AUSTRALIAN Prawn Farmers ASSOCIATION

18th December 2014.

Marine Pest Unit
Department of Agriculture
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RE: National Marine Pest Biosecurity Review - submission from Australian Prawn Farmers Association.

To whom it may concern

Australian Prawn Farmers Association (APFA) welcomes the opportunity to have input to the National Marine Pest Biosecurity Review. APFA believes that there are key issues for our industry and environment that current arrangements may not be able to contain pests, marine/exotic micro organisms or emerging diseases that are occurring globally.

APFA have reviewed the terms of reference and will provide comment relevant to exotic organisms, likely pathways, adequacy of current protocols and surveillance and their implementation for high-priority environmental risks and the extent to which compliance monitoring and enforcement are focused.

Terms of Reference – Key issues APFA would like addressed.

APFA members are extremely concerned about new and emerging global diseases and the emergence of microorganisms the consequences of which are relatively unknown.

TOR – 3. How effective are the current arrangements in preventing marine pests arriving and establishing in Australia?

APFA is extremely concerned that despite Australia having regulations and inspections in place there is still a high risk that exotic organisms can enter via ballast water, through the use of imported prawns as bait, through dried shrimp or Australia's ALOP and testing regime of 5% of imported shipments. The DAFF failed food report on rejected shipments for imported prawns shows regular rejection for

vibrio cholerae and excessive quantities of Enrofloxacin, Furazolidone and Ciprofloxacin.

Ballast Water – International regulations (MARPOL) instructs the shipping industry to manage their waste on board through storage or incineration. Once in Australia, any waste being discharged by vessels must go into a quarantine bin for appropriate management. It is acknowledged that vessels may carry invasive species through ballast water and that Department Agriculture Fishery Forestry – Biosecurity have ballast water protocols that states vessels must manage ballast water through an exchange of port water with mid-ocean water during a voyage.
http://www.daff.gov.au/biosecurity/avm/vessels/quarantine-concerns/ballast

APFA are extremely concerned that ballast water, regardless of what protocols are in place, may still carry, harbour then deposit into Australian waters harmful algal blooms (HAB's) and cysts or microsporidia that can lie dormant until an environmental trigger sets them off.

Greenpeace have predicted that vessels shipping coal from current and proposed terminals between Cape York to North Gladstone will increase from 1,722 in 2011 to 10,150 by 2020.
http://www.greenpeace.org/australia/Global/australia/reports/Boom_goes_the_Reef_Report_4MB.pdf

These are alarming statistics. A recent article in The Australian (November 20, 2014) reported that a Chinese shipping company was fined $20,000 after a ute load of rubbish was dumped off one of its ships in the Great Barrier Reef Marine Park. This vessel did not make the required entries in the garbage disposal log book for which the master of the vessel was fined a further $6,000 for two breaches. The fine in total - $32,000 is pittance for the environmental damage that this type of action could cause. This was one example that was sighted and reported by a fisherman – how many go unreported? Copy of the article is attached.

The use of imported prawns as bait by recreational fishers is another likely pathway of disease and exotic organisms. A National survey of bait and berley used by recreational fishers in 2002 and followed up in 2006 reported that there was a significant increase in the number of fishers using prawns sold for human consumption as bait/berley. The prime reason for doing this was convenience, quality and price of the imported product. Given that eight years have elapsed since the last survey perhaps it's time for Biosecurity to get an update on this data to help

guide Imported Risk Assessments (IRA) and Imported Fish Inspection Schemes (IFIS) both of which have been under review through inquiries this year.

The biosecurity risk to Australia using the ALOP (Appropriate Level of Protection) approach needs to take into account that if other countries are banning imported products because of particular disease or antibiotic residue risk which are not covered under Australia's IRA (Import Risk Assessments), then Australia cannot assume that the risk will be low. This is in reference to outbreaks internationally of Acute Hepatopancreatic Necrosis Disease (AHPND) also called Early Mortality Syndrome (EMS). The current IRA process does not take into account risk factors and actions to implement when a new strain or virus or disease is recognised globally. If such a disease (AHPND/EMS) got into Australia the current prawn farming industry **would** be wiped out.

Antibiotic residue in imported prawns -

APFA is greatly concerned Australia's ALOP means we are prepared to accept inferior products that other countries are refusing to buy or allow to be imported. Japan had stopped buying shrimp from Vietnam because of the level of banned antibiotics that are used and detected – please refer to the links below.

http://vietnamnews.vn/economy/254296/japan-may-stop-vietnamese-shrimp-imports.html
http://www.shrimpalliance.com/fda-expands-import-alert-on-chloramphenicol-to-cover-all-crustaceans-including-shrimp/

A further Shrimp News article December 2, 2014 states that the Vietnam system for controlling the use of antibiotics on aquatic farms was not working and as a result shipments to the European Union, Japan, and South Korea have been rejected because the products contained banned antibiotics for aquaculture.
http://www.shrimpnews.com/FreeReportsFolder/NewsReportsFolder/VietnamAlarmingUseOfAntibiotics.html

Another recent article states: *The miracle drugs of the 20th century are in danger of running out of power. Antibiotic use in both humans and animals is contributing to a reservoir of resistant bacteria resulting in increased human mortality and increased hospital stay lengths globally, writes Øistein Thorsen in October 2014 edition of Sustainable Aquaculture Digital. The World Health Organization (WHO) warns the*

misuse of antimicrobial medicines and new resistance mechanisms are "making the latest generation of antibiotics virtually ineffective", while at the 2013 G8 Summit, scientific ministers issued a statement calling antimicrobial resistance (AMR) "a major health security challenge of the twenty first century."

Antibiotic use is an integral part of intensive animal agriculture and aquaculture. Increased public concern about antibiotic resistance and the need to preserve the ever-diminishing arsenal of antimicrobials that work in humans for as long as possible, has brought about increased scrutiny of the use of antibiotics in animal agriculture – especially for prophylactic and growth enhancing purposes. The mechanisms by which antimicrobial resistant bacteria, initially derived from food-producing animals, contribute to the emergent and increasing threat of antibiotic resistance in people are complex and varied. The main routes bacteria can take to move from animals to humans include via food or other animal product contamination, occupational exposure for farm workers and fish keepers, abattoir workers, veterinary surgeons and health workers. Bacteria can also transmit through environmental contamination like manure containing resistant bacteria, resistance genes, and antibiotic residues, along with recreational pursuits like swimming and fishing. The prevention of buildup of resistant bacteria in waterways as a result of fish farming practices, terrestrial agriculture run-off or sewage outflow surrounding fish farms is a major concern for the aquaculture industry.

Despite difficulties of measuring the exact contribution of animal agriculture and aquaculture to the overall development of antimicrobial resistance, a consensus is emerging around the need for everyone to use these powerful drugs carefully and responsibly, especially those deemed critically important for human health by the WHO. With the explosive growth in production and demand for farmed seafood, how can the aquaculture industry lead the charge for responsible use of antibiotics without compromising food safety, the environment and human health, as well as animal health, welfare and productivity?

See the source (http://tinyurl.com/oaqbql4) for more information on Current Use in Aquaculture, Bad Data, The Certification Approach, & The Path of Least Resistance. See related story "A global shift to antibiotic free production" at http://tinyurl.com/jvtwvm2.

It would seem from the above article that the increasing use of antibiotics from international sources may compromise animal health, welfare and productivity, food safety, human health and the environment.

The Senate Finance and Public Administration References Committee – Progress in the implementations of the recommendations of the 1999 Joint Expert Technical Advisory Committee on Antibiotic Resistance (JETACAR) June 2013 – reported that 2 recommendations relating to surveillance and monitoring on Anti Microbial Resistance (AMR) found that *"while systems for resistance surveillance in humans were found to be well established in Australia, there was no similar system of surveillance for animals. The lack of reliable data on antibiotics usage, including monitoring of import volumes and individual consultations, prescription and dispensing data for both human and animal antibiotic use was also identified."*

There are a myriad of research papers that have identified that the overuse of antibiotics in today's society has unknown implications for the environment after passing through waste treatments, a small sample of available papers include:

1. *During the past decade, concern has grown about the adverse effects the use and disposal of pharmaceuticals might potentially have on human and ecological health. Research has shown that after passing through wastewater treatment, pharmaceuticals, amongst other compounds, are released directly into the environment.*
http://jac.oxfordjournals.org/content/52/1/5.full

2. *The ubiquitous presence of antibiotics has upset the delicate balance of microorganisms in the environment. Over millions of years, bacteria have evolved a number of strategies to coexist peacefully, including the capacity to produce antibiotics to ward off competitors. Other organisms have an ability to destroy these substances programmed into their genetic makeup, and having this capacity, are said to be antibiotic resistant. Both types have always existed. However, before the wide-spread use of antibiotics, resistant strains were a small fraction of the microorganism ecosystem. Significant change has occurred with the large scale human uses of antibiotics because these substances kill off antibiotic susceptible bacteria, and thus create favorable environments for the overgrowth of resistant strains.*
http://www.tufts.edu/tufts-test/med/apua/Ecology/EIA.html

3. *Most people equate antibiotic resistance to the medical field. However, antibiotic resistance is also in our soils. And, the field of agriculture has been blamed for making this worse by using concentrated feed operations that leak antibiotics into surrounding waterways. In addition, municipal water treatment systems are unable to filter antibiotics, and are being studied for their impact on the development of resistance in the environment.*

http://www.sciencedaily.com/releases/2013/09/130926142926.htm

4. *If a substance is not eliminated in any way, it can reach the environment with the potential to adversely affect aquatic and terrestrial organisms. Bacteria, fungi and micro algae are the organisms primarily affected, because antibiotics are designed to affect microorganisms. Antibiotics are of particular interest, because we do not currently know whether their presence in natural waters contributes to the spread of antibiotic resistance of microorganisms.*
http://link.springer.com/chapter/10.1007%2F978-3-540-74664-5_14

5. Effects of antibiotics on ecological functions have also been discovered, including nitrogen transformation, methanogenesis, and sulfate reduction. In the latter part, this review discusses in detail on factors that influence antibiotic effects on microbial communities in soil and aquatic environment, including concentration of antibiotics, exposure time, added substrates, as well as combined effects of multiple antibiotics.
http://www.ncbi.nlm.nih.gov/pubmed/20508933

TOR – 4. How effective are the current arrangements for the detection, eradication and containment of invasive marine pest?

APFA believes that current arrangements are not effective – as the 2005 pest report highlights below.

Reference to ballast water introducing marine pests can be found