

Report of the

ROUND-TABLE DISCUSSION: MOVING FORWARD THROUGH LESSONS LEARNED ON  
RESPONSE ACTIONS TO AQUATIC ANIMAL DISEASE EMERGENCIES

Rome, 16–18 December 2019

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- Identification at the national level of a coordination/reference center on MMEs.
- Peculiarities of aquatic animals make diagnosis of their diseases more difficult than those of terrestrial animals (i.e. specific media for growing bacteria, specific temperatures, many uncultivable pathogens, emergence of new pathogens).
- Standard sampling protocols.
- Training of local veterinary services in identifying as soon as possible whether the MME is clearly pathogen related or environmentally related.
- Emergency funds must be available.

## Reference

Toffan A, A. Marsella, M. Abbadi, S. Abass, B. Al-Adhadh, G. Wood & D.M. Stone. First detection of koi herpesvirus and carp oedema virus in Iraq associated with a mass mortality in common carp (*Cyprinus carpio*). *Transbound. Emerg. Dis.* 2019 Nov 21. doi: 10.1111/tbed.1342.

### 3.3.3 Response actions to aquatic animal disease emergencies: Wageningen Bioveterinary Research, the Netherlands (Dr Olga Haenen)

101. Wageningen Bioveterinary Research (WBVR) (<https://www.wur.nl/en/Research-Results/Research-Institutes/Bioveterinary-Research.htm>) is the official, independent Dutch Government Veterinary Institute of the Ministry of Agriculture, Nature and Food Quality. For the government, research activities consist, among others, of statutory tasks related to animal health. The Ministry, Directorates, and the chief veterinary officer (CVO) set the tasks of Nederlandse Voedsel - en Warenautoriteit (NVWA), the official veterinary service (which does the field work, like registration of farms, notification of disease outbreaks, sampling and transport of samples to WBVR, and interventions). Mostly farms have a veterinarian. The National Reference Laboratory for Fish, Shellfish, and Crustacean Diseases of WBVR is (according to 2006/88/EC) in charge of aquatic diagnostics, disease notification, confirmation testing, research, and advice. In case of aquatic mass mortalities, the standard NVWA procedure applies: NVWA and the Ministry are informed, NVWA takes samples, brings them to WBVR, the fish farm is closed temporarily by NVWA, and waits a diagnosis. WBVR tests the fish by fast, validated tests and informs NVWA and the Ministry on findings. In the case of a notifiable disease, the CVO notifies the European Union and the OIE. Netherlands has no active surveillance for fish diseases, and no infectious hematopoietic necrosis virus (IHNV)- or viral hemorrhagic septicemia virus (VHSV)-free farms. All farms now have status “unknown” (Cat. III in 2006/88/EC).

102. Example 1: Infectious hematopoietic necrosis (IHN) is an European Union??- and OIE-notifiable disease of salmonid fish caused by IHN virus (IHNV), present in Western Europe since 1987. In the spring of 2008, IHNV was detected for the first time in the Netherlands in rainbow trout, *Oncorhynchus mykiss*, and another seven times, up to 2011. In 2016, a single new IHN case was reported. The Dutch trout branch is small, mainly put-and-take fisheries, stocked with imported ready-to-catch trout. The epidemiology and phylogeny of IHNV outbreaks in the Netherlands from 2008 to 2011 were analyzed. IHNV was most likely introduced from Germany, but phylogenetic results suggested earlier introduction than in 2008.

103. Example 2: *CyHV-2 in imported goldfish*. In global fish trade, yearly, > 1 billion ornamental fish is transported, with >3 000 deliveries of tropical ornamental fish into the Netherlands as an important import- and transfer port, from >40 countries worldwide, 50 percent from Southeast Asia. The NVWA sent 50 batches of imported freshwater ornamental fish (36 species/genera from 13 countries), mainly from Asia and South America, directly from Schiphol Airport to WBVR, for analysis. Among several other tests, goldfish were tested for cyprinid herpesvirus 2 (CyHV-2). At the

National Research Institute of Aquaculture (NRIA), Japan, in a collaborative study, 1/8 goldfish samples was found positive for CyHV-2. This isolate appeared highly virulent to the Ryukin goldfish (Ito, Kurita and Haenen, 2017). Moreover, CyHV-2 outbreaks occurred in mass mortalities in wild gibel carp (*Carassius gibelio*) in the Netherlands (an invasive fish species), but also in 2017 in China in gibel carp as food fish (Lingbing Zeng via N.J. Olesen, pers.comm.). This non-notifiable viral disease may be devastating.

104. *Lessons learnt and improvements:* As diseases like IHN can be spread across borders, epidemiologists in Europe should actively cooperate to understand and prevent the spread of IHNV. Moreover, accurate notification is possible by fish farmers seeking financial compensation. Regarding CyHV-2, we should all be aware of the risk of disease via imports of (ornamental) fish and its subsequent transfer to wild fish, as seen in this case involving gibel carp populations. All involved persons, including fish importers should be aware of this, and appropriate prevention, hygiene, and waste-water treatment should be in place.

### Reference

Ito, T., J. Kurita & O.L.M. Haenen. 2017. Importation of CyHV-2 infected goldfish into the Netherlands. *Dis. Aquat. Org.*, 126: 51–62. (available at: <https://doi.org/10.3354/dao03157>).

### 3.3.4 MSD: Ghana tilapia ISKNV case study (Lee Yeng Sheng and Collard Arnaud)

105. MSD Animal Health is a commercial entity with interest in aquatic preventative solutions against diseases. In event of outbreaks, we provide technical support to help partners mitigate losses and aid in their operational recovery.

106. *Infectious Spleen and Kidney Necrosis Virus (ISKNV): Ghana 2018.* ISKNV has been known within MSD to be present in tilapia exclusively in Indonesia over the last 12 years. Due to this specificity, we only apply ISKNV test on samples originating from Indonesia. Samples collected from Ghana in September 2018 were only tested against tilapia lake virus (TiLV) and streptococcosis. The results showed only < 20 percent positive for TiLV, which did not match the outbreak impact observed. A second phase of investigation was performed in Q4 2018, when up to 90 percent mortalities and positive ISKNV tests from other laboratories were reported.

107. New samples were collected and tested to verify ISKNV's presence. Results were: Positive > 70 percent ISKNV, Positive >85 percent *Streptococcus agalactiae* serotype Ib (co-infections), and Negative for TiLV.

108. *ISKNV risk mitigation strategy.* MSD provided a risk mitigating strategy based on internal technical knowledge of iridovirus pathogenicity, coupled with heat intervention process adapted from barramundi farming (acknowledgements to Alain Michel and Allegro-Aqua's Jeffrey Teo).

- Volta Lake at high ISKNV levels: Sanitize water in ponds/tanks to reduce ISKNV load in hatchery culture. Hold juveniles to larger sizes (>10 g) on land before transfer into lake.
- ISKNV pathogenesis: Perform heat intervention above 36 °C, heating every 4 to 7 days to break viral incubation cycle. Elevated water temperature accelerates fish metabolism; enhance innate immunity to overcome early infections.