2018/1

QUARTERLY
AQUATIC ANIMAL DISEASE REPORT
(Asia and Pacific Region)

January – March 2018

Published by

Network of Aquaculture Centres in Asia-Pacific

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July 2018

Network of Aquaculture Centres in Asia-Pacific, World Organisation for Animal Health (OIE) Regional Representation for Asia and the Pacific, and Food and Agriculture Organization of the United Nations. July, 2018. *Quarterly Aquatic Animal Disease Report (Asia and Pacific Region)*, 2018/1, January – March 2018. NACA, Bangkok, Thailand and OIE-RRAP, Tokyo, Japan.

Contents

Foreword

Intensive 7-day course on Tilapia Lake Virus successfully completed

(Report provided by Dr. Melba Reantaso, FAO, Rome, Italy)

A collaborative capacity building initiative between China's National Fisheries Extension Center (NFTEC) and Sun Yat-Sen University (SYSU) and FAO, was successfully concluded on 24 June 2018. The course was opened by Dr Jianguo He (SYSU) and closed by Dr Feng Zang and Ms Qing Li (NFTEC).

Some 29 participants representing competent authorities, academe and service providers from Brasil, China, Indonesia, Malaysia, Mozambique, Myanmar, Peru, the Philippines, Sri Lanka and Viet Nam completed the intensive 7-day course on Tilapia lake virus (TiLV). Under the technical oversight of FAO, the course was delivered by Chinese (Dr Yang Hong, Prof Anxing Li, Dr Hong Liu and Prof JunHong Xia) and FAO experts (Dr Kathy F.J. Tang/ USA, Dr Win Surachetpong/ Thailand, Dr Ha Thanh Dong/ Viet Nam, Dr Mona D. Jansen/Norway).

The course consisted of seven sessions that included 22 expert presentations, field visit, laboratory activities and several interactive working group exercises. The participants acquired the currently available technical information on the biology, pathology, diagnostics, surveillance and economics, farm level management of TiLV and emergency preparedness. These learnings reinforced their capacity in preparing a preliminary action plan on TiLV.

Tilapias, are the second-most important farmed finfish worldwide (next to the cyprinids), with Nile Tilapia (Oreochromis niloticus), ranking 6th among the most important cultured species. Their importance is also due to their affordability, widespread source of low cost but high quality protein and micronutrients. TiLV represents a serious threat to food security especially in developing world where tilapia is farmed.

TiLV, an enveloped, negative-sense, single stranded RNA virus, appears to have a narrow host specificity [e.g. farmed tilapia such as hybrid tilapia (Oreochromis niloticus x O. aureus hybrid), Nile tilapia, and red tilapia (Oreochromis sp.)] and reported as well from several wild tilapines. Histopathology, RT-PCR and RT-qPCR, and in-situ hybridization are currently the methods that can be used to identify TiLV. The most common histopathological lesion found in TiLV outbreaks is syncytial hepatitis.

Although the precise mechanism for transmission is unknown, nor is there information available on virus stability free in the water or in contaminated fomites, horizontal disease transmission is likely to be the main mode of disease spread. TiLV spread is likely a direct one through local and transboundary movement of live fish. There are at least 14 tilapia producing countries where TiLV has been reported (e.g. through local and international scientific literature, OIE notifications). As live tilapia is a widely traded commodity, there is potential that TiLV may have spread significantly over the years since its first reported occurrence in 2009. There is still

lacking information on the role played by the trade in uncooked tilapia products, both in terms of the virus' survival in frozen/chilled tissue or in terms of pathways by which these products could result in infection of farmed or wild fish stocks.

It is paramount for tilapia producing countries to assess risks, undertake surveillance to determine national TiLV health status, investigate unexplained tilapia mortalities and introduce risk management measures where deemed necessary. The status of TiLV in a country can be politically sensitive due to the range of potential implications. It is thus essential that competent authorities are immediately informed of any observation (field or research) before such findings are made publicly available.

Further information about the course and other related activities on TiLV of FAO can be obtained by writing to Melba.Reantaso@fao.org

The link to download all training course materials can be found below:
http://www.fao.org/fishery/nems/41072/en

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: Jnauary - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	-(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 *Aphanomyces invadans* (EUS)	-(2017)	-(2017)	-(2017)		2
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
Non OIE-listed diseases					
8. Grouper iridoviral disease	0000	0000	0000		
9. Viral encephalopathy and retinopathy	+	-(2018)	+	III	3
10.Enteric septicaemia of catfish	-(2014)	-(2014)	-(2014)		4
11. Carp edema virus disease	***	***	***		
12. Tilapia lake virus (TiLV)	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	-(2017)	-(2017)	+?	III	5
2. Infection with *Perkinsus olseni*	+(west zone	+?	-(2018)	I	6
3. Infection with abalone herpesvirus	-(2011)	-(2011)	-(2011)		7
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000		
5. Infection with *Bonamia ostreae*	***	***	***		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
7. Acute viral necrosis (in scallops)	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000		
2. Infection with white spot syndrome virus	(S.E.QLD 2017)	(S.E.QLD 2017)	+(S.E.QLD 2017)	III	8
3. Infection with yellow head virus genotype 1	0000	0000	0000		
4. Infection with infectious hypodermal and haematopoietic	-(2017)	-(2017)	+	III	9
5. Infection with infectious myonecrosis virus	0000	0000	0000		
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	-(2008)	-(2008)	-(2008)		10
7. Infection with *Hepatobacter penaei* (Necrotising	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000		
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. *Spiroplasma eriocheiris* infection	***	***	***		
13. Iridovirus in crayfish	***	***	***		

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

AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	-(2008)	-(2008)	-(2008)		11
2. Infection with *Batrachochytrium dendrobatidis*	-(2016)	-(2016)	+	III	12
ANY OTHER DISEASES OF IMPORTANCE					
1. *Hepatopancreatitis* in prawns	-(2017)	-(2017)	-(2017)		13
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	**Epizootic haematopoietic necrosis** 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	**Infection with *Aphanomyces invadans* (EUS)** was not reported this period despite passive surveillance in New South Wales (last reported July 2017) and the Northern Territory (last reported May 2017), Queensland (last reported 2014), Western Australia (last reported 2013), Victoria (last reported 2012), and South Australia (last reported 2008). Passive surveillance and never reported in Tasmania. No information available this period in the Australian Capital Territory.

