

An aerial photograph of a shrimp farm in Thailand, 2018. The image shows a large, dark, rectangular net spread across a body of water. Several workers are visible, some standing in the water and others on a narrow wooden walkway or platform. They are engaged in harvesting activities, with some holding large blue buckets. The water is dark and reflects the sky. The overall scene depicts an emergency harvest operation.

Emergency harvest at shrimp farm, Thailand, 2018

The OIE Collaborating Centre for Emerging Aquatic Animal Diseases

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Healthy Seafood

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@grantstentiford 
#OneHealthAquaculture



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International Centre of Excellence for Aquatic Animal Health

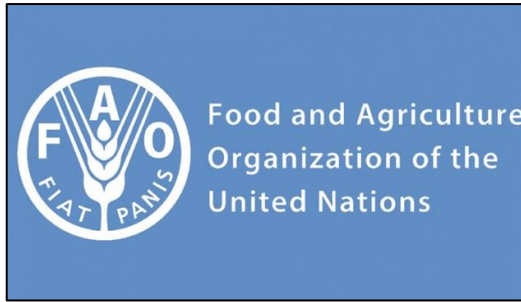


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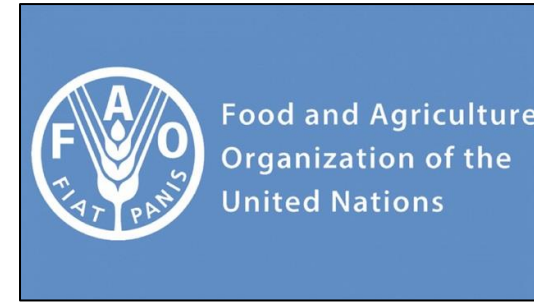
International Centre of Excellence in Seafood Safety



Collaborating Centre for Emerging
Aquatic Animal Diseases



Reference Centre for
Antimicrobial Resistance (AMR)



Reference Centre for Bivalve
Molluscs Sanitation

SUSTAINABLE AQUACULTURE FUTURES



UNIVERSITY OF
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OIE Collaborating Centres

'Provide scientific expertise and support to the OIE and its Members, and for promoting international collaboration on animal health and welfare. Collaborating Centres are designated for a specific specialty within a focus area. In its designated specialty, they must provide their expertise internationally'

- To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories
- To propose/develop methods/procedures to facilitate harmonisation of international standards/guidelines applicable to the designated specialty
- To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations
- To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty
- To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries
- To organise and participate in scientific meetings and other activities on behalf of the OIE
- To identify and maintain existing expertise, in particular within its region
- To establish/maintain a network with other OIE Collaborating Centres designated for the same specialty/other disciplines
- To place expert consultants at the disposal of the OIE



Emerging disease

An **emerging disease** is defined as a new infection* resulting from the evolution or change of an **existing pathogen** or parasite resulting in a change of host range, vector, pathogenicity or strain; or the occurrence of a **previously unrecognized** infection or disease. A **re-emerging disease** is considered an already known disease that either shifts its geographical setting or expands its host range, or significantly increases its prevalence.

*though 'infection' will not always necessarily be associated with population-level disease



OIE Collaborating Centre for Emerging Aquatic Animal Diseases

Remit

Rapid detection, characterization and reporting of the causative agents of (emerging) disease provide a crucial first step in their control. For this reason, efficient and accurate detection and description of **emergent and potentially emergent** aquatic animal disease threats forms the central precept of this OIE Collaborating Centre

We aim to function as a global resource for health and disease research, diagnostics, pathogen detection and description, and knowledge sharing, associated with aquatic animals



