WOAH Collaborative Centre Reports Activities 2022

Activities in 2022

This report has been submitted : 15 février 2023 14:20

Centre Information

<table>
<thead>
<tr>
<th>Title of WOAH Collaborating Centre</th>
<th>WOAH Collaborating Centre for Emerging Aquatic Animal Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address of WOAH Collaborating Centre</td>
<td>Cefas, Barrack Road, The Nothe, Weymouth, DT48UB, UK</td>
</tr>
<tr>
<td>Tel.:</td>
<td>+441305206600</td>
</tr>
<tr>
<td>E-mail address:</td>
<td><a href="mailto:kelly.bateman@cefas.gov.uk">kelly.bateman@cefas.gov.uk</a></td>
</tr>
<tr>
<td>Website:</td>
<td><a href="https://www.cefas.co.uk/icoe/aquatic-animal-health/designations/woah-collaborating-centre-for-emerging-aquatic-animal-disease/">https://www.cefas.co.uk/icoe/aquatic-animal-health/designations/woah-collaborating-centre-for-emerging-aquatic-animal-disease/</a></td>
</tr>
<tr>
<td>Name Director of Institute (Responsible Official):</td>
<td>Dr Rachel Hartnell</td>
</tr>
<tr>
<td>Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):</td>
<td>Dr Grant Stentiford</td>
</tr>
<tr>
<td>Name of the writer:</td>
<td>Kelly Bateman</td>
</tr>
</tbody>
</table>

TOR1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

| Disease Control |
|-----------------|-----------------|
| Title of activity | Scope |
| The FHI is responsible for the delivery and enforcement of | |

WOAH Collaborative Centre Reports Activities 2022
<table>
<thead>
<tr>
<th>Title of activity</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of aquatic animal health epidemiological surveillance service</td>
<td>Provision of advice for aquatic animal health policy, risk assessment and modelling: design and assessment of surveillance plans.</td>
</tr>
<tr>
<td>Provision of training in sampling and histological analysis of fish and crustacean diseases.</td>
<td>Training in sampling techniques for fish and crustacean tissues and histological/molecular analysis.</td>
</tr>
<tr>
<td>Provision of materials for the &quot;Introduction to histopathology in fish and crustacean diseases&quot;</td>
<td>Training workshop run by the European Union Reference Laboratory for fish and crustacean diseases.</td>
</tr>
<tr>
<td>Contribution to Regional seminar for the WOAH Central Asia Workshop on Aquatic Animal Health, held in Bishkek, Kyrgyzstan, 20-21 July 2022</td>
<td>Presentation (online) providing an overview of the WOAH Collaborating Centre covering how to engage with the centre and brief summary of some relevant research.</td>
</tr>
<tr>
<td>National Reference Laboratory for Anisakis.</td>
<td>Maintain capacity and knowledge base for zoonotic nematode parasites. Provide advice to industry, government and other stakeholders as required.</td>
</tr>
<tr>
<td>Monitoring of health and disease of wild fish, crustaceans and molluscs</td>
<td>Samples of fish, crustacean and mollusc tissues were assessed for disease and samples collected for reference materials.</td>
</tr>
<tr>
<td>Title of activity</td>
<td>Scope</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>International Database on Aquatic Animal Diseases (IDAAD)</td>
<td>Complete review of the disease data, accessions added and updated as required.</td>
</tr>
<tr>
<td>WOAH experts available for Koi Herpesvirus (KHV) and Spring Viraemia of Carp (SVC)</td>
<td>Provision of expert advice on these disease conditions, their diagnostics, host range, pathogenicity and characterisation, including pathogen testing when required.</td>
</tr>
<tr>
<td>Investigation into health of Edible crab stocks (Cancer pagurus)</td>
<td>Provision of advice and reference materials. Assistance in histological analysis of tissues to colleagues at the European Union Reference Laboratory for Mollusc Diseases.</td>
</tr>
<tr>
<td>Analysis of Blue crab (Callinectes sapidus) tissues from USA</td>
<td>Assistance in histological and ultrastructural analysis of blue crab tissues infected with an unknown microeukaryote parasite.</td>
</tr>
<tr>
<td>Collaboration on shrimp health and microbiome studies with ICAR India (associate partner laboratory to WOAH CC)</td>
<td>FCDO-OCPP collaborative project between Cefas and ICAR (India) using ‘omics methods, molecular diagnostics, and histopathology to elucidate a syndromic disease of shrimp: white gut syndrome. Analyses have shown involvement of EHP and a diversity of viral lineages. A publication in currently in preparation.</td>
</tr>
<tr>
<td>Metagenomic/metatranscriptomic analysis of skin biopsies from salmon affected by &quot;Red Skin Disease&quot; an apparently</td>
<td></td>
</tr>
</tbody>
</table>
Emerging disease investigation – Atlantic salmon
effectively identified a novel condition in Atlantic salmon. Coordination with Marine Scotland and Environment Agency; samples accumulated from England and Scotland; RNAseq and other analyses are ongoing.