3	**Viral encephalopathy and retinopathy (VER)** 1. **Reported in** Queensland in January and March 2018, passive surveillance; 2. **Species affected** – juvenile Queensland grouper (*Epinephelus lanceolatus*); 3. **Clinical signs** – cloudy eyes, infalted swim bladders; 4. **Pathogen** – Betanodavirus; 5. **Mortality rate** – low level chronic mortality; 6. **Economic loss** – none; 7. **Geographic extent** – two separate farms in southern Queensland; 8. **Containment measures** – none; 9. **Laboratory confirmation** – imunohistochemistry, RT-PCR; 10. **Publications** – nil. VER is known to occur previously in the Northern Territory (last reported 2013), Western Australia (last reported 2013), South Australia (last reported 2010) and Tasmania (last reported 2000). Targeted surveillance and not reported this period in New South Wales (last reported 2016). Passive surveillance and never reported in Victoria. No information available this period in the Australian Capital Territory.
4	**Enteric septicaemia of catfish (*E. ictaluri*)** was not reported this period despite passive surveillance. It was reported from clinically normal fish from a single river in Queensland (October 2014), the only occurrence of *E. ictaluri* in wild fish populations in Australia. Active surveillance throughout Northern Australia has found no evidence of *E. ictaluri* in any other wild fish populations. *E. ictaluri* 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.
5	**Infection with *Bonamia exitiosa*** 1. **Reported in** South Australia in March 2018, passive surveillance; 2. **Species affected** – flat oyster (*Ostrea angasi*); 3. **Clinical signs** – none; 4. **Pathogen** – *Bonamia exitiosa*; 5. **Mortality rate** – none; 6. **Economic loss** – none; 7. **Geographic extent** – Coffin Bay and Streaky Bay farming regions; 8. **Containment measures** – none; 9. **Laboratory confirmation** – qPCR, tissue smears; 10. **Publications** – nil. *Bonamia exitiosa* is known to have occurred previously in Western Australia (last reported February 2017) and Victoria (last reported 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).

6	**Infection with *Perkinsus olseni*** 1. **Reported in** South Australia in January 2018, Western Australia in February 2018, passive surveillance; 2. **Species affected** –blacklip abalone (*Haliotis rubra*) and greenlip abalone (*H. laevigata*); 3. **Clinical signs** – clinical and sub-clinical; 4. **Pathogen** – *Perkinsus olseni*; 5. **Mortality rate** – none; 6. **Economic loss** – N/A; 7. **Geographic extent** –western fishery zone in SA, one farm in WA; 8. **Containment measures** – N/A; 9. **Laboratory confirmation** – RFTM; 10. **Publications** – nil. *Perkinsus olseni* is known to occur previously 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).
7	**Infection with abalone herpesvirus (abalone viral ganglioneuritis)** 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 in the Australian Capital Territory (no marine water responsibility).
8	**Infection with white spot syndrome virus (white spot disease)** 1. **Reported in** Queensland in March 2018, targeted surveillance; 2. **Species affected** – wild greasyback prawn (*Metapenaeus bennettae*), banana prawn (*Penaeus merguiensis*), brown tiger prawn (*P. esculentus*), crenate swimming crab (*Thalamita crenata*) 3. **Clinical signs** – none; 4. **Pathogen** – white spot syndrome virus; 5. **Mortality rate** – N/A; 6. **Economic loss** – N/A; 7. **Geographic extent** – Northern Moreton Bay, Queensland; 8. **Containment measures** – movement control orders; 9. **Laboratory confirmation** – qPCR; 10. **Publications** – nil. Infection with white spot syndrome virus (white spot disease) was confirmed on a farm on 1 December 2016. By February 2017, seven properties, all along the Logan River in South East Queensland, were confirmed as being affected by white spot disease. Containment was immediately implemented for all affected farms. In May 2017, destruction of stock, disposal and decontamination of ponds on all affected farms were complete, and all ponds on the affected farms will lay fallow until May 2018 to assist with the eradication of WSSV. As a result of detection of WSSV in wild crustacean movement and fishing restrictions in the Moreton Bay region have been in place to contain white spot disease and prevent new outbreaks. Surveillance outside of the movement restricted area in Queensland returned no positive test results for the last eight months. White spot disease has never been reported despite active and passive surveillance in New South Wales, South Australia, Western Australia and Northern Territory. Never reported in Victoria and Tasmania despite passive surveillance. No information available for the Australian Capital Territory (no marine water responsibility).

9	**Infection with infectious hypodermal and haematopoietic necrosis virus** 1. **Reported in** Queensland in March 2018, passive surveillance; 2. **Species affected** – juvenile black tiger prawn (*Penaeus monodon*); 3. **Clinical signs** – moribund prawns; 4. **Pathogen** – IHHNV; 5. **Mortality rate** – variable rates of mortality; 6. **Economic loss** – N/A; 7. **Geographic extent** – one farm; 8. **Containment measures** – harvest; 9. **Laboratory confirmation** – qPCR, histopathology; 10. **Publications** – nil. Infection with infecftious hypodermal and haematopoietic necrosis virus is known to occur previously in the Northern Territory (last reported 2003). Passive surveillance and never reported in New South Wales, South Australia, Victoria and Western Australia. No information available this period in the Australian Capital Territory (no marine water responsibility) and Tasmania (susceptible species not present).
10	**Infection with *Macrobrachium rosenbergii* nodavirus (White tail disease)** 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).
11	**Infection with *Ranavirus*** 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 and New South Wales. No information available this period in the Australian Capital Territory, South Australia, Victoria and Western Australia.
12	**Infection with *Batrachochytrium dendrobatidis*** 1. **Reported in** Queensland in March 2018, passive surveillance; 2. **Species affected** – Kroombit tinker frog (*Taudactylus pleione*); 3. **Clinical signs** – none; 4. **Pathogen** – *Batrachochytrium dendrobatidis*; 5. **Mortality rate** – none; 6. **Economic loss** – none; 7. **Geographic extent** – one animal from Kroombit Tops National Park; 8. **Containment measures** – N/A; 9. **Laboratory confirmation** – qPCR; 10. **Publications** – nil. Infection with Batrachochytrium dendrobatidis is know to occur previously 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.
13	**Hepatopancreatitis** in prawns was not reported this period despite passive surveillance in Queensland (last reported March 2017). Passive surveillance and never reported in New South Wales. No information available in the Australian Capital Territory, Victoria, Northern Territory, South Australia, Western Australia and Tasmania.