OIE Collaborating Centre for
Emerging Aquatic Animal Diseases



Functions of the Collaborating Centre



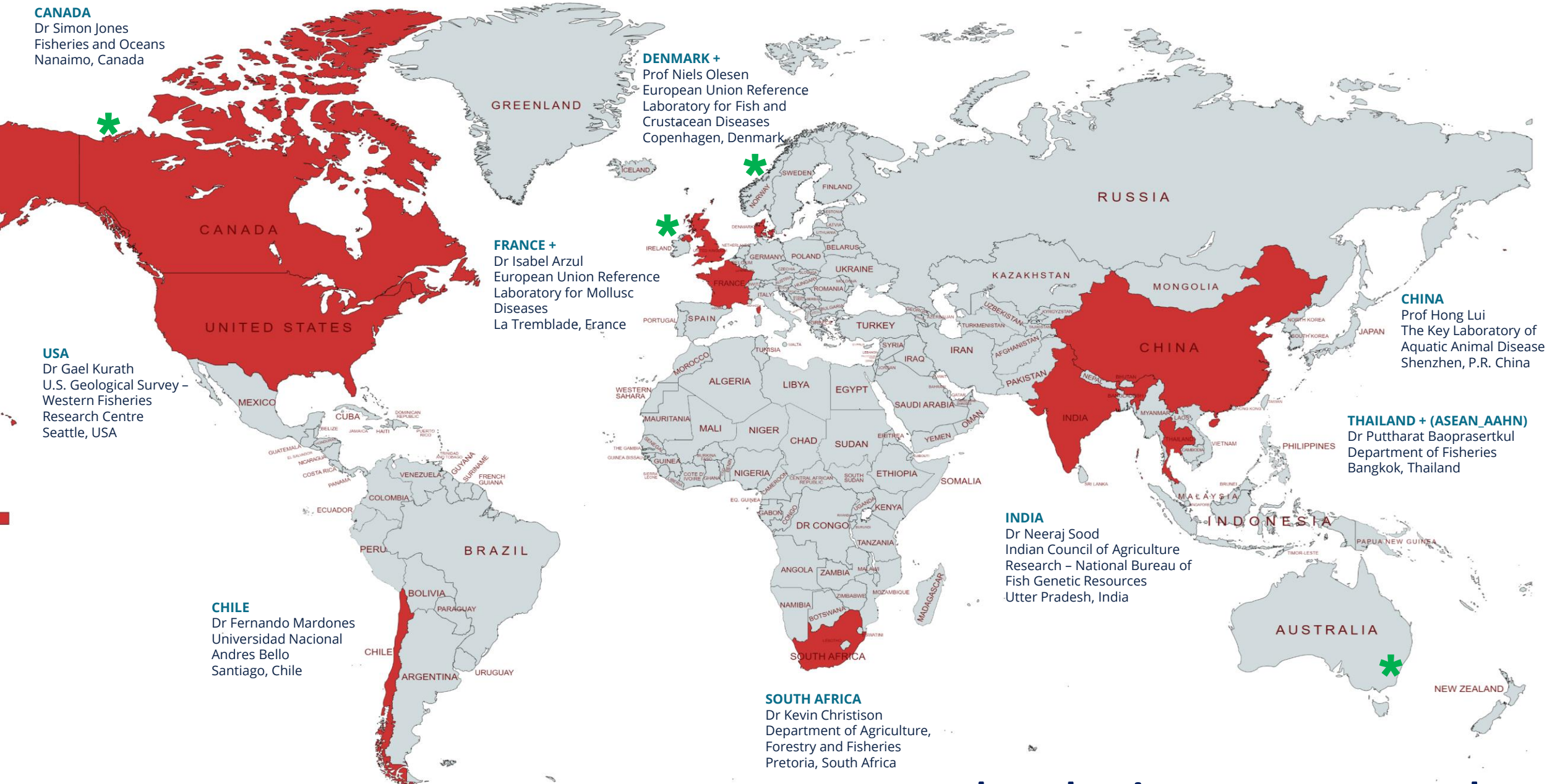
Functions

A hub for a global **network of laboratories** focussed on the **continued and increasing challenge** of emerging aquatic animal diseases.