**TOR3: HARMONISATION OF STANDARDS**

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

<table>
<thead>
<tr>
<th>Proposal title</th>
<th>Scope/Content</th>
<th>Applicable area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crustacean ad hoc group</td>
<td>CCEAAD invited to be part of this ad hoc group, first priority to identify susceptible species for infection with Decapod iridescent virus 1 (DIV1)</td>
<td>Laboratory expertise</td>
</tr>
<tr>
<td>Infection with Tilapia lake virus (TiLV) Chapter for Aquatic Manual</td>
<td>CCEAAD invited to lead the production of a chapter on infection with Tilapia lake virus (TiLV) and associated diagnostic methods for inclusion in the Manual of Diagnostic Tests for Aquatic Animals</td>
<td>Laboratory expertise, Training and education</td>
</tr>
</tbody>
</table>

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

**Yes**

<table>
<thead>
<tr>
<th>Name of OIE CC/RL/other organisation(s)</th>
<th>Location</th>
<th>Region of networking Centre</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURL for Fish and Crustacean Diseases</td>
<td>DTU, Denmark</td>
<td>Europe</td>
<td>Sharing of information on fish and crustacean health, participation in interlaboratory proficiency tests, and attendance at National Reference Laboratory meetings.</td>
</tr>
<tr>
<td>EURL for Mollusc Diseases</td>
<td>IFREMER, France</td>
<td>Europe</td>
<td>Sharing of information on mollusc health, participation in interlaboratory proficiency tests.</td>
</tr>
<tr>
<td>WOAH Reference Laboratory for AHPND, IHNV, NHP, TSV, WSSV</td>
<td>University of Arizona, USA</td>
<td>Americas</td>
<td>Participation in histological proficiency test for crustacean diseases.</td>
</tr>
<tr>
<td>Organization</td>
<td>Country</td>
<td>Region</td>
<td>Activities</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>FAO Antimicrobial Resistance (AMR) Reference Centre</td>
<td>UK</td>
<td>Europe</td>
<td>Provide services in identifying AMR risks to aquatic animals and to help develop and assess the effectiveness of alternatives to use of antibiotics for control of diseases of farmed aquatic animals (particularly in finfish and shrimp).</td>
</tr>
<tr>
<td>International Council for the Exploration of the Seas (ICES). Expert group on crab</td>
<td>Denmark</td>
<td>Europe</td>
<td>Reporting of disease emergence and trends in wild shellfish stocks</td>
</tr>
<tr>
<td>Worldfish</td>
<td>Malaysia</td>
<td>Asia and Pacific</td>
<td>Coordination of Cefas activities and those of Worldfish.</td>
</tr>
<tr>
<td>Indian Council of Agricultural Research (ICAR)</td>
<td>India</td>
<td>Asia and Pacific</td>
<td>Provision of positive control reference materials. Collaboration with ICAR (an Assoc Partner laboratory) in India on a British High Commission funded piece of work on shrimp health.</td>
</tr>
<tr>
<td>ASEAN Aquatic Animal Health Network</td>
<td>Thailand</td>
<td>Asia and Pacific</td>
<td>Collaboration with Mahidol University and BIOTEC (Thailand) on shrimp health</td>
</tr>
<tr>
<td>NIWA New Zealand/Biosecurity NZ</td>
<td>New Zealand</td>
<td>Asia and Pacific</td>
<td>Collaboration to investigate health issues in mussels, the presence of Francisella halioticida and vibrios in Ostrea chilensis and Perna sp. samples and the occurrence and genetic typing of Bonamia ostreae.</td>
</tr>
</tbody>
</table>

WOAH Collaborative Centre Reports Activities 2022
### Emerging Pathogens Institute, University of Florida
- **USA**
- **Americas**
- Symposiom to cover One Health Aquaculture. Inward visit to UK by Professor Behringer from EPI to discuss collaboration in aquatic animal health.

### EvaG
- **Various**
- **Europe**
- An international group of 47 laboratories that represent an extensive range of virological disciplines, generating and distributing diagnostic materials and protocols globally.

### National Agricultural Research Organization (NARO)
- **Uganda**
- **Africa**
- Establishment of MOU, advice provided on screening for tilapia viral diseases including Infectious Spleen and Kidney Necrosis Virus (ISKNV), tilapia lake virus (TiLV), tilapia parovirus (TiPV), nodavirus and herpesvirus (TLEV). Preparation for a mission in 2023 and analysis of samples.

### Department for Animal Production and Health (DAP&H)
- **Sri Lanka**
- **Asia and Pasific**
- Collaboration to develop a project investigating slow growth syndrome in shrimp.

