The standards in the Aquatic Code have been formally adopted by the World Assembly of OIE Delegates, which constitutes the organisation's highest decision-making body. This 20th edition incorporates modifications to the Aquatic Code agreed at the 85th General Session in May 2017. It includes: revisions to several definitions in the glossary; Chapter 1.2. 'Criteria for listing aquatic animal diseases' has been extensively amended to align with the corresponding chapter in the OIE Terrestrial Animal Health Code; a new disease, *Batrachochytrium salamandrivorans*, has been added to Chapter 1.3. 'Diseases listed by the OIE' and some disease names have been amended; minor amendments have been made in Chapters 4.3. 'Disinfection of aquaculture establishments and equipment', 4.4. 'Recommendations for surface disinfection of salmonid eggs' and 5.1. 'General obligations related to certification'; a number of horizontal amendments were made in all crustacean disease-specific chapters, to improve readability. In addition, the list of susceptible species in Article X.X.2. in Chapters 9.2., 9.3., 9.4., 9.5., 9.6. and 9.8. was reviewed and amended, where relevant, after consideration of the application of the 'Criteria for listing species as susceptible to infection with a specific pathogen' (Chapter 1.5.); a new chapter on acute hepatopancreatic necrosis disease (Chapter 9.1.) has been added; Article X.X.8. in all disease-specific chapters was revised to more adequately describe the requirements for the importation of aquatic animals for aquaculture from a country, zone or compartment not declared free from disease X; the year that a chapter was first adopted and the year of last revision are noted at the end of each chapter. In this regard the OIE has made every endeavour to ensure the accuracy of this information based on our historical records. 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, 2017.** The purpose of this Manual of Diagnostic Tests for Aquatic Animals (Aquatic Manual) is to provide a uniform approach to the detection of the diseases listed in the OIE Aquatic Code, so that the requirements for health certification in connection with disease prevention and control programmes, and trade in aquatic animals and aquatic animal products can be met. Although many publications exist on the detection and control of aquatic animal diseases, the Aquatic Manual is a key and unique document describing the methods that should be applied to the OIE-listed diseases in aquatic animal health laboratories all over the world, thus increasing efficiency and promoting improvements in aquatic animal health world-wide. The requirements published in this Aquatic Manual are recognised as international standards by the WTO. 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:

#### OIE Regional Representation for Asia and the Pacific

Food Science Building 5F  
The University of Tokyo  
1-1-1 Yayoi, Bunkyo-ku  
Tokyo, 113-8657, Japan  
Tel. +81 3 5805 1931; Fax +81 3 5805 1934  
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#### 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. E.M. Leñaño  
E-mail: [eduardo@enaca.org](mailto:eduardo@enaca.org)

#### FAO

Fishery Resources Division, Fisheries Department  
FAO of the United Nations  
Viale delle Terme di Caracalla, 00100 Rome  
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## Notes

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