To include -

1. Identifying **new and emerging disease conditions**, reducing the transmission of diseases through risk management with decisions based on prompt and effective scientific investigations
2. Ensuring **transparency** via dissemination of listed and emerging aquatic animal disease via the Centre website, International Database on Aquatic Animal Diseases (IDAAD) and, the Registry for Aquatic Pathology (RAP)
3. Collecting, analysing and **disseminating scientific information** via the same mechanisms and directly to the OIE
4. Ensuring international solidarity through an **offer of expertise** to countries where aquaculture provides a critical food and income source
5. Promotion of **diagnostic and pathogen identification services** through provision of training courses and workshops
6. Enhancing the **capacity** and sustainability of national diagnostic services to tackle emerging diseases in aquatic animals





A developing AAH network

Recent examples

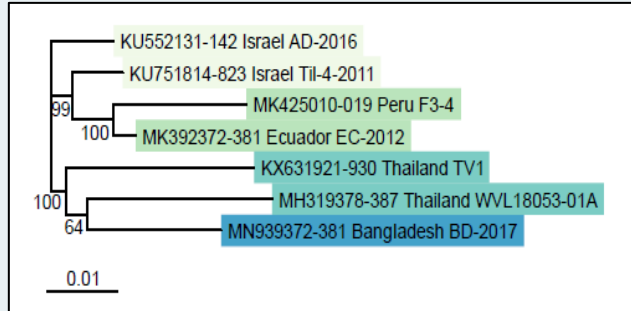
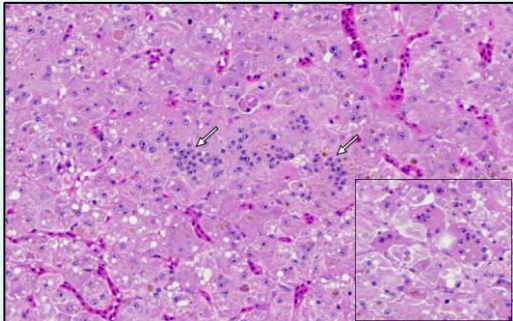


Variant TiLV in Bangladesh

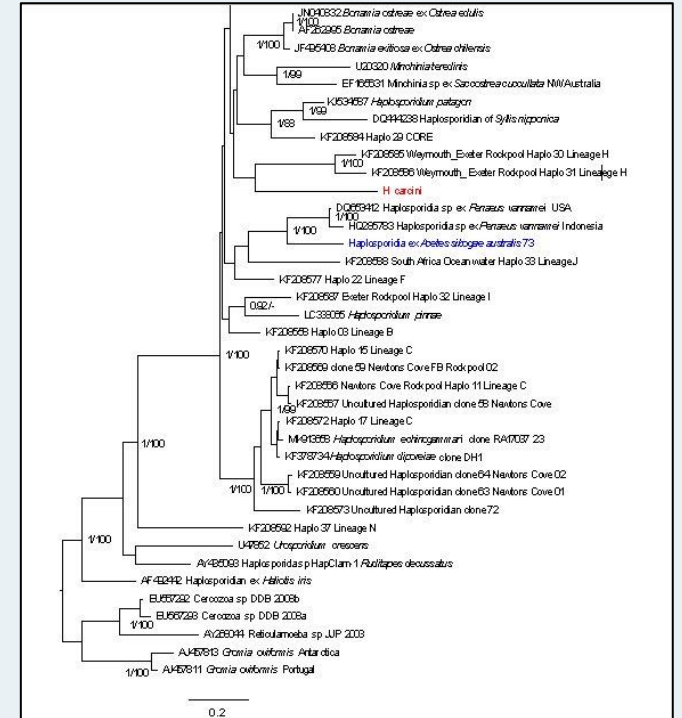
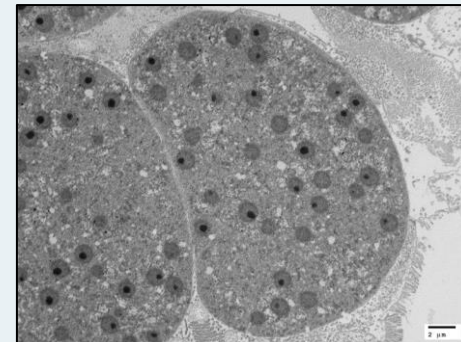
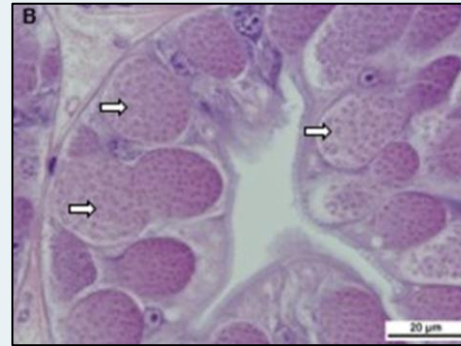
Article

