AQUATIC ANIMAL DISEASE REPORT - 2021

Country/territory: Singapore Disease status/occurrence code a/b/ Epidemiologi-Level of DISEASES PREVALENT IN THE REGION Month cal comment diagnosis FINFISH DISEASES January February March April Mav June July August September October November December numbers OIE-listed diseases . Infection with epizootic haematopoietic necrosis virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with infectious haematopoietic necrosis virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with spring viremia of carp virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with viral haemorrhagic septicaemia virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with Aphanomyces invadans (EUS) 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with red sea bream iridovirus (2019) (2019) (2019) (2019) (2019) (2019) (2019) (2019) (2019)(2019)(2019)(2019)Infection with koi herpesvirus (2019)(2019)(2019)(2019)(2019)(2019)(2019)(2019)(2019)(2019)(2019)(2019)Non OIE-listed diseases . Grouper iridoviral disease (2014)(2014) (2014) (2014) (2014) (2014)(2014)(2014)(2014) (2014) (2014) (2014) . Viral encephalopathy and retinopathy III (2020)(2020)(2020)(2020)(2021)(2021)(2021)(2021)(2021)**** **** **** **** **** **** 0.Enteric septicaemia of catfish 11. Carp Edema Virus Disease **** **** **** **** **** **** **** **** **** **** **** **** 12. Tilapia lake virus (TiLV) 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 MOLLUSC DISEASES OIE-listed diseases **** **** **** **** **** **** **** **** **** **** **** **** . Infection with Bonamia exitiosa **** **** **** **** **** **** **** **** **** . Infection with Perkinsus olseni **** **** **** . Infection with abalone herpesvirus **** **** **** **** **** **** **** **** **** **** **** **** . Infection with Xenohaliotis californiensis **** **** **** **** **** **** **** **** **** **** **** **** . Infection with Bonamia ostreae **** **** **** **** **** **** **** **** **** **** **** **** Non OIE-listed diseases . Infection with Marteilioides chungmuensis **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** **** . Acute viral necrosis (in scallops) **** CRUSTACEAN DISEASES OIE-listed diseases . Infection with Taura syndrome virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 Infection with white spot syndrome virus (2018)(2018)(2021) (2021) (2021)(2021)(2021)(2021)(2021)(2021) (2021)Ш . Infection with yellow head virus genotype 1 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with infectious hypodermal and haematopoietic necrosis virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with infectious myonecrosis virus 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 5. Infection with Macrobrachium rosenbergii nodavirus (White Tail **** **** **** **** **** **** **** **** **** **** **** **** Infection with *Hepatobacter penaei* (Necrotising hepatopancreatitis) 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 Acute hepatopancreatic necrosis disease (AHPND) 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 . Infection with Aphanomyces astaci (Crayfish plague) **** **** Non OIE-listed diseases 10. Hepatopnacreatic Microsporidiosis caused by Enterocytozoon **** **** **** **** **** **** **** **** **** **** **** hepatopenaei (HPM-EHP) **** **** **** **** **** **** **** **** **** **** 11. Viral covert mortality disease (VCMD) of shrimps **** **** **** **** **** **** **** **** **** **** **** **** 12. Spiroplasma eriocheiris infection **** **** 13. Decapod iridescent virus 1 (DIV-1) **** **** AMPHIBIAN DISEASES OIE-listed diseases . Infection with Ranavirus species **** **** **** **** **** **** **** **** **** **** **** **** . Infection with Batrachochytrium dendrobatidis (2020) (2020) (2020) (2020) (2020) (2020)(2020)(2020) (2020)(2020)(2020)(2020). Infection with Batrachochytrium salamandrivorans (2018) (2018) (2018) (2018) (2018) (2018)(2018) (2018) (2018) (2018) (2018) (2018)

Prepared	repared by:					
Name:	_Dr Teo Xuan Hui					
Position:	Senior Veterinarian / Professional & Scientific Services					
Date:	7 February 2022					

ANY OTHER DISEASES OF IMPORTANCE														
1 Infection with Scale Drop Disease Virus	+	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	+	(2021)	(2021)	(2021)	III	2
2 Infection with Big Belly bacterium	+	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	+	(2021)	(2021)	(2021)	II	2
3 Infection with Lymphocystis virus	0000	0000	+	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	III	3
4 Infection with Nocardia sp.	(2018)	(2018)	(2018)	+	+	+	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	III	4,6
5 Infection with Streptococcus iniae	(2020)	(2020	(2020)	+	(2021)	+	(2021)	(2021)	(2021)	(2021)	(2021)	(2021)	III	4,6,8
6 Infection with Tenacibaculum sp.	(2019)	(2019)	(2019)	(2019)	(2019)	+	(2021)	(2021)	+	(2021)	(2021)	(2021)	II	7
7 Infection with Lates Calcarifer Herpesvirus	(2020)	(2020)	(2020)	(2020)	(2020)	(2020)	(2020)	(2020)	+	(2021)	(2021)	(2021)	III	2

DISEASES PRESUMED EXOTIC TO THE REGION^b

LISTED BY THE OIE

Finfish: Infection with HPR-deleted or HPR0 salmon anaemia virus; Infection with salmon pancreas disease virus;

Infection with Gyrodactylus salaris.

Molluscs: Infection with Marteilia refringens; Perkinsus marinus.

