INQUIRY INTO BIOSECURITY & QUARANTINE ARRANGEMENTS
SUPPLEMENTARY SUBMISSION

DigsFish Services has already provided a submission in relation to the area of quarantine of aquatic animals, and particularly the inadequate quarantine conditions relating to aquarium fishes imported into Australia from other countries.

However, I would like the committee to note that I continue to find evidence of exotic disease agents (e.g. species of parasites that have not been previously recorded from Australian native fishes) in imported aquarium fishes (most recently goldfish) obtained from local aquarium shops. A recent case study of "speedy the goldfish" can be used to illustrate the problem.

Case study - speedy the goldfish

Two goldfish were purchased from a retail pet shop near where I live on 11 April 2010, as presents for my two children. After bringing them home to a brand new goldfish bowl containing new conditioned water, we acclimatised the fish to the bowl using a small amount of water from the petshop. The fish were introduced to the new bowl after ensuring water temperature and other water quality parameters (pH, hardness, DO) were similar between the bowl and the original water the fish came from (i.e. best husbandry practice was enforced by a professional aquatic animal health practitioner, namely Dr Ben Diggles). After 2 days it was obvious that both fish were ill. I briefly removed them from the tank to conduct some skin scrapes and quickly identified Gyrodactylus spp. and Dactylogyrus spp. monogenean flukes on the skin and fins, as well as Tetrahymena -like ciliates. The fish were then placed in a separate formalin bath (200 mg/L for 20 min, followed by administration of 5 mg/L praziquantel to the tank water. In the 12 hours after the treatment, the gold coloured fish (named "nemo" by my youngest son) recovered a little, while the white and red coloured fish (named "speedy" by my eldest son) remained sick. A 50% water change was undertaken. The next morning, speedy was found moribund in the tank. I euthanased the fish by spinal section and conducted an autopsy including basic high power microscopic examination of external and internal organs.

The bath treatments had removed the ectoparasitic monogeneans and the tetrahymena, but internal organ examination revealed another list of pathogens remained in the fish, including: Myxobolus sp. derived from gill cysts and another Myxobolus sp. from smears of the gall bladder and liver, encysted liver nematodes (unknown species) and a mixed bacterial infection of several internal organs.

As I had reason to believe that the Myxobolus sp. on the gills was likely to be an exotic species, (and at least some of the other parasites may have been exotic as well), and suspecting a quarantine incursion had taken place, I alerted the national aquatic animal health authorities via e-mail on 14 April 2010. The concensus was that the material should be sent to one of the QLD aquatic animal health laboratories for formal identification, however I was informed that I would have to pay for the service, as funding was not available for this and capacity constraint was a major impediment to following up the discovery. I will forward the e-mail correspondence confirming this as an attachment to this submission.

Not being made of money, I simply resorted to informing and educating the pet shop of my findings, but they refused to acknowledge that my unpaid diagnostic work for them entitled me to a refund. The fish were sold with no implied warranty, suggesting that sale of sick fish is common practice within the ornamental fish industry near where I live, and indeed, underpins its profitability by ensuring constant turnover of replacement fishes to customers who may expect their fish to last days or weeks (instead of several years).

As an aside, after several weeks of periodic medication with antibiotics and repeat bath treatments with praziquantel, I managed to keep Nemo alive, and he remains in good health to this day. But he remains alone as we do not want to put nemo (or my kids) through the process again by trying to replace speedy with another fish.

As you may now appreciate, this case study demonstrates the massive contrast in how Australia administers its ALOP with respect to aquatic animals, and particularly ornamental fishes, compared to other commodities. A comparison between the response of authorities in this case study (through no fault of their own), and a similar case which might occur within the livestock, horticulture or agriculture industries, would be rather illuminating. Given the existence of direct pathways between home aquaria and local waterways via disposal of unwanted or sick fish, the need to improve quarantine performance for ornamental fishes becomes poignantly clear if we are to better protect Australias aquatic biodiversity, fisheries and aquaculture industries, if not for welfare reasons for the fishes themselves.

Sincerely

Dr Ben Diggles

Addendum to my previous e-mail re: quarantine situation with ornamental fishes and the case study of speedy the goldfish.