The Segment Matters: Probable Reassortment of Tilapia Lake Virus (TiLV) Complicates Phylogenetic Analysis and Inference of Geographical Origin of New Isolate from Bangladesh

Dominique L. Chaput ^{1,*}, David Bass ^{2,3}, Md. Mehedi Alam ⁴, Neaz Al Hasan ⁴, Grant D. Stentiford ^{2,3}, Ronny van Aerle ^{2,3}, Karen Moore ⁵, John P. Bignell ³, Mohammad Mahfujul Haque ^{4,†} and Charles R. Tyler ^{1,2,*,†}



Haplosporidian in Australian shrimp



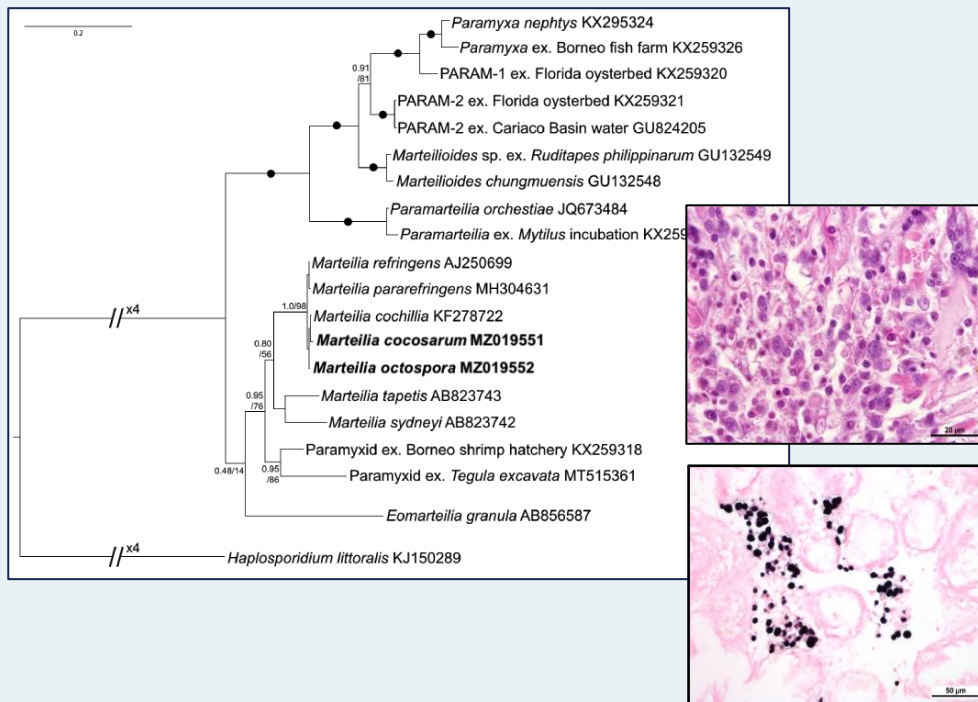
<https://www.cefas.co.uk/icoe/aquatic-animal-health/designations/oie-collaborating-centre-for-emerging-aquatic-animal-disease/>