NOT LISTED BY THE OIE

Finfish: Channel catfish virus disease

a/ Please use the following occurrence code:

-	*		
Occurrence code as	<u>Definition</u>	Occurrence code and symbol	<u>Definition</u>
symbol			
Disease present	The disease is present with clinical signs in the whole country	Disease absent	The disease was absent in the country during the
Disease limited to o	(in domestic species or wildlife)	Disease absent	reporting period (in domestic species or wildlife).
or more zones	The disease is present with clinical signs, and limited to one or		
+()	more zones/compartments (in domestic species or wildlife)	Never reported	The disease has "never been reported" (historically
		0000	absent) for the whole country in domestic species and wildlife.
Infection/infestation +?	on Confirmed infestation or infection using diagnostic tests, but no clinical signs observed (in domestic species or wildlife)		wildlife.
T1	no chinical signs observed (in domestic species of whidine)		No information is available regarding the presence or
Infection/infestation	n	No information ***	the absence of this disease during the reporting period
limited to one or mo	Confirmed infestation or infection using diagnostic tests, but	***	(in domestic species or wildlife).
zones	no clinical signs observed and limited to one or more zones/compartments (in domestic species or wildlife)		
+?()	zones comparaments (in domestic species of whatite)		
Disease suspected			
? Disease suspected b	(in domestic species or wildlife)		
not confirmed and			
l .	ore and limited to one or more zones/compartments (in domestic		
zones	species or wildlife)		
?()			
b/ If there is any char	inges on historical data, please highlight in RED		

b/ If there is any changes on historical data, please highlight in RED

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 ivo.	
1 1	White Spot Syndrome Virus (WSSV) DNA was detected by real-time PCR in a batch of ornamental crayfish imported by a local ornamental fish trading facility. All specimens of the affected batch were culled. The premises were inspected by the competent animal health authority and found to have good biosecurity practices.

	In January, Scale Drop Disease Virus (SDDV) was detected through a combination of PCR and histopathology in a batch of diseased Asian seabass (<i>Lates calcarifer</i>) submitted by a commercial offshore flow-through farming system. In 1 fish, histopathology analysis of the intestine also detected evidence of Big Belly bacterium (BB) infection. A disease investigation was conducted jointly by the competent animal health authority and farm staff, and identified the growout tanks as being a reservoir of pathogens. The farm was advised to consider vaccinating the nursery fish and shifting the growout stages to flow-through netcages.
2	In September 2021, SDDV was detected through a combination of PCR and histopathology in a separate batch of diseased Asian seabass (<i>Lates calcarifer</i>) submitted by another commercial offshore flow-through farming system. Concurrently, a second batch of Asian seabass from the same premises had Lates Calcarifer Herpesvirus (LCHV) detected via PCR. The farm's attending veterinarian was informed of the detections.
	In September 2021, BB was detected again, this time in a batch of diseased Asian Seabass fingerlings submitted by another offshore commercial aquaculture system. The farm was informed of the detection.
3	Lymphocystis virus was detected via a combination of PCR and histopathology in a batch of diseased Red snapper submitted by a commercial offshore netcage farm. The fish presented with black wart-like lesions on the skin. The farm was advised on the mode of fish to fish transmission and management of this virus.
4	Nocardia seriolae infection was detected by a combination of histopathology, culture and sequencing in two batches of diseased threadfin submitted by an offshore commercial netcage farm in April and May respectively. Concurrently, fish from the April submission also showed histopathologic evidence of gram-positive cocci infection, which was supported by culture and PCR confirming the aetiological agent as Streptococcus iniae. The farm was informed of the detection and advised on the results of in vitro antibiotic sensivity tests to inform their selection of antimicrobial treatment. The farm also adopted frequent removal of dead and moribund fish to reduce shedding of pathogen into the water column.
5	Viral Nervous Necrosis Virus (VNNV) was detected via a combination of PCR and histopathology in a batch of diseased pompano and two batches of diseased grouper, all submitted by the same offshore netcage farm, in May. VNNV was detected from a separate batch of diseased pompano from the same farm, in June. The farm's attending veterinarian was informed of the detection.
	VNNV was detected via a combinatoin of PCR and histopathology in two batches of diseased coral trout submitted by a land-based commercial recirculating aquaculture system farm, in November. The farm's fish health personnel were informed of the detection and advised on management measures.
6	Nocardia sp. infection was detected by a combination of histopathology, culture and isolation in a batch of diseased red snapper submitted by an offshore netcage farm in June. Concurrently, the same batch of snapper also showed histopathologic evidence of gram-positive cocci infection, which was supported by culture, PCR and sequencing confirming the aetiological agent as Streptococcus iniae. The farm's attending veterinarian was informed of the detection and advised on the results of in vitro antibiotic sensivity tests to inform their selection of antimicrobial treatment. The farm also adopted frequent removal of dead and moribund fish to reduce shedding of pathogen into the water column.
7	Histopathologic findings compatible with Tenacibaculosis were detected in a batch of diseased pompano fingerlings submitted in June and a separate batch of diseased coral trout submitted in September. In both cases, the farm's attending fish health manager was promptly informed of the diagnosis.
8	Streptococcus iniae infection was detected by a combination of histopathology, culture and PCR in a batch of diseased red snapper submitted by an offshore farm in June. Concurrently the fish had a significant infestation with Benedenia sp. The farm's attending veterinarian was promptly informed of the diagnosis.
2. New aquatic an	imal health regulations introduced within past six months (with effective date):