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

Country: CHINESE TAIPEI **Period: Jnauary - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	***	***	***		
2. Infectious haematopoietic necrosis	***	***	***		
3. Spring viraemia of carp (SVC)	***	***	***		
4. Viral haemorrhagic septicaemia (VHS)	***	***	***		
5. Infection with *Aphanomyces invadans* (EUS)	-	-	-		
6. Red seabream iridoviral disease (RSID)	-	-	-		
7. Koi herpesvirus disease (KHV)	-	-	-		
Non OIE-listed diseases					
8. Grouper iridoviral disease	+	+	+	LDCCs	1
9. Viral encephalopathy and retinopathy	+	+	+	LDCCs	2
10.Enteric septicaemia of catfish	***	***	***		
11. Carp edema virus disease	***	***	***		
12. Tilapia lake virus (TiLV)	-	-	-		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Perkinsus olseni*	***	***	***		
3. Infection with abalone herpesvirus	-	-	-		
4. Infection with *Xenohaliotis californiensis*	***	***	***		
5. Infection with *Bonamia ostreae*	***	***	***		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
7. Acute viral necrosis (in scallops)	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	-	-	-		
2. Infection with white spot syndrome virus	+	+	+	LDCCs	3
3. Infection with yellow head virus genotype 1	-	-	-		
4. Infection with infectious hypodermal and haematopoietic	-	-	+	LDCCs	4
5. Infection with infectious myonecrosis virus	***	***	***		
6. Infection with *Macrobrachium rosenbergii* nodavirus	-	-	-		
7. Infection with *Hepatobacter penaei* (Necrotising	***	***	***		
8. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***		
9. Infection with *Aphanomyces astaci* (Crayfish plague)	-	-	-		
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. *Spiroplasma eriocheiris* infection	***	***	***		

13. Iridovirus in crayfish	***	***	***		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	-	-	-		
2. Infection with *Batrachochytrium dendrobatidis*	***	***	***		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	1. Kaohsiung city. 32 outbreak reports from 17 farms. 2. Date: (1) Jan 2; (2) Jan 15; (3) Jan 29; (4), (5), (6) Jan 30; (7) Feb. 6; (8), (9) Feb. 10; (10), (11), (12) Feb 24; (13) Feb 26; (14) Mar 1; (15), (16) Mar 7; (17), (18), (19) Mar 10; (20), (21), (22) Mar 17; (23) Mar 22, (24), (25), (26), (27), (28) Mar 24; (29), (30) Mar 27; (31) Mar 29; (32) Mar 31. 3. Species: (1), (7), (11), (14), (17) *Epinephelus lanceolatus*; (2), (3), (4), (5), (6), (8), (9), (10), (13), (15), (16), (18), (19), (20), (21), (22), (23), (24), (25), (26), (27), (28), (29), (30), (32) *Lates calcarifer*; (12) *Epinephelus malabaricus;* (31) *Epinephelus fuscoguttatus x Epinephelus lanceolatus*. 4. Mortality rate: low. 5. Total number of death: (1) 0/800; (2), (29) 0/20000; (3), (30) 0/50000; (4), (5), (6), (15), (16), (23), (27), (28), (32) 0/40000; (7) 0/500; (8), (9), (10), (13), (26) 0/30000; (11), (14), (17) 0/1000; (12) 0/13000; (18) 0/32000; (19) 0/35000; (20) 0/70000; (21), (22) 0/80000; (24) 0/38000; (25) 0/34000; (31) 0/10000.

2	1. Kaohsiung city. 41 outbreak reports from 24 farms. 2. Date: (1), (2), (3), (4), (5) Jan 2; (6) Jan 8; (7) Jan 10; (8), (9), (10) Jan 15; (11) Jan 23, (12), (13) Jan 24; (14) Jan 25; (15) Jan 29; (16) Jan 30; (17) Feb 5; (18) Feb 6; (19) Feb 10; (20) Feb 14; (21), (22), (23) Feb 24; (24) Mar 1; (25), (26) Mar 6; (27) Mar 7; (28), (29), (30), (31), (32), (33), (34), (35) Mar 10; (36), (37) Mar 16; (38), (39), (40) Mar 17; (41) Mar 31. 3. Species: (1), (4), (5), (13), (19), (30), (31), (38) *Epinephelus lanceolatus*; (2), (3), (6), (7), (8), (9), (10), (11), (12), (14), (15), (16), (18), (20), (21), (22), (23), (24), (27), (28), (29), (34), (35), (37), (41) *Epinephelus fuscoguttatus x Epinephelus lanceolatus*; (17), (25), (26), (32), (33), (36), (39), (40) *Epinephelus malabaricus*. 4. Mortality rate: low. 5. Total number of death: (1), (2), (3), (13), (19), (30), (31), (38) 0/1000; (4) 0/600; (5), (9) 0/5000; (6), (15), (17), (24), (25), (26) 0/20000; (7), (8), (9), (10), (11), (12), (14), (16), (18), (20), (21), (22), (23), (27), (32), (33), (34), (35), (36), (37), (39), (41) 0/10000; (28) 0/3000; (29) 0/2500; (40) 0/130000.
3	1. Kaohsiung city, Tainan city, Pingtung county. 4 outbreak reports from 4 farms. 2. Date: (1) Jan 25 ,(2) Jan 30, (3) Feb 9, (4) Mar 14. 3. Species: (1), (2), *Litopenaeus vannamei*, (3), (4) Ornamental shrimps. 4. Mortality rate: low. 5. Total number of death: (1) 0/16000; (2) 0/50000; (3) 0/10000; (4) 0/80000.
4	1. Taitung county. 1 outbreak report from 1 farm. 2. Date: (1) Mar 27. 3. Species: (1) *Litopenaeus vannamei*. 4. Mortality rate: low. 5. Total number of death: (1) 0/1200000.