Recent examples







Marteilia in Welsh cockles



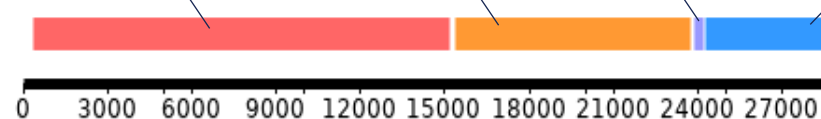
MrGV in freshwater shrimp

Article

A Novel RNA Virus, *Macrobrachium rosenbergii* Golda Virus (MrGV), Linked to Mass Mortalities of the Larval Giant Freshwater Prawn in Bangladesh

Chantelle Hooper ^{1,*} , Partho P. Debnath ^{2,*}, Sukumar Biswas ³, Ronny van Aerle ^{1,4} , Kelly S. Bateman ^{1,4} , Siddhawartha K. Basak ², Muhammad M. Rahman ², Chadag V. Mohan ⁵ , H. M. Rakibul Islam ⁶, Stuart Ross ¹, Grant D. Stentiford ^{1,4}, David Currie ³ and David Bass ^{1,4,7}

ORF1 - Replicase Polyprotein a ORF2 - Replicase Polyprotein b ORF3 - Hypothetical Protein ORF4 - Enveloping Protein



<https://www.cefas.co.uk/icoe/aquatic-animal-health/designations/oie-collaborating-centre-for-emerging-aquatic-animal-disease/>



Small beginnings – emergence of EHP in shrimp

Enterospora canceri n. gen., n. sp., intranuclear within the hepatopancreatocytes of the European edible crab *Cancer pagurus*

G. D. Stentiford*, K. S. Bateman, M. Longshaw, S. W. Feist



Enterocytozoon hepatopenaei sp. nov. (Microsporida: Enterocytozoonidae), a parasite of the black tiger shrimp *Penaeus monodon* (Decapoda: Penaeidae): Fine structure and phylogenetic relationships

Somjintana Tourtip^a, Somjai Wongtripop^b, Grant D. Stentiford^c, Kelly S. Bateman^c, Siriporn Sriurairatana^d, Jittipan Chavadej^a, Kallaya Sritunyalucksana^d, Boonsirm Withyachumnarnkul^{a,d,*}



Decay of the glycolytic pathway and adaptation to intranuclear parasitism within Enterocytozoonidae microsporidia



Hepatospora eriocheir (Wang and Chen, 2007) gen. et comb. nov. infecting invasive Chinese mitten crabs (*Eriocheir sinensis*) in Europe

G.D. Stentiford^{a,*}, K.S. Bateman^a, A. Dubuffet^b, E. Chambers^a, D.M. Stone^a



A Nested PCR Assay to Avoid False Positive Detection of the Microsporidian *Enterocytozoon hepatopenaei* (EHP) in Environmental Samples in Shrimp Farms

Pattana Jaroenlak^{1,2}, Piyachat Sanguanrut^{2,3}, Bryony A. P. Williams⁴, Grant D. Stentiford⁵, Timothy W. Fiegel^{2,6}, Kallaya Sritunyalucksana^{3,6}, Ornchuma Itsathitphaisarn^{1,2,*}