### Ministry of Fisheries and Aquaculture Development, Fisheries Commission, Fish Health Unit
- **Ghana**
- **Africa**

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**TOR4 AND 5: NETWORKING AND COLLABORATION**

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

<table>
<thead>
<tr>
<th>Name of OIE CC/RL/other organisation(s)</th>
<th>Location</th>
<th>Region of networking Centre</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Discussions on collaboration and extension of the GBAD</td>
</tr>
</tbody>
</table>

WOAH Collaborative Centre Reports Activities 2022
**WOAH Collaborating Centre for Economics in Animal Health**  
Liverpool, UK  
Europe  

Approach to cover wider aquatic hazards which impact yield and safety of products arising from aquaculture. Funded work to develop this approach as part of a ‘One Food’ tool with separate funding from UK Government.

**TOR6: EXPERT CONSULTANTS**

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?  
Yes

<table>
<thead>
<tr>
<th>NAME OF EXPERT</th>
<th>KIND OF CONSULTANCY</th>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Grant Stentiford</td>
<td>Advice</td>
<td>Expert pathologist for investigation of aquatic animal diseases. Head of the WOAH Collaborating Centre for Emerging Aquatic Animal Diseases. Advocate for One Health Aquaculture</td>
</tr>
<tr>
<td>Dr Kelly Bateman</td>
<td>Advice</td>
<td>Expert in crustacean diseases and coordinator for the WOAH Collaborating Centre for Emerging Aquatic Animal Diseases</td>
</tr>
<tr>
<td>Dr Richard Paley</td>
<td>Advice</td>
<td>Expert virologist and Chair of the ICES Working Group on Pathology and Diseases of Marine Organisms.</td>
</tr>
<tr>
<td>Dr Frederico Batista</td>
<td>Advice</td>
<td>Expert in molluscan diseases and emerging molecular diagnostic tools</td>
</tr>
<tr>
<td>Dr Edmund Peeler</td>
<td>Advice</td>
<td>Expert in epidemiology and Risk.</td>
</tr>
<tr>
<td>Dr Jessica Witt</td>
<td>Advice</td>
<td>WOAH Focal point for Aquatic Animal Health for the UK</td>
</tr>
<tr>
<td>Prof David Bass</td>
<td>Advice</td>
<td>Molecular parasitologist with emphasis on pathogen diversity and life cycles; and molecular systematics of novel/emergent pathogens</td>
</tr>
<tr>
<td>Dr David Verner Jeffreys</td>
<td>Advice</td>
<td>Expert aquatic animal bacteriologist with specific expertise in antimicrobial resistance.</td>
</tr>
</tbody>
</table>
TOR7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area? Yes

EUReL for Fish and Crustacean Diseases - assistance with reviewing “Diagnostic methods and procedures for the surveillance and confirmation of TSV and YHV1

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members? Yes

a) Technical visit : 1
b) Seminars : 6
c) Hands-on training courses: 3
d) Internships (>1 month) : 8

<table>
<thead>
<tr>
<th>TYPE OF TECHNICAL TRAINING PROVIDED (A, B, C OR D)</th>
<th>CONTENT</th>
<th>COUNTRY OF ORIGIN OF THE EXPERT(S) PROVIDED WITH TRAINING</th>
<th>NO. PARTICIPANTS FROM THE CORRESPONDING COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Training in histological processing and reading of fish and crustacean tissues and molecular analysis for aquatic animal pathogens</td>
<td>Qatar</td>
<td>5</td>
</tr>
<tr>
<td>b</td>
<td>One Health Aquaculture African Workshop (online event)</td>
<td>Various (Africa)</td>
<td>100</td>
</tr>
<tr>
<td>b</td>
<td>Sri Lanka Veterinary Association 74th Annual Scientific Session 2022</td>
<td>Sri Lanka</td>
<td>100</td>
</tr>
<tr>
<td>b</td>
<td>One Food Workshop event, Pretoria (hybrid meeting)</td>
<td>South Africa</td>
<td>100</td>
</tr>
</tbody>
</table>
### Emerging Aquatic Animal Diseases - WOAH Collaborative Centre Reports Activities 2022