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

Country: HONG KONG SAR, CHINA* Period: January - March 2018

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	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 *Aphanomyces invadans* (EUS)	0000	0000	0000	III	
6. Red seabream iridoviral disease (RSID)	-	-	-	III	
7. Koi herpesvirus disease (KHV)	-	-	-	III	
Non OIE-listed diseases					
8. Grouper iridoviral disease	-	-	-	III	
9. Viral encephalopathy and retinopathy	-	?	-	III	1
10.Enteric septicaemia of catfish	0000	0000	0000	II	
11. Carp edema virus disease	***	***	***		
12. Tilapia lake virus (TiLV)	***	***	***		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000	II	
2. Infection with *Perkinsus olseni*	0000	0000	0000	II	
3. Infection with abalone herpesvirus	0000	0000	0000	II	
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000	II	
5. Infection with *Bonamia ostreae*	***	***	***		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000	II	
7. Acute viral necrosis (in scallops)	0000	0000	0000	II	
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000	III	
2. Infection with white spot syndrome virus	-	-	-	III	
3. Infection with yellow head virus genotype 1	0000	0000	0000	III	
4. Infection with infectious hypodermal and haematopoietic	0000	0000	0000	II	
5. Infection with infectious myonecrosis virus	0000	0000	0000	II	
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	0000	0000	0000	II	
7. Infection with *Hepatobacter penaei* (Necrotising	***	***	***	II	
8. Acute hepatopancreatic necrosis disease (AHPND)	***	***	***	II	
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000	II	
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. *Spiroplasma eriocheiris* infection	***	***	***		

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13. Iridovirus in crayfish	***	***	***		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	(1 Apr 2017)	(1 Apr 2017)	(1 Apr 2017)	III	
2. Infection with *Batrachochytrium dendrobatidis*	0000	0000	0000	III	
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	Sabah hybrid grouper fry was suspected to be suffering from Viral encephalopathy and retinopathy (VER). The size of affected raft was approximately 400 m^2. High mortality for fish fry and sporadic mortality for adults were reported. The farmer was advised to carry out stress-reducing measures and adopt good aquaculture practice.
2	
3	

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

Country: INDIA* **Period: January - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with *Aphanomyces invadans* (EUS)	+( )	-	-	II,III	1
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
Non OIE-listed diseases					
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	-	-	-		
12. Tilapia lake virus (TiLV)	+( )	-	+( )	III	2
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Perkinsus olseni*	+	+	+	II,III	3
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000		
5. Infection with *Bonamia ostreae*	0000	0000	0000		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
7. Acute viral necrosis (in scallops)	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000		
2. Infection with white spot syndrome virus	+( )	+( )	+( )	III	4
3. Infection with yellow head virus genotype 1	0000	0000	0000		
4. Infection with infectious hypodermal and haematopoietic	+( )	-	+( )	III	5
5. Infection with infectious myonecrosis virus	-	-	-		
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	-	-	-		
7. Infection with *Hepatobacter penaei* (Necrotising	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000		
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	+( )	+( )	+( )	III	6
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		
12. *Spiroplasma eriocheiris* infection	0000	0000	0000		

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13. Iridovirus in crayfish	0000	0000	0000		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	0000	0000	0000		
2. Infection with *Batrachochytrium dendrobatidis*	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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 *Aphanomyces invadas*** was reported in Puntius spp. From very limited area of Baksa district of Assam.
2	**Tilapia lake virus disease** was reported from very limited areas of Nagapattinam district of Tamil Nadu; Alappuzha, Pathanamthitta, Kozhikode and Palakkad districts of Kerala.
3	**Infection with *Perkinsus olseni*** was reported in farmed samples of *Perna viridis* from Kasaragode district of Kerala. Infection with *P. olseni* was also reported in wild samples of *Paphia malabarica* from Chennai, Tamil Nadu; *Pinctada fucata*, *Pinna bicolor*, *Donax cuneatus* and *Circe scripta* from Mandapam, Tamil Nadu; and *P. viridis* from Kannur, Kerala.

4	**Infection with white spot syndrome virus (White spot disease)** was reported in *Litopenaeus vannamei* from very limited areas of Nagapattinam and Thiruvallur districts of Tamil Nadu; Dakshina Kannada district of Karnataka; Srikakulam, East Godavari and Nellore districts of Andhra Pradesh; and Alappuzha district of Kerala. WSD was also reported in *Penaeus monodon* in North 24 Parganas district of West Bengal.
5	**Infection with infectious hypodermal and haematopoietic necrosis virus** was reported in Litopenaeus vannamei from Dakshina Kannada district of Karnataka; Thiruvallur district of Tamil Nadu; and Nellore district of Andhra Pradesh.
6	**Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei*** was reported in *Litopenaeus vannamei* from very limited areas of Nagapattinam and Thiruvallur districts of Tamil Nadu; Udupi, Uttar Kannada and Dakshina Kannada districts of Karnataka; and Sindhudurg district of Maharashtra.

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

Country: JAPAN* **Period: January - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	I	
2. Infectious haematopoietic necrosis	+	+	+	III	1
3. Spring viraemia of carp (SVC)	0000	0000	0000	I	
4. Viral haemorrhagic septicaemia (VHS)	+	+	+	III	2
5. Infection with *Aphanomyces invadans* (EUS)	-(2015)	-(2015)	-(2015)	I	
6. Red seabream iridoviral disease (RSID)	-(2017)	-(2017)	-(2017)	I	
7. Koi herpesvirus disease (KHV)	-(2017)	-(2017)	-(2017)	I	
Non OIE-listed diseases					
8. Grouper iridoviral disease	0000	0000	0000	I	
9. Viral encephalopathy and retinopathy	-(2017)	-(2017)	-(2017)	I	
10.Enteric septicaemia of catfish	-(2010)	-(2010)	-(2010)	I	
11. Carp edema virus disease	0000	0000	0000	I	
12. Tilapia lake virus (TiLV)	0000	0000	0000	I	
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000	I	
2. Infection with *Perkinsus olseni*	-(2007)	-(2007)	-(2007)	I	
3. Infection with abalone herpesvirus	0000	0000	0000	I	
4. Infection with *Xenohaliotis californiensis*	-(2015)	-(2015)	-(2015)	I	
5. Infection with *Bonamia ostreae*	0000	0000	0000	I	
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	-(2014)	-(2014)	-(2014)	I	
7. Acute viral necrosis (in scallops)	0000	0000	0000	I	
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000	I	
2. Infection with white spot syndrome virus	-(2017)	-(2017)	-(2017)	I	
3. Infection with yellow head virus genotype 1	0000	0000	0000	I	
4. Infection with infectious hypodermal and haematopoietic	0000	0000	0000	I	
5. Infection with infectious myonecrosis virus	0000	0000	0000	I	
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	0000	0000	0000	I	
7. Infection with *Hepatobacter penaei* (Necrotising	0000	0000	0000	I	
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	I	
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000	I	
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	0000	0000	0000	I	
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000	I	
12. *Spiroplasma eriocheiris* infection	0000	0000	0000	I	

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13. Iridovirus in crayfish	0000	0000	0000	I	
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	-(2012)	-(2012)	-(2012)	I	
2. Infection with *Batrachochytrium dendrobatidis*	-(2009)	-(2009)	-(2009)	I	
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	**Infectious haematopoietic necrosis (IHN)** 1) **Reported in** 14 prefectures 2) **Species affected:** Amago (*O. masou ishikawae*), Yamame (*O. masou*), Rainbow trout (*O.mykiss*), Biwa trout (*O. masou rhodurus*), hybrid of rainbow trout; 3) **Disease characteristics:** Mortality, anemia, bleeding,eExophthalmos, threadbare fins, discoloration of liver, abnormal swimming, blackening of the body, ascites; 4) **Pathogen:** Infectious haematopoietic necrosis virus 5) **Mortality rate:** 1-100% 6) **Economic loss:** － 7) **Names of infected areas:** Honshu, Shikoku; 8) **Preventive/control measures taken:** disinfection of facilities and tools, removal of dead fish, movement control. 9) **Laboratories for confirmation:** Cell culture, PCR, isolation of the virus by prefectural research laboratories 10) **Publications:** None

2	**Viral haemorrhagic septicaemia (VHS)** 1) **Reported in** 4 prefectures 2) **Species affected:** Japanes flounder (*Paralichthus olivaceus*), red seabream (*Pagrus major*); 3) **Disease characteristics:** Mortality, ascites, brown spots on the gills, enlarged spleen; 4) **Pathogen:** Viral haemorrhagic seticaemia virus 5) **Mortality rate:** 1-50% 6) **Economic loss:** － 7) **Names of infected areas:**, Honshu, Shikoku, Kyushu 8) **Preventive/control measures taken:** Culling of infected fish, removal of dead fish, disinfection of facilities and tools 9) **Laboratory confirmation:** PCR by the prefectural research laboratory 10) **Publications:** None

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

Country: NEW ZEALAND **Period: January - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	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 *Aphanomyces invadans* (EUS)	0000	0000	0000	III	
6. Red seabream iridoviral disease (RSID)	0000	0000	0000	III	
7. Koi herpesvirus disease (KHV)	0000	0000	0000	III	
Non OIE-listed diseases					
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	
12. Tilapia lake virus (TiLV)	0000	0000	0000	III	
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	- (2017)	+	+	III	1
2. Infection with *Perkinsus olseni*	- (2017)	+	- (2018)	III	2
3. Infection with abalone herpesvirus	0000	0000	0000	III	
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000	III	
5. Infection with *Bonamia ostreae*	- (2017)	- (2017)	- (2017)	III	3
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000	III	
7. Acute viral necrosis (in scallops)	0000	0000	0000	III	
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000	III	
2. Infection with white spot syndrome virus	0000	0000	0000	III	
3. Infection with yellow head virus genotype 1	0000	0000	0000	III	
4. Infection with infectious hypodermal and haematopoietic	0000	0000	0000	III	
5. Infection with infectious myonecrosis virus	0000	0000	0000	III	
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	0000	0000	0000	III	
7. Infection with *Hepatobacter penaei* (Necrotising	0000	0000	0000	III	
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000	III	
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000	III	
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	0000	0000	0000	III	
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000	III	
12. *Spiroplasma eriocheiris* 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 *Batrachochytrium dendrobatidis*	-(2010)	-(2010)	-(2010)	III	4
ANY OTHER DISEASES OF IMPORTANCE					
1.					
2.					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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 Bonamia exitiosa*** occurs in commercial oyster beds in Foveaux Strait, Southland 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 (southern end of the North Island), and has been previously reported in *Ostrea chilensis* from Hauraki Gulf (Auckland region), Tauranga (Bay of Plenty region), the Marlborough Sounds and Wellington Harbour. Annual monitoring of the presence of *B. exitiosa* infection is undertaken in the flat oyster (*O. chilensis*) population in the Foveaux Strait.

2	**Infection with *Perkinsus olseni*** was first detected in New Zealand in 1999, in wild wedge shells *(Macomona liliana*). It was then found in wild populations of New Zealand cockles (*Austrovenus stutchburyi*), ark shells (Barbatia novaezelandiae) and pipi (*Paphies australis*) in 2000-2001. In July 2013, *P. olseni* was detected for the first time in farmed black foot pāua (*Haliotis iris*), a type of abalone native to New Zealand. Further detections were made in wild *H. iris* populations in 2014. These mollusc species occur widely around the coast of New Zealand, but to date *P. olseni* has only been detected in these species from the Auckland region northwards. *Perkinsus olseni* was found for the first time on the South Island in New Zealand green lipped mussels (*Perna canaliculus*) in a land based aquaculture facility in September 2014, and then in wild New Zealand scallops (*Pecten novaezelandiae*) in November 2014. Both of these findings were in the Marlborough region, and were incidental and not associated with mortality events. In November 2017, passive surveillance detected *P. olseni* from New Zealand scallops in two sites within Kaipara harbour, Auckland region, and again was thought to be incidental and not associated with significant pathology in scallops.
3	***Infection with Bonamia ostreae*** was detected for the first time in New Zealand flat oysters (*Ostrea chilensis*) in January 2015. It was found on one land-based aquaculture facility in the Nelson region, and on two marine farms in the Marlborough region, both regions being in northern part of the South Island. Since that time, movement controls have been in place to regulate the movement of susceptible shellfish from the northern regions of the South Island and active surveillance has been conducted for the purposes of early detection of spread. In 2016, *B. ostreae* was detected in both farmed and wild flat oysters within the Marlborough region (the same region as initially reported), and was associated with pathology and mortality in the farmed population. In May 2017 surveillance detected *B. ostreae* in marine flat oyster farms in Big Glory Bay, Stewart Island (situated in the Southland region, at the southern end of the South Island). Following this detection, movement controls to manage risk movements from Stewart Island were issued, and depopulation of all flat oyster farms within areas where *B. ostreae* had been detected commenced. Depopulation of farms in Big Glory Bay commenced on the 19 June 2017 and was completed September 2017. Depopulation of farms in Marlborough Sounds commenced on the 11 July and is continuing. Active surveillance continues for the purposes of early detection of spread, with no *B. ostreae* detected in wild oysters in Big Glory Bay in the September 2017. No clinical signs or elevated mortality was observed in association with *B. ostreae* in farmed flat oysters in Big Glory Bay.
4	The first isolation of ***Batrachochytrium dendrobatidis*** 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.