PEARLS

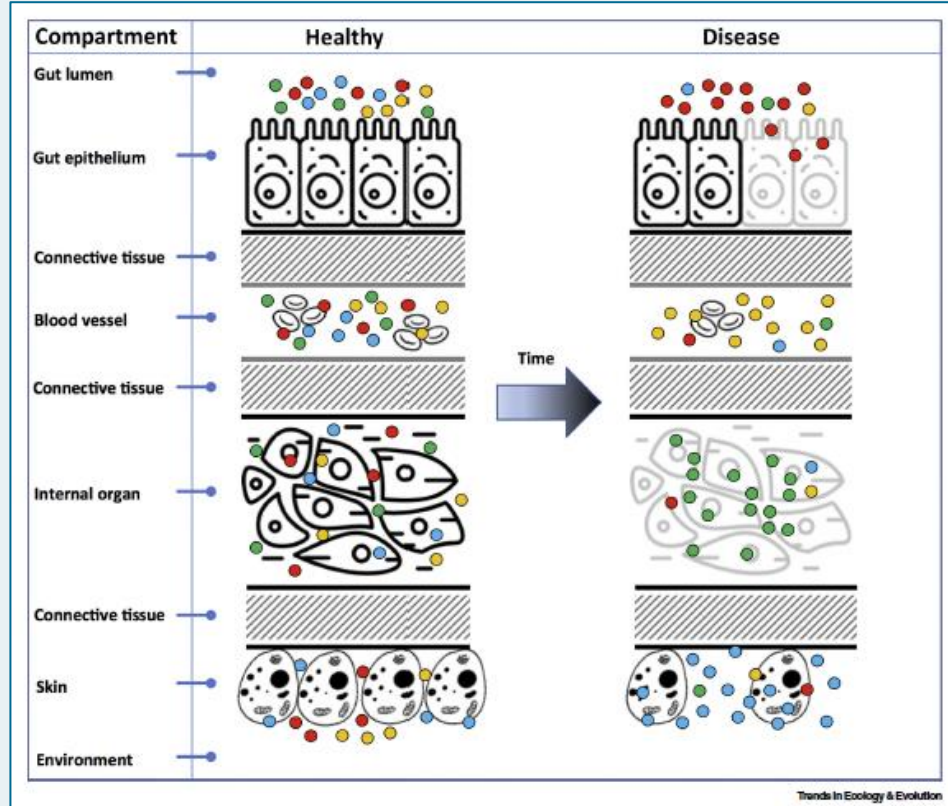
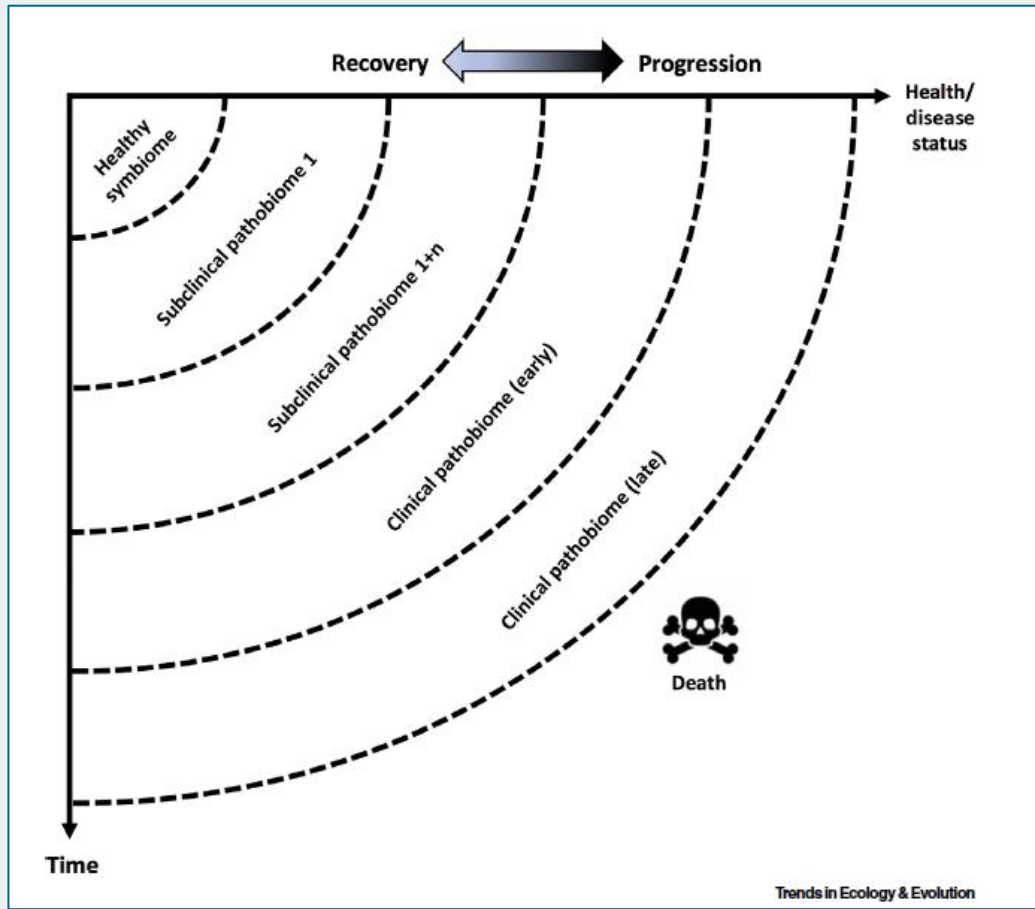
Ultimate opportunists—The emergent *Enterocytozoon* group Microsporidia