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity Description</th>
<th>Location</th>
<th>No. Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>Overview of Finfish Biosecurity at the Fin Fish Guidelines Workshop (hybrid meeting)</td>
<td>Bangladesh</td>
<td>100</td>
</tr>
<tr>
<td>b</td>
<td>Overview of AMR surveillance in aquaculture at the 3rd Webinar AQUAE STRENGTH: OIE Cooperation Project</td>
<td>Paris</td>
<td>10</td>
</tr>
<tr>
<td>b</td>
<td>South Africa WAVMA meeting</td>
<td>Various (Africa)</td>
<td>100</td>
</tr>
<tr>
<td>c</td>
<td>Provision of materials to the European Union Reference Laboratory for Crustacean diseases for online training course in Histopathology of crustacean tissues</td>
<td>Various (Europe)</td>
<td>25</td>
</tr>
<tr>
<td>c</td>
<td>Provision of training in histopathology of crustacean tissues and diseases</td>
<td>UK</td>
<td>1</td>
</tr>
<tr>
<td>c</td>
<td>Provision of training in histopathology of molluscan diseases, including TEM and molecular techniques</td>
<td>UK</td>
<td>3</td>
</tr>
<tr>
<td>d</td>
<td>PhD students in various aspects of shellfish health and pathogen systematics</td>
<td>Various</td>
<td>8</td>
</tr>
</tbody>
</table>

## TOR8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

<table>
<thead>
<tr>
<th>NATIONAL/INTERNATIONAL</th>
<th>TITLE OF EVENT</th>
<th>CO-ORGANISER</th>
<th>DATE (MM/YY)</th>
<th>LOCATION</th>
<th>NO. PARTICIPANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>WOAH Regional online seminar for Aquatic Animals Focal Points in Asia</td>
<td>WOAH</td>
<td>2022-07-20</td>
<td>Kyrgyzstan</td>
<td>40</td>
</tr>
</tbody>
</table>

## TOR9: DATA AND INFORMATION DISSEMINATION
10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

24


Shellfish Immunology 121:505-515


b) International conferences:

12

- CCEAAD colleagues organised and participated in the One Health Aquaculture African Workshop, 16th – 17th March 2022. This was a dual in person and online event and involved a series of presentation and bilateral workshop/breakouts.

- Dr Richard Paley was invited to present at the 26th Annual Workshop of the National Reference Laboratories for Fish Diseases, Organised by the European Union Reference Laboratory for Fish Diseases, Online meeting, 30th - 31st May 2022. Presentations on Cyclopterus lumpus virus (CLUV) and the WOAH CC E

- Dr Kelly Bateman attended the 13th Annual Workshop of the National Reference Laboratories for Crustacean Diseases, Organised by the European Union Reference Laboratory for Fish Diseases, Online meeting, 30th - 31st May 2022. Presentations on Cyclopterus lumpus virus (CLUV) and the WOAH CC E

- Dr Kelly Bateman attended the 54th Annual Meeting of the Society for Invertebrate Pathology, online meeting 1st June 2022.

- Dr Kelly Bateman presented an overview of the CCEAAD at the WOAH Regional online seminar for Aquatic Animals Focal Points in Asia, 20th – 21st July 2022.

- Dr Athina Papadopoulou organised the Bangladesh Fin Fish Guidelines Workshop Dhaka, Bangladesh 21-Sep-22.

- Head of CCEAAD presented at the 74th Annual Scientific Sessions of the Sri Lankan Veterinary Association, virtual attendance, 21st October 2022.

- CCEAAD colleagues participated at the 7th World One Health Congress. Sands Expo & Convention Centre, Singapore. 7-11 November 2022.

- CCEAAD colleagues presented at the International Symposium of Ecology and Evolution of Marine Parasites and Diseases, La Rochelle, France 15th – 18th November 2022.

- CCEAAD colleague presented at the Aquatic Veterinary Medicines Association World Aquatic Health Conference. Pretoria University, South Africa. 4-7 December 2022.

- Head of CCEAAD provided keynote presentation on ‘One Health Aquaculture’ at European Society of Comparative Physiology and Biochemistry meeting, Naples, Italy, 30th August 2022.

- CCEAAD colleagues presented at the International Symposium on Ecology and Evolution of Marine Parasites and Diseases, organised by Ifremer. La Rochelle, France, November 2022, and contributed to a workshop on high throughput sequencing, bioinformatics, eDNA, and improved understanding of disease aetiologies and trajectories.


c) National conferences:

3
• CCEAAD colleagues attended a meeting for the UK National Reference Laboratories for fish, mollusc and crustacean diseases, online event, 11th May 2022.
• CCEAAD colleagues attended the European Association for Fish Pathologists (EAFP) UK branch meeting held in Portland, Dorset, 14th – 15th September 2022.
• CEAAD colleagues attended and presented at the 4th International Symposium for Advances in Marine Mussel Research, organised by Exeter University; Saunton Sands Hotel, North Devon, November 2022.

d) Other (Provide website address or link to appropriate information):

1

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
Development of virtual slide systems to provide online access to histological materials in the Registry of Aquatic Pathology (RAP). The RAP is an exclusive database and specimen archive system which includes hundreds of examples of disease conditions and parasites from cultured and wild fish, bivalve molluscs and crustacea from freshwater and marine environments around the world.

12. Additional comments regarding your report: