

FINAL REPORT (DEVELOPMENT AWARD)

AWARD CODE and TITLE

2009/315.22 People development program: Aquatic Animal Health Training Scheme – Josiah Pit

AWARD RECIPIENT: Josiah Pit

ADDRESS: 16-26 Shirley Way, Epping VIC 3076

HOST ORGANISATION: Aquarium Industries

DATE: 19th December 2012

ACTIVITY UNDERTAKEN

Attended a 2-week intensive training course in Florida, United States during August 2012 on "Diseases of Warm Water Fishes" focusing on Ornamental Fish Production.

OUTCOMES ACHIEVED TO DATE

- 1 Increased knowledge and skills in identifying diseases currently impacting the Aquarium Sector,
- 2 Increased knowledge on existing and emerging disease treatments and their correct management, and
- 3 Established a network of ornamental fish professionals working in aquatic diseases

Acknowledgments

The participant would like to thank the Fisheries Research and Development Corporation through the Department of Agriculture, Fisheries and Forestry for funding this project, Aquarium Industries as the host as well as the following people that supported this project, including:-

Dr Tracey Bradley (Principal Veterinary Officer, Victorian Department of Primary Industries),

Mr Andrew Clarke (Manager-Aquaculture, Victorian Department of Primary Industries),

Dos O'Sullivan (Dosaqua), and

Dr Robert Jones (PIAA; The Aquarium Vet)

Background

The Ornamental fish industry in Australia, valued at over \$200 million (O'Sullivan et al. 2007) is comprised of more than 200 licensed fish breeders, collectors and importers who through a network of wholesalers supply over 2000 pet shops and specialist aquarium outlets distributed around the country. The majority of fish traded within Australia are freshwater finfish sourced from imports (around 15 million fish annually), while local production from breeding varies between 5-10 million per annum. Despite its size, there is a lack of qualified technical personnel in Australia

that possess detailed information on the diseases that affect ornamental fish and their correct management. Coupled with this is the shortage in courses in educating the industry on these matters.

Need

Like all animals, aquarium fish can carry and transmit disease. Whether defined as parasitic, fungal, bacterial or viral, these diseases could affect the growth of the ornamental industry in Australia. Therefore gaining a better understanding in terms of identification, treatment and management is essential to allow this industry to flourish.

The project allowed the participant to gain a better formal understanding in the methodology for diagnosing and treating of parasitic, bacterial, fungal and viral diseases as well as identifying the factors that can contribute to fish developing a disease. A fishes susceptibility to disease can be attributed to many factors, with environmental and nutritional factors being the most common that impact warm water aquarium fish species.

Objectives

The 3 main objectives of this project were:-

- 1 Increase knowledge and skills in identifying diseases impacting the Aquarium Sector

The workshop was proposed to cover both theoretical and practical identification of a variety of diseases that occur in Ornamental fish around the world.

- 2 Increase knowledge on existing and emerging disease treatments and their correct management

Treatments and management of various diseases were to be discussed in terms of the fishes health as well as the factors leading to the fish being effected by the disease.

- 3 Establish a network of ornamental fish professionals working in aquatic diseases.

The course was aimed at a wide network of personnel covering all aquatic animal health specialists including Veterinarians, Aquarists, Pathologists etc which will allow networks to be established.

Methods

The focus of this project was to attend a two-week intensive course on Diseases of Warmwater Fish, which was hosted by University of Florida during July 30-August 10, 2012. The course was coordinated by Professor Ruth Francis-Floyd and included lectures from among others Professor Edward J Noga and Dr Roy Yanong.

The course covered theory and practical components as well as some field trips to some of the largest ornamental fish breeding and wholesale facilities in the United

States. The theory and practical components were conducted at the UF/IFAS Tropical Aquaculture Laboratory, located in Ruskin situated in the heart of the tropical ornamental aquaculture industry and at the UF/ Whitney Laboratory for Marine Bioscience located in St. Augustine.

Each day consisted of theory and practical classes. The classes covered subjects on Fish Biology, Water Quality, Aquatic Systems, Fish Nutrition, Diagnostic Procedures, Necropsy Procedures, Parasitic diseases, Fungal diseases, Bacterial diseases, Viral diseases, Managing diseases, Vaccination Technology, Antibiotic Sensitivities, Infectious/Notifiable diseases, Diagnostic Haematology, Zoonoses, Biosecurity Principles and Quarantine Procedures. The practical classes allowed participants to gain a better understanding in conducting biopsies and necropsies to allow the identification of common parasites of warm water aquarium fish. Participants also developed treatment protocols for management of simple fish diseases.