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

Country: SINGAPORE* **Period: January - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with *Aphanomyces invadans* (EUS)	0000	0000	0000		
6. Red seabream iridoviral disease (RSID)	(2017)	(2017)	(2017)		
7. Koi herpesvirus disease (KHV)	(2017)	(2017)	+	III	1
Non OIE-listed diseases					
8. Grouper iridoviral disease	(2014)	(2014)	(2014)		
9. Viral encephalopathy and retinopathy	+	(2018)	+	III	2
10.Enteric septicaemia of catfish	***	***	***		
11. Carp edema virus disease	***	***	***		
12. Tilapia lake virus (TiLV)	0000	0000	0000		
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	***	***	***		
2. Infection with *Perkinsus olseni*	***	***	***		
3. Infection with abalone herpesvirus	***	***	***		
4. Infection with *Xenohaliotis californiensis*	***	***	***		
5. Infection with *Bonamia ostreae*	***	***	***		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	***	***	***		
7. Acute viral necrosis (in scallops)	***	***	***		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000		
2. Infection with white spot syndrome virus	+	(2018)	(2018)	III	3
3. Infection with yellow head virus genotype 1	0000	0000	0000		
4. Infection with infectious hypodermal and haematopoietic	0000	0000	0000		
5. Infection with infectious myonecrosis virus	0000	0000	0000		
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	***	***	***		
7. Infection with *Hepatobacter penaei* (Necrotising	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	0000	0000	0000		
9. Infection with *Aphanomyces astaci* (Crayfish plague)	***	***	***		
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	***	***	***		
11. Viral covert mortality disease (VCMD) of shrimps	***	***	***		
12. *Spiroplasma eriocheiris* infection	***	***	***		

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13. Iridovirus in crayfish	***	***	***		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	***	***	***		
2. Infection with *Batrachochytrium dendrobatidis*	(2017)	(2017)	+	III	4
ANY OTHER DISEASES OF IMPORTANCE					
1 Mycobacteriosis (Coral Trout)	+	(2018)	(2018)	II	5
2 *Tenacibaculum* sp. (Asian seabass)	0000	+	(2018)	II	6
3 Scale Drop Disease Virus (Asian seabass)	0000	+	(2018)	II	7
4 Nocardiosis (Pompano and threadfin)	(2017)	+	+	II	8
5 Megalocytivirus(ornamental platy)	+	+	(2018)	III	9

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	**Koi Herpesvirus (KHV)** DNA was detected from a batch of diseased koi fish from a public ornamental display pond, submitted for post-mortem examination. Concurrently, lesions compatible with ongoing KHV infection were observed with gross and histopathological analysis. An isolation order was placed on the affected premises indicating that fish from the affected population are not allowed to leave the ponds or to be transferred to other establishments. Also, disinfection of the ponds, administration of medication, daily monitoring for moribund or dead fish and daily monitoring of water parameters were initiated.

2	**Viral Nervous Necrosis Virus (VNNV)** was detected through a combination of PCR and histopathology, in two separate batches of moribund grouper fish submitted from the a land-based commercial aquaculture facility in January and March respectively. The farm was promptly informed of the findings and to screen import sources if possible.
3	**Infection with White Spot Syndrome Virus (WSSV)** was detected by real-time PCR in two batches of ornamental shrimp submitted from two separate commercial land-based ornamental fish facilities. An isolation order was placed on both premises and concurrently the affected batches were culled and the tanks subjected to thorough disinfection with sodium hypochlorite. A follow-up inspection was conducted to assess that disinfection procedures were carried out appropriately. A premises biosecurity assessment was also carried out and facility staff then educated on potential improvements in on-site biosecurity.
4	**Infection with *Batrachochytrium dendrobatidis*** was detected by real-time PCR in skin swabs taken from a batch of ornamental Fire Belly newts from a local commercial land-based ornamental facility. An isolation order was issued to the premises, while concurrently the affected population was culled, the affected tanks disinfected, and sampling of all other susceptible species within the premises was carried out. A follow-up inspection to establish completion of the disinfection protocol was carried out. A circular was issued to the local ornamental industry to inform of this detection, and concurrently the Competent Authority of the newt's (imported) country of origin was notified.
5	Bacterial entities with morphology compatible with *Mycobacterium* sp. were detected by histopathology and histochemical staining within granulomatous lesions observed during post-mortem examination of a batch of moribund coral trout. The fish were submitted from a land-based commercial aquaculture facility. The farm was advised on the zoonotic potential of *Mycobacterium* sp. so that necessary precautions may be taken.
6	Bacterial entities with morphology suggestive of *Tenacibaculum* sp. were detected by histopathology analysis from skin lesions of 3 separate batches of diseased seabass submitted for post-mortem examination, from floating marine netcage farms. The fish aso had a significant ectoparasite infestation. The farms were advised on management methods for the bacteria and parasites.
7	Histopathological lesions suggestive of Scale Drop Disease Virus were detected in a batch of diseased seabass submitted from a floating netcage farm. The fish also concurrently had a significant ectoparasite infection. The farm was advised on measures to control the virus.
8	Bacterial entities consistent with *Nocardia* sp. were detected by histopathology and histochemical staining of granulomatous lesions detected from post-mortem examination of a batch of diseased pompano and threadfin submitted from two separate commercial netcage farms. Concurrently, *Nocardia* sp. was isolated from bacteriological culture of the lesions. The farms isolated the affected batch, removed dead or moribund fish, and identified potential predisposing environmental causes for the infection to prevent future occurrences.
9	Megalocytivirus was detected by real-time PCR in two separate, clinically healthy batches of ornamental platy fish from exporters' premises in January and February respectively.

