European Union Reference Laboratory for Crustacean Diseases
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2016/2017 WORK PROGRAMME FOR THE EURL FOR CRUSTACEAN DISEASES

LEGAL FUNCTIONS AND DUTIES

The functions and duties of the EURL are specified in Annex VI Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on prevention and control of certain diseases in aquatic animals. In the 2016/2017 work programme years 28 Member States and 5 candidate countries (Albania, Montenegro, Serbia, Former Yugoslav Republic of Macedonia and Turkey) will be considered eligible for EURL assistance and will be invited to participate in EURL organised training programmes and activities. The full integration into the European Union of recent accession Member States is a priority area, and facilitated via the provision of additional advice, training and assistance to these states.

2016 and 2017 WORK PROGRAMME

Some of the tasks listed below will be relevant for both years, specific tasks to be completed within a certain year will be highlighted (yellow for 2016).

1. To ensure the development and use of high quality analytical methods across the EU-RL framework

1.1. Via linkages to OIE reference laboratories, other specialist global centres and the scientific literature, establish and maintain molecular diagnostic approaches for the key crustacean pathogens, including emerging diseases in global aquaculture as appropriate. Ensure diagnostic techniques for White Spot Disease (WSD), Yellowhead Disease (YHD) and Taura Syndrome (TS) being used by the EURL (and NRL's) are aligned with recent developments by OIE laboratories and other specialist centres in 3rd countries. Move towards harmonization of diagnostics techniques to all listed crustacean pathogens designated by the OIE, to include full diagnostic capacity for the viral pathogens (Infectious Myonecrosis Virus (IMNV), Infectious Hypodermal and Haematopoietic Necrosis Virus (IHHNV), White Tail Disease (WTD) caused by *Macrobrachium rosenbergii* Nodavirus (*Mr*NV), bacterial pathogens Acute Hepatopancreatic Necrosis Disease (AHPND), Necrotising Hepatopancreatitis (NHP) of shrimp, and crayfish plague (*Aphanomyces astaci*). Develop in-house protocols for real-time PCR and *in situ* hybridisation for listed pathogens.

1.2. Participate in any relevant third country ring trials and proficiency testing exercises run by OIE reference laboratories or others.

1.3. Continue activities to form Member State (MS) Crustacean Disease NRL network and to ensure capacity to diagnose agents of WSD, YHD and TS as listed in Council Directive 2008/88/EC, and to provide advice and training in

the diagnosis of other crustacean diseases of relevance to European crustaceans.

1.4. To organize and host the 8th and 9th Annual meeting of the NRL network for crustacean diseases. As previous, the workshop will combine elements of technical training for NRL representatives in histological and molecular diagnosis of Directive-listed agents of WSD, TS and YHD and OIE-listed diseases including the newly listed AHPND. The workshops will also provide an update on progress, capacity and important disease issues by MS representatives.

The 8th workshop will aim to continue to build upon expertise in crustacean disease diagnosis within Europe. The meeting will concentrate on invertebrate viruses in general and discuss the link between crustacean and insect viruses. The meeting will highlight how utilising methods from the insect studies may enhance future research in crustacean viruses.

The 9th workshop will aim to continue to build upon expertise in crustacean disease diagnosis within Europe and to gather a European-wide perspective on issues facing the crustacean harvesting industries and wildlife populations of European waterways. A theme for this meeting will be discussed and agreed with NRLs.

The outputs of all meetings to be made available via report to DG SANCO and to Member State NRLs and Competent Authorities. Following discussions this meeting will also provide the framework for the 2018/2019 work programmes.

1.5. Continue work with WSD susceptible species from Europe and sampling strategy for their utilisation in surveillance programs. Investigate molecular basis for susceptibility of certain hosts and on viral population within different hosts (moving towards virulence or avirulence). Report on the role and implications of viral inserts into host genomes and the potential impact on the use of current diagnostic tools in these hosts.

1.6. Develop taxonomic tools to isolate and characterise a range of large DNA viruses (e.g. CcBV, HPV, CmBV, B and B2) known to occur in European hosts. Provide a framework for description of these viruses under rules of the International Committee on the Taxonomy of Viruses (ICTV).

1.7. Investigate any potential risk of identifying false positive results arising from the identification of viruses which may be present in the environment but not yet described, these viruses may appear to be similar but not identical to notifiable diseases.

1.8. Develop taxonomic expertise and publish descriptions of novel and/or emerging crustacean pathogens of economically and ecologically important crustaceans from Europe.

1.9. To apply novel work flows for the utilisation of Next Generation Sequencing technologies for diagnosis of novel and emerging pathogens of crustaceans. In particular to report on utilisation of eDNA (environmental DNA) approaches for the detection and diagnosis of pathogens and to advise the EC on utility of published eDNA data for decision making. Screen public sequence databases (e.g. NCBI, TARA Oceans) for the presence of sequences derived from organisms causing notifiable diseases (e.g. White Spot Syndrome

Virus) to gain insight into their geographical distribution. This could potentially lead to the discovery of novel, closely related species, which may or may not be pathogenic.

1.10. To continue to develop diagnostic capacity for AHPND within the EURL.

2. To maintain appropriate level of proficiency testing ensuring efficiency of control analysis methods

2.1. Maintain stocks of reagents/materials (e.g. WSSV-infected shrimp tissues) for use in confirmatory testing and for ring trials and proficiency testing.

2.2. Maintain and build upon tissue/strain/reagent bank for agents of WSD, TS and YHD (EC listed pathogens) for provision of training, proficiency testing and ring testing material to NRL's and other laboratories. Carry out 7th and 8th ring trials and proficiency test for molecular diagnosis of WSD utilising both the Lenticule^{TM}-based system and provision of infected pleopods. Separate ring trials will be conducted to establish capacity to diagnose YHD and TS by Member State NRLs.

Reference material (e.g. WSSV-infected shrimp) generated from EURL aquarium programmes will be also be required for MS NRL's.

2.3. Continue to expand tissue/strain/reagent bank by specific linkages to OIE references laboratories in Asia and USA for WSD, TS and YHD and other OIE listed pathogens.

2.4. Maintain and develop EURL competence and expertise on histological and molecular techniques for diagnosis of crustacean diseases caused by a range of pathogenic agents via collection of samples from key European and global sentinel species and encouragement of NRLs to submit samples for testing/cataloguing. To include maintenance of ISO 17025 accreditation status for histological diagnosis of crustacean diseases and confirmatory PCR diagnosis of WSD, TS and YHD.

2.5. Perform accredited testing on experimental trial and/or outbreak material from Member States NRL's, or on disputed material submitted to the EURL from Member States (on request from DG SANCO). In addition, to assist third countries with diagnosis of emerging or unknown pathogens of crustacean hosts (e.g. AHPND).

2.6. Collate reference strains of WSD, TS, YHD and other relevant crustacean pathogens from global outbreaks. Typing of strains using nucleic acid sequencing techniques and storage of type material in tissue bank held at the EURL (see above). Other pathogens to include the viruses causing IMNV, IHHNV, MBV and HPV and the pathogenic bacterial strain *Vibrio parahaemolyticus* (VP_{AHPND}) responsible for AHPND of penaeid shrimp in global aquaculture.

3. To ensure the availability of scientific and technical assistance provided by EU-RLs

3.1. Provide advice and support to Commission on current and arising issues, including emergencies, associated with crustacean diseases and in particular, with the crustacean diseases listed in Directive 2006/88/EC

3.2. Assist Commission with continued designation of MS NRLs by provision of updated information on the status of the network. In instances whereby a MS is unable to designate a Crustacean Disease National Reference Laboratory (NRL), the EURL will provide a portal for contact between MS without designation and those with existing designated NRL's. The continuing aim in 2016/2017 is to further develop the comprehensive network of NRL's or designated testing laboratories in all MS and to integrate with wider networks of expert centre's globally

3.3. Provide specialist scientific information and advice to MS NRLs, including new EU accession countries, on all aspects of crustacean disease diagnosis, including that associated with diagnosis of those diseases listed in Directive 2006/88/EC. Continue to provide early assistance with design of national programmes for diagnosis of crustacean diseases if required. To continue to develop a diagnostic centre of excellence for the identification and diagnosis of pathogens of crustaceans.

3.4. As a centre of excellence for crustacean disease diagnosis, to assist third countries with diagnosis of emerging disease issues and to be a portal for information flow from third countries to the EC on this subject.

3.5. Maintain and refresh the Crustacean Disease EURL website as the primary means of information dissemination to NRLs and others (www.crustaceancrl.eu). Utilize social media (Twitter) for the dissemination of crustacean disease and food security-related information to NRL representatives and to wider society (@grantstent).

4. To ensure a sound and efficient management of EU-RL funding cycle

4.1. Maintain full accreditation status (ISO 17025) for histological diagnosis of crustacean diseases and for confirmatory PCR diagnosis for agents of WSD, TS and YHD. Advise NRL's on relevant accreditation processes and provide a framework for quality assured recording of crustacean disease data.

4.2. Prepare documents, make an application and obtain accreditation status (ISO 17043) general requirements for proficiency testing.

4.3. Participate in EURL co-ordination meetings and workshops as appropriate (e.g. *ad hoc* meetings organized by the Commission on aquatic animal diseases).

4.4. Complete required EURL evaluations to include peer-reviewed publications published in year, performance indicator targets met, proficiency testing results from 7th and 8th WSD ring trial and 2nd and 3rd YHD and TS ring trial.

Dr Grant Stentiford, EURL Director

22nd September 2015