Grant D. Stentiford^{1,2,*}, David Bass^{1,2,3}, Bryony A. P. Williams^{2,4}

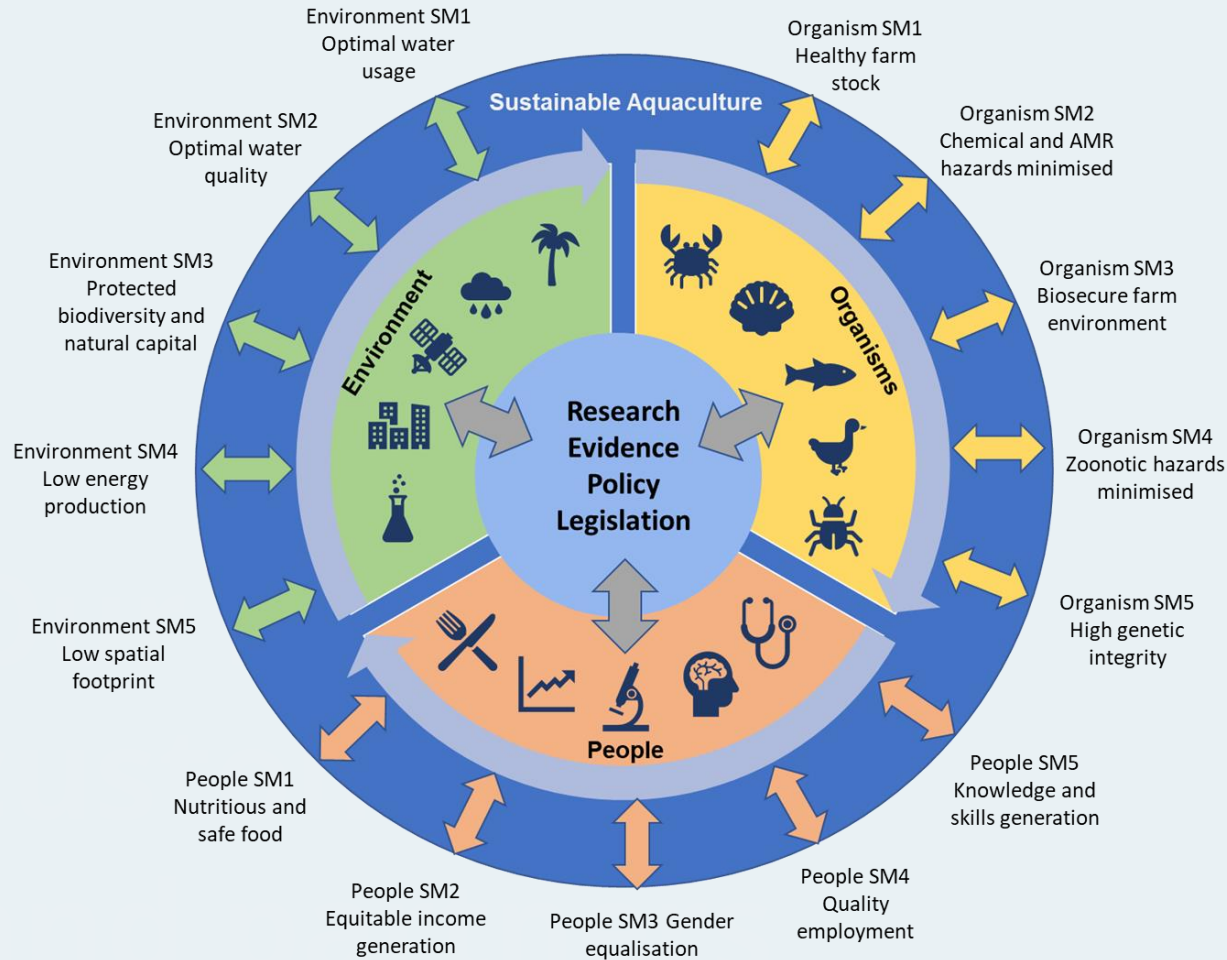
Now >100 publications on EHP....



New paradigms



The Bigger Picture



Volume 1 Issue 8, 1 August 2020



One Health aquaculture

Aquaculture, the farming of aquatic animals and plants, is one of the fastest developing food sectors globally, and in recent years has become the main source of fish available for human consumption. Applying the principles of One Health – the interconnectedness of human, animal and planetary health – could well support enhanced sustainable production in aquaculture; facilitating food and nutrition security, poverty alleviation, economic development and the protection of natural resources.

See [Stentiford et al.](#) [show less](#)

One Health aquaculture - everyone's business

'Aquaculture has evolved into a major global food sector. Rapid growth necessitates an evidence and policy makeover fit for a doubling of output by 2050. A One Health approach, drawing on a broad expertise outside of traditional aquatic disciplines is now needed to realise it's full potential'

<https://sustainabilitycommunity.springernature.com>

Stentiford, G.D. et al (2020). *Sustainable aquaculture through the One Health lens*. *Nature Food* 1, 468–474

How to work with us



- Advice and protocols for sample collection, submission and shipping
- Advice and protocols for importation permits and fulfilment of Nagoya Protocols arrangements
- Advice for reporting collaboration and findings arising with national Responsible Authorities and OIE
- For fish – Dr Richard Paley: richard.paley@cefas.co.uk
- For crustaceans – Dr Kelly Bateman: kelly.bateman@cefas.co.uk
- For molluscs – Dr Fred Batista: frederico.batista@cefas.co.uk

<https://www.cefas.co.uk/icoe/aquatic-animal-health/designations/oie-collaborating-centre-for-emerging-aquatic-animal-disease/>



Collaboration

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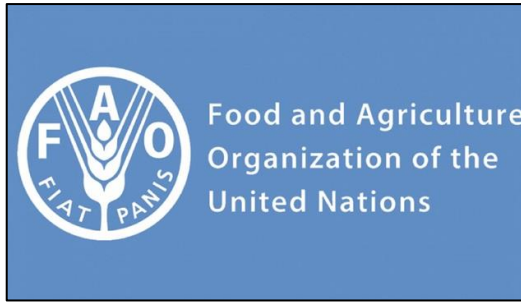
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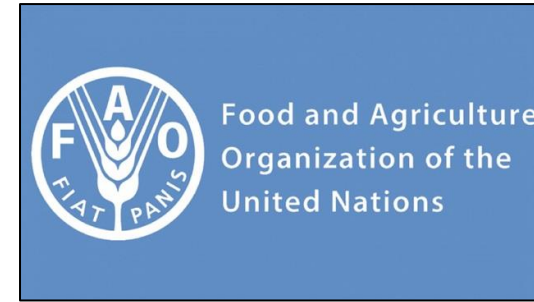
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