

The Aquatic Animal Health and Welfare Subprogram aims to investigate disease issues and understand their epidemiology; develop sustainable solutions to disease issues effecting techniques to improve disease detection; develop and enhance knowledge and use of biosecurity procedures to reduce risks; and increase awareness of aquatic animal health issues through communication, in particular through the provision of scientific and technical advice to managers, and participation in education and training.

### Overview

The Aquatic Animal Health and Welfare Group is undertaking research projects on the health of farmed finfish, including southern bluefin tuna, yellowtail kingfish and mullet, as well as molluscs, including abalone and Pacific oysters. Health and welfare research is also being undertaken on wild fisheries, including finfish (sardines), molluscs (abalone) and crustaceans (prawn), and the by-catch associated with some of these fisheries. Of interest are issues associated with a range of parasites including flukes and sea lice in finfish, protist parasites of fish and molluscs, disease treatments, epizootics of viruses, disease related biosecurity, pathophysiology, and capture related health and physiology.

Facilities continue to expand with a shared PC-2 biosecure facility at the Veterinary School, University of Adelaide, Roseworthy Campus soon to open nearby the SARDI South Australian Experimental Stockfeed Extrusion Centre, which has the capacity to manufacture medicated animal feeds. This new facility will supplement the recently completed Aquatic Animal & Health Laboratory at the Lincoln Marine Science Centre, Port Lincoln and the many facilities that exist at SARDI's South Australian Aquatic Sciences Centre, West Beach, Adelaide (e.g. Constant Temperature Rooms, an indoor environmentally controlled Aquaria Room and a large outdoor tank area, each with the capacity for recirculation or flow-through marine and freshwater.

Through Marine Innovation South Australia (MISA), the DPI Victoria – SARDI Alliance, the Australian Seafood CRC and the Fisheries Research & Development Corporation, the Subprogram networks closely with other aquatic animal health groups, including the University of Adelaide, Flinders University, the University of Tasmania, CSIRO and Department of Fisheries, Western Australia.

### Research Projects

2008/711 Australian Seafood CRC: Addressing key aquatic animal health issues limiting production of Australian yellowtail kingfish (*Seriola lalandi*) and hatchery-reared southern bluefin tuna (*Thunnus maccoyii*) industries.

2006/225 Aquafin CRC – FRDC: Southern bluefin tuna Aquaculture Subprogram: Improving husbandry and performance of southern bluefin tuna through better understanding of the relationship between fish stress and health.

DPI Victoria - Improving the resilience of aquaculture sectors to climate variability – Better practice fish health management for salmonid farmers (with Future Fisheries Veterinary Service).

2009/032 FRDC - Characterisation of abalone herpes-like virus infections in abalone (with CSIRO Australian Aquatic Health Laboratories).

Projects on biosecurity and disease status of prawn populations in SA.

### Recent Publications

Bott, N.J., Ophel-Keller, K.M., Sierp, M.T., Herdina, Rowling, K.P., McKay, A.C., Loo, M.G., Tanner, J.E., Deveney, M.R., (2010). Toward routine, DNA-based detection methods for marine pests. *Biotechnology Advances* 28, 706 - 714.

Deveney, M.R., Whittington, I.D., (2010). Three new species of *Benedenia* Diesing, 1858 from the Great Barrier Reef, Australia with a key to species of the genus. *ZooTaxa* 2348, 1 - 22.

Hayward CJ, Ellis D, Foote D, Wilkinson RJ, Crosbie PBB, Bott NJ, Nowak BF (2010) Concurrent epizootic hyperinfections of sea lice (predominantly *Caligus chistos*) and blood flukes (*Cardicola forsteri*) in ranched Southern Bluefin tuna. *Veterinary Parasitology* 173: 107-115.

Hayward CJ, Svane I, Lachimpadi SK, Itoh N, Bott NJ, Nowak BF. (in press) Sea lice infections of wild fishes near ranched southern bluefin tuna (*Thunnus maccoyii*) in South Australia. *Aquaculture*

Munro, J., Boon, V., (2010). Quantitative Determination of Recombinant Bovine Somatotropin in Commercial Shrimp Feed Using a Competitive Enzyme-Linked Immunosorbent Assay. *Journal of Agricultural and Food Chemistry* 58, 1429 – 1433.

Roberts, S.D., Deveney, M., Sierp, M., (2010). Biosecurity and disease status of prawn nurseries in South Australia. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication Number F2010/000593-1. SARDI Research Report Series No. 449. 35p.

Besprozvannykh, V.V., Ermolenko, A.V., Deveney, M.R., (2009). *Orientocreadium elegans* n. sp. and *Orientocreadium pseudobagri* Yamaguti (Digenea: Orientocreadiidae), from freshwater fish of the Primorsky region (south-ern far east, Russia) with a description of their life cycles. *ZooTaxa* 2176: 22 - 32.

Hayward, C. J., Bott, N. J. and Nowak, B. F. (2009) Seasonal epizootics of sea lice (*Caligus* spp.) on Southern Bluefin tuna (*Thunnus maccoyii*) in a long-term farming trial. *Journal of Fish Diseases* 32: 101-106.

Roberts, S.D., Powell, M.D., (2008). Freshwater bathing alters the mucus layer of marine Atlantic salmon (*Salmo salar* L.). *Journal of Fish Biology* 72, 1864 - 1870.

Powell, M.D., Leef, M.L., Roberts, S.D., Jones, M.A., (2008). Review – Neoparamoebic gill infections: host response and physiology in salmonids. *Journal of Fish Biology* 73(9), 2161 - 2183.

Munro, J., Owens, L., (2007). Production of polyclonal and monoclonal antibodies against gill-associated virus and the development of an ELISA. *Aquaculture* 262, 173 - 182.

## Staff

The Aquatic Animal Health and Welfare group can draw on research capabilities from selected SARDI staff from various strategic research areas of Aquatic Sciences.

Mr Steven Clarke  
Principal Scientist

Mr Clarke has over 25 years post-graduate experience in aquatic sciences research, management, and industry and government liaison, including more than 15 years in aquaculture research and development.

Dr Marty Deveney

Dr Deveney has experience in invasive species biology, aquaculture and fisheries biosecurity (including pest and disease management), risk analysis, veterinary medicine and disinfectant registration and use, application of scientific principles to public policy. He is a coopted member of the Subcommittee on Aquatic Animal Health (SCAAH) and has led several working groups of that committee.

Dr James Munro

Dr Munro has considerable experience in the area of aquatic disease, including professional experience in Asia, Europe and America. He has a particular interest in the detection and control of viruses affecting finfish, crustaceans and molluscs, and in establishing biosecurity procedures for practical use.

Dr Nathan Bott

Dr Bott is experienced in the development and use of molecular-based diagnostics, detection of aquaculture pathogens and invasive species from environmental samples, parasites of aquatic animals, parasite life-cycles, systematics and phylogenetics, mutation scanning methods, and DNA extraction methodologies.

## Contact

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