NB: The use of the word disease summarises all areas of fish health that were investigated including parasites, bacteria, fungal and viral.

Results/Discussion

As outlined in the Methods above, a variety of techniques were introduced and developed. From these, a number of scenarios were presented, in which participants were required to use epidemiology techniques to determine the source of a fish kill, whether it was disease or poor management related and what treatments were available if applicable. The course allowed participants to identify the various diseases, but also investigate and determine the source or trigger of the disease and ensure management practices can be altered if applicable.

Diseases in fish are more often than not the result of a stressful event that the fish has undergone. During these stressful events the fishes immune system is weakened which creates the opportunity for pathogens (secondary) to affect the fish and cause disease. Such stressful events can include placing fish into an environment with poor water quality outside the fishes natural range or moving the fish during maintenance activities, such as grading or reducing stocking densities in the tank/pond. In more severe cases, highly contagious pathogens (primary) can be introduced by a variety of fomites or vectors to a farm/pond or tank in which healthy fish in perfect condition are unable to ward off the disease.

Water quality conditions of each major fish group were discussed in detail as well as fish culturing systems in relation to filters and the interaction between filters and water quality. Understanding water quality is also very important prior to introducing medications into the system. For example, knowing the alkalinity before treating a system with copper sulphate is imperative. Many diseases are often expressed due to incorrect management of the fish under culture, most notably water quality. Like fleas on dogs which can be easily controlled with monthly prophylactic medication, some simple preventative or management protocols can ensure fish are not affected by certain diseases (eg flukes).

The attended course contained a number of lecturers who are at the forefront of fish diseases, one of whom, Dr Ed Noga, is the author of the most commonly sourced and referenced book - "Diagnosis and Treatment of Fish Disease". In addition to the main topics, there were also some guest lecturers in the fields of Biosecurity, Quarantine Protocols, and Haematology that provided key information in their

specified area. A number of farm and facility tours were also conducted in which system design among the already mentioned topics were discussed.

The ornamental fish industry in Australia is relatively small when compared to countries such as United States, Japan, Germany and Singapore. Australia currently lacks a diverse network of professionals working on Ornamental fish. The course allowed the participant to interact with like-minded aquatic animal health professionals who are caring for aquatic animals, including Aquatic Veterinarians, Public Aquarists, Public Zoo's, and private and Government pathology laboratory personnel. This has allowed the participant to establish networks primarily in the United States to ensure transfer of information relating to existing and emerging diseases applicable to the ornamental fish industry in Australia.

Benefits and Adoption

The information gained from this project in terms of improved knowledge on the identification, treatment and management of existing and emerging diseases will be distributed through a number of networks. These networks will include Industry associations and government agencies in which newsletters, training programs and updated websites will be utilised. Relevant State Fisheries Departments will be able to relay the information to their members, while information distributed directly to retailers and consumers will be distributed via members of the Pet Industry Association of Australia (PIAA). The skills learned during this project have already been disseminated amongst industry members including breeders, wholesalers and retailers. Information is currently being incorporated into the Aquarium Industries "Fish School" which is an interactive free online training course for hobbyists to gain a better understanding of keeping ornamental fish. This information will better equip the owners with the knowledge to identify and treat/manage any diseases they encounter within the facilities and/or the fish populations (www.aquariumindustries.com.au/fish-school).

It is also intended that information will be disseminated through Trade publications, such as the AustAsia Aquaculture Magazine.

The participant has joined an Ornamental Fish Animal Health group which includes other participants and lecturers of the training course, in which information can be shared in the future. The applicant has also since been contacted to discuss an overall picture of the Australian Industry and the potential relationship that can be established with the US breeders and collectors.

Further Development

Ensuring these new skills and information are widely distributed not only to Australia's breeders, but wholesalers, retailers and ultimately the broader community is key to continuing the ornamental fish hobby in Australia. However, this will rely on the continual training and education of key personnel within the Australian Ornamental fish industry. It is critical that industry continues its involvement in government supported initiatives such as those funded by the FRDC Aquatic Animal Health Subprogram, including ones such as the Aquatic Animal Health Technical Forums, projects such as the current project as well as other workshops that ensure domestic networks of highly skilled and technical people continue to be developed and promoted.

References

O'Sullivan, D., Clark, E and Morrison, J (2007). The Australian Ornamental Fish Industry in 2006/2007. Fisheries Research and Development Corporation, Department of Agriculture, Fisheries and Forestry, Dosaqua Pty Ltd and EconSearch Pty Ltd.

Noga, E.J (2010) Fish Disease-Diagnosis and Treatment 2nd Ed. Wiley-Blackwell. 519pp