Dr Ben Diggles

------- Forwarded message follows -------
Subject: RE: (Fwd) RE: FW: post on forum
Date sent: Thu, 15 Apr 2010 10:07:40 +1000
From: "Chong, Roger"
To:

Hi Ben,

These parasites are par for the course for goldfish and ornamentals in general even post AQIS quarantine. Biosecurity Australia (BA) actually did a nationally funded surveillance project through the State labs and the AQIS ornamental fish quarantine centres in 2005/06 and DEEDI saw a bag of other pathogens as well as myxobolus and tetrahymena. You may ask BA for a copy of the project report. That is to say there is already an official record of these pathogens arriving at with a significant number slipping through quarantine. See :

Global trade in ornamental fish from an Australian perspective: The case for revised import risk analysis and management strategies.
R.J. Whittington a,*, R. Chong b
a Faculty of Veterinary Science, University of Sydney, PMB 3, Camden, NSW 2570, Australia
b Department of Primary Industries & Fisheries, Animal Research Institute,
665 Fairfield Road, Yeerongpilly, Qld 4105, Australia
Preventive Veterinary Medicine (PVM) 81 (2007) 92-116

In table 5 of this paper, the list of pathogens slipping through quarantine are listed which includes myxosporeans, tetrahymena, dactylogyrids and gyrodactylids.

" In 1995, there were at least 56 pathogens of high quarantine importance recorded internationally in ornamental finfish species that were allowed entry into Australia: virus (n = 6 species), bacteria (13), protozoa (24), crustacea (2), nematodes (4), monogenean trematodes (7) (Humphrey, 1995)."

Humphrey, J.D., 1995. Australian Quarantine Policies and Practices for Aquatic Animals and their Products: a Review for the ScientificWorking Party on Aquatic Animal Quaratine. PART I: Review and Annexes PART II Appendices. Bureau of Resource Sciences, Canberra, 264 + p.

SCAAH (Sub-Comttee on Aquatic Animal Health) is the national body which discusses the technical issues related to biosecurity and disease management of aquatic animals including ornamental fish. We currently have a working group specific to ornamental fish on which I sit and Ron Glanville (Chief Veterinary Officer - QLD) is the chair of SCAAH. The group is deliberating on a policy initiative for SCAAH on how to measure and manage the biosecurity risks encountered with ornamental fish trade.

Back to your request, you may submit the fish but it will be at cost to you

since the ornamental fish retail as an industry is not currently under direct State regulation, the exception being a notifiable disease on the State or Australian list of notifiable diseases or if the ornamental fish come from one of Qld's licenced ornamental fish producers. Will it add more information to the risk assessment - sure.

As an aside, I have seen myxobolus in goldfish while working with the Hong Kong Agriculture, Fisheries & Conservation Department (veterinary laboratory service) in which we had a policy to exclude batches of such infected fish from export. It was a six monthly fish health testing and biosecurity inspection service designed in part to meet AQIS regulations in 1999/2000. I am pleased to say that in the 2005/06 BA ornamental fish project, no batch of fish from Hong Kong arriving in Brisbane met the criteria for sampling (25% mortalities in batch). Perhaps that system of risk management is working still even though I left Hong Kong in 2003. But as you read the PVM article, you may note that currently the diagnostic testing of sick fish in AQIS quarantine is not mandatory, so for the most part, we do not have an updated snapshot of what is entering quarantine or leaving quarantine (subclinical survivors) in terms of pathogens.

In summary, while I personally would be interested to work on ornamental fish samples through DEEDI, capacity constraint is a major impediment. Since you yourself have expertise in aquatic animal diagnostic disciplines, you may consider working up these goldfish cases (put the tissues fixed into cassettes) and DEEDI can provide basic technical sample processing support to you eg. process the histo sections at base cost similar to your other samples submitted.

PS. your 24 flathead and mullet H&E sections will be ready tomorrow for you to pick up.

Cheers,
Roger

Dr. Roger SM CHONG BVSc MACVSc
Principal Veterinary Officer (Aquatic Animal Biosecurity)
Biosecurity Queensland
Department of Employment, Economic Development and Innovation

Biosecurity Sciences Laboratory
665 Fairfield Road, Yeerongpilly
Queensland 4105, Australia.

-----Original Message-----
From: DigsFish Services
Sent: Wednesday, 14 April 2010 4:37 PM
To: Chong, Roger
Subject: (Fwd) RE: FW: post on forum

Roger,

Would you be in a position to process , say, half a dozen goldfish for ectoparasites (monogeneans, Myxobolus sp., tetrahymena sp, et al),

bacteria
and viruses if I picked some up from my local pet shop on the way through to your lab when time comes to pick up those histo cassettes and slides that you should have by now ? The fish at this particular shop could have anything in them - one of them only lasted 3 days after it was transferred to my kids new goldfish bowl. While the worms were the usual suspects, the
Myxobolus was very interesting to me, possibly M. carassii, and there were a few bacteria kicking around too - I'm sure you would find it rewarding. Some pics attached.

Hear from you soon.

Ben

------- Forwarded message follows -------
From:
To:
Date sent: Wed, 14 Apr 2010 14:17:47 +1000
Subject: RE: FW: post on forum

Hi Ben,

This is the most appropriate action at this stage viz. notify state authorities. Then it can be reported officially through State departments and will come to SCAAH via the Queensland rep (either Ian Anderson or Roger Chong).

Cheers

Mark

Mark Crane PhD
Project Leader
AAHL Fish Diseases Laboratory
Australian Animal Health Laboratory
CSIRO Livestock Industries
Private Bag 24
Geelong VIC 3220

-----Original Message-----
From: DigsFish Services
Sent: Wednesday, 14 April 2010 2:11 PM
To: S Crane, Mark (LI, Geelong AAHL)
Cc: Slater, Joanne (LI, Geelong AAHL)
Subject: Re: FW: post on forum

Mark,

Forward the information to who you see fit. The shop may clean up their tanks eventually after I bought the carcass of "speedy" the goldfish back in to let them know , but I think that's unlikely, so if people need some fresh material, we may have a good window of a few weeks to sort it out. The material we published in the new Zealand disease ID publications all came from my own fish tanks - very small sample sizes - the mind boggles as
to what is actually out there...

The Myxobolus was all over the gills - I have personally never seen that before. Maybe I should submit some to Roger Chong so the parasites can be
officially recorded ?

Ben

On 14 Apr 2010 at 13:59, Mark.Crane@csiro.au wrote:

> Hi Sridevi,
>
> I know that Ingo is on leave but see email below. Rather than
> broadcast this widely it may be something that SCAAH needs to consider
> (you may want to discuss this with Ingo when he returns) and then decide
> the best course of action.
>
> BEN: Thanks for bringing this to our attention. I know your
> observation would not be a surprise to most of us. As you are probably
> aware, SCAAH is wrestling with the issue of imported ornamental fish and
> it is probably more appropriate for this committee to consider this first
> before taking any further action.
>
> Mark
>
> Mark Crane PhD
> Project Leader
> AAHL Fish Diseases Laboratory
> Australian Animal Health Laboratory
> CSIRO Livestock Industries
> Private Bag 24
> Geelong VIC 3220
>
>

>> -----Original Message-----
> From: Slater, Joanne (LI, Geelong AAHL)
> Sent: Wednesday, 14 April 2010 1:40 PM
> To: Crane, Mark (LI, Geelong AAHL)
> Subject: FW: post on forum
> Importance: High
>
>
> Mark,
> Can you suggest whom I should forward this email from Ben onto?

> Thanks,
> Jo
>
> -----Original Message-----
> From: DigsFish Services
> Sent: Wednesday, 14 April 2010 12:43
> To: Slater, Joanne (LI, Geelong AAHL)
> Cc: ingo.ernst@daff.gov.au
> Subject: post on forum
> Importance: High
>
> Joanne,
>
> I have just had one of my kids goldfish die after 3 days in a brand
> new goldfish bowl and it had quite a few parasites (possibly exotic
> ones endemic within the aquarium trade) that I can get some more of if
> researchers are after samples. Is there any way I can get access to the
> bellyup forum or some other mail list to let the right people know I can
> get them a supply of material consisteing of goldfish derived Myxobolus
> sp, Gyrodactylus, Dactylogyrus, Tetrahymena, encysted liver nematodes and
> some bacterial pathogens from my local aquarium shop ?
>
> Thanks
>
> Ben Diggles PhD
> DigsFish Services Pty Ltd

------- End of forwarded message -------

Ben Diggles PhD

Please find attached a new paper outlining how ornamental fishes continue to be released into the australian environment. Note also hosw these authors suggesr there is a strong case for banning the importation and keeping of all varieties of C. carpio from Australia altogether, including koi carp, to further protect aquatic environments from invasive species. I suggest that this would also mitigate significant risks of spread of exotic diseases. You should also note that New Zealand has banned imports of carp and goldfish for some time for these exact same reasons, and their ornamental industry works well based on locally bred fish which generates a healthy local industry. Everything to gain, nothing to lose with banning carp and goldfish imports based on real disease/biosecurity and ecological risks.

Dr Ben Diggles.

(SEE ATTACHMENT 1)