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

Country: THAILAND* Period: January - March 2018

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000	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 *Aphanomyces invadans* (EUS)	(2009)	(2009)	(2009)	II	
6. Red seabream iridoviral disease (RSID)	0000	0000	0000	III	
7. Koi herpesvirus disease (KHV)	(2011)	(2011)	(2011)	III	
Non OIE-listed diseases					
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	0000	0000	0000		
12. Tilapia lake virus (TiLV)	-	-	-	III	
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Perkinsus olseni*	0000	0000	0000		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000		
5. Infection with *Bonamia ostreae*	0000	0000	0000		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
7. Acute viral necrosis (in scallops)	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	(2015)	(2015)	+?( )	III	2
2. Infection with white spot syndrome virus	+?( )	-	-	III	3
3. Infection with yellow head virus genotype 1	+?( )	-	-	III	4
4. Infection with infectious hypodermal and haematopoietic	+?( )	-	-	III	5
5. Infection with infectious myonecrosis virus	0000	0000	0000	III	
6. Infection with *Macrobrachium rosenbergii* nodavirus (White	(2017)	(2017)	(2017)	III	
7. Infection with *Hepatobacter penaei* (Necrotising	(2005)	(2005)	(2005)	III	
8. Acute hepatopancreatic necrosis disease (AHPND)	-	-	+?( )	III	6
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000	III	
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	+?( )	+?( )	+?( )	III	7
11. Viral covert mortality disease (VCMD) of shrimps	-	-	-	III	
12. *Spiroplasma eriocheiris* infection	0000	0000	0000		

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13. Iridovirus in crayfish	***	***	***		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	(2016)	(2016)	+?( )	III	8
2. Infection with *Batrachochytrium dendrobatidis*	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	A total of 170 fish samples from fish farms had been tested at PCR Laboratories of the DOF under active and passive surveillance. 1 specimen or 0.59% recorded as PCR positive for **VER**. Fish farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
2	A total of 3,874 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 60 specimens or 1.55% recorded as PCR positive or carrying **TSV** genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
3	A total of 4,126 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 40 specimens or 0.97% recorded as PCR positive or carrying **WSSV** genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.

4	A total of 4,108 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 132 specimens or 3.21% recorded as PCR positive or carrying **YHV** genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
5	A total of 4,126 shrimp samples from shrimp farms had been tested at PCR Laboratories of the DOF under active surveillance. 48 specimens or 1.16% recorded as PCR positive or carrying **IHHNV** genes. Shrimp farm with positive testing results is subjected to health improvement, movement control, eradication and/or farm disinfection.
6	A total of 3,410 shrimp samples from shrimp farms had been tested by PCR assay at the DOF's laboratories under active surveillance, 115 specimens or 3.37% recorded as PCR positive for **AHPND**. Shrimp farms with positive testing results have been subjected to shrimp health management control and pond improvement.
7	A total of 2,953 shrimp samples from shrimp farms had been tested by PCR assay at the DOF's laboratories under passive surveillance, 447 specimens or 15.14% recorded as PCR positive for **EHP**. Shrimp farms with positive testing results have been subjected to shrimp health management control and pond improvement.
8	A total of 402 frog samples had been tested by virus isolation in EPC cell line at the DOF's laboratory under active surveillance. The ***Ranavirus*** was confirmed using PCR technique, 29 specimens or 7.21% recorded as positive for Ranavirus. Frog farms with positive testing results have been subjected to health improvement, movement control, eradication and/or farm disinfection.

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

Country: VIETNAM* **Period: January - March 2018**

Item	Disease status [a/]			Level of diagnosis	Epidemiological comment numbers
DISEASES PREVALENT IN THE REGION	Month				
FINFISH DISEASES	January	February	March		
OIE-listed diseases					
1. Epizootic haematopoietic necrosis	0000	0000	0000		
2. Infectious haematopoietic necrosis	0000	0000	0000		
3. Spring viraemia of carp (SVC)	0000	0000	0000		
4. Viral haemorrhagic septicaemia (VHS)	0000	0000	0000		
5. Infection with *Aphanomyces invadans* (EUS)	-	-	-		
6. Red seabream iridoviral disease (RSID)	0000	0000	0000		
7. Koi herpesvirus disease (KHV)	0000	0000	0000		
Non OIE-listed diseases					
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		
12. Tilapia lake virus (TiLV)					
MOLLUSC DISEASES					
OIE-listed diseases					
1. Infection with *Bonamia exitiosa*	0000	0000	0000		
2. Infection with *Perkinsus olseni*	-	-	-		
3. Infection with abalone herpesvirus	0000	0000	0000		
4. Infection with *Xenohaliotis californiensis*	0000	0000	0000		
5. Infection with *Bonamia ostreae*	0000	0000	0000		
Non OIE-listed diseases					
6. Infection with *Marteilioides chungmuensis*	0000	0000	0000		
7. Acute viral necrosis (in scallops)	0000	0000	0000		
CRUSTACEAN DISEASES					
OIE-listed diseases					
1. Infection with Taura syndrome virus	0000	0000	0000		
2. Infection with white spot syndrome virus	+()	+()	+()	I, III	2
3. Infection with yellow head virus genotype 1	-	-	-		
4. Infection with infectious hypodermal and haematopoietic	0000	0000	0000		
5. Infection with infectious myonecrosis virus	0000	0000	0000		
6. Infection with *Macrobrachium rosenbergii* nodavirus (White Tail disease)	-	-	-		
7. Infection with *Hepatobacter penaei* (Necrotising hepatopancreatitis)	0000	0000	0000		
8. Acute hepatopancreatic necrosis disease (AHPND)	+()	+()	+()	I, III	3
9. Infection with *Aphanomyces astaci* (Crayfish plague)	0000	0000	0000		
Non OIE-listed diseases					
10. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)	0000	0000	0000		
11. Viral covert mortality disease (VCMD) of shrimps	0000	0000	0000		

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12. *Spiroplasma eriocheiris* infection	0000	0000	0000		
13. Iridovirus in crayfish	0000	0000	0000		
AMPHIBIAN DISEASES					
OIE-listed diseases					
1. Infection with Ranavirus	0000	0000	0000		
2. Infection with *Batrachochytrium dendrobatidis*	0000	0000	0000		
ANY OTHER DISEASES OF IMPORTANCE					

DISEASES PRESUMED EXOTIC TO THE REGION[b]
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	**Enteric Septicaemia of Catfish (*Edwardsiella ictaluri*)** Infection found in small scale catfish (*Pangasius micronema*, *P. hypophthalmus*) farms. The disease occurred in An Giang and Dong Thap provinces (10.9 ha).

2	**Infection with white spot syndrome virus (White Spot Disease; WSD)** **Pathogen**: White spot syndrome virus (WSSV) **Species affected:** *Penaeus monodon* and *Litopenaeus vannamei;* **Name of affected area:** reported and limited in some small scale farms with low biosecurity control. Shrimps were affected at 10-100 days after stocking; **Mortality rate:** average to high; **Clinical signs:** 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; **Control measures:** early harvest, strict isolation of infected ponds from movement, strengthened control of transportation, cleaning and disinfection of infected ponds and farming tools using Calcium hypochlorite (chlorine).
3	**Acute Hepatopancreatic Necrosis Disease (AHPND)** **Pathogen**: *Vibrio parahaemolyticus* with Phage A3 **Species affected:** *Penaeus monodon* and *Litopenaeus vannamei* (10-45 DOC) **Name of affected area:** reported and limited to some small-scale farms with low biosecurity control. **Mortality rate:** could reach 95% in intensive and semi-intensive farms; **Clinical signs:** shrimps become lethargic with soft, darkened shells, mottling of the carapace. Pathology is limited to hepatopancreas. **Control measures:** early harvest, strict isolation of infected ponds from movement and transport controls, cleaning and disinfection of infected ponds and farming tools using Calcium hypochlorite (chlorine).

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

List of Diseases in the Asia-Pacific
Quarterly Aquatic Animal Disease Report (Beginning 2018)

1. DISEASES PREVALENT IN THE REGION	
1.1 FINFISH DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
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 *Aphanomyces invadans* (EUS)	5. Tilapia lake virus disease
6. Red seabream iridoviral disease (RSID)	
7. Koi herpesvirus disease (KHV)	
1.2 MOLLUSC DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with *Bonamia exitiosa*	1. Infection with *Marteilioides chungmuensis*
2. Infection with *Perkinsus olseni*	2. Acute viral necrosis (in scallops)
3. Infection with abalone herpesvirus	
4. Infection with *Xenohaliotis californiensis*	
5. Infection with *Bonamia ostreae*	
1.3 CRUSTACEAN DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with Taura syndrome virus	1. Hepatopancreatic microsporidiosis caused by *Enterocytozoon hepatopenaei* (HPM-EHP)
2. Infection with white spot syndrome virus	
3. Infection with yellow head virus genotype 1	2. Viral covert mortality disease (VCMD) of shrimps
4. Infection with infectious hypodermal and haematopoietic necrosis	3. *Spiroplasma eriocheiris* infection
5. Infection with infectious myonecrosis virus	4. Iridovirus in crayfish
6. Infection with *Macrobrachium rosenbergii* nodavirus (White Tail	
7. Infection with *Hepatobacter penaei* (Necrotising hepatopancreatitis)	
8. Acute hepatopancreatic necrosis disease (AHPND)	
9. Infection with *Aphanomyces astaci* (Crayfish plague)	
1.4 AMPHIBIAN DISEASES	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with *Ranavirus*	
2. Infection with *Bachtracochytrium dendrobatidis*	
2. DISEASES PRESUMED EXOTIC TO THE REGION	
2.1 Finfish	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with HPRdeleted or HPR0 salmon anaemia virus	1. Channel catfish virus disease
2. Infection with salmon pancreas disease virus	
3. Infection with *Gyrodactylus salaris*	
2.2 Molluscs	
OIE-listed diseases	**Non OIE-listed diseases**
1. Infection with *Marteilia refringens*	
2. Infection with *Perkinsus marinus*	

Recent Aquatic Animal Health Related Publications

OIE Aquatic Animal Health Code, 21st Edition, 2018. The OIE Aquatic Animal Health Code (the Aquatic Code) provides standards for the improvement of aquatic animal health worldwide. It also includes standards for the welfare of farmed fish and use of antimicrobial agents in aquatic animals. The sanitary measures in the Aquatic Code should be used by the Competent Authorities of importing and exporting countries for early detection, reporting and control of pathogenic agents in aquatic animals (amphibians, crustaceans, fish and molluscs) and to prevent their spread 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 21st edition incorporates modifications to the Aquatic Code agreed at the 86th General Session in May 2018. This edition includes the following updates: Chapter 1.3. 'Diseases listed by the OIE'; Chapter 5.3. 'OIE procedures relevant to the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization'; Chapter 5.4. 'Criteria to assess the safety of aquatic animal commodities';Article X.X.2. of Chapters 10.1. 'Epizootic haematopoietic necrosis', 10.3. 'Infection with Gyrodactylus salaris' and 10.4. 'Infection with infectious salmon anaemia virus'; Articles X.X.8., X.X.9., X.X.10. and X.X.11. of all disease-specific chapters in Sections 8, 9 and 10. This edition also includes the following new chapter: Chapter 8.2. 'Infection with *Batrachochytrium salamandrivorans*'.The Aquatic Animal Health Code is available for free download http://www.oie.int/en/standard-setting/aquatic-code/access-online/

OIE Manual of Diagnostic Tests for Aquatic Animals, 2017. The purpose of the Manual of Diagnostic Tests for Aquatic Animals (the Aquatic Manual) is to provide a standardised approach to the diagnosis of the diseases listed in the Aquatic Code, to facilitate health certification for trade in aquatic animals and aquatic animal products. Although there are many publications on the diagnosis and control of aquatic animal diseases, the Aquatic Manual is a key reference document describing the methods relevant to the OIE-listed diseases and other important diseases for use by aquatic animal health laboratories around the world. Adoption of the specified methods will help to increase efficiency of laboratories and to promote improvements in aquatic animal health world-wide.The manual is available for free download at http://www.oie.int/en/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[1], 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.

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

C. Levels of Diagnosis

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

D. Subjects to be covered in the Epidemiological Comments

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

IMPORTANT

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

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

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Published by the Network of Aquaculture Centres in Asia-Pacific, World Organisation for Animal Health (OIE) Regional Representation for Asia and the Pacific, and the Food and Agriculture Organization of the United Nations.
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ISSN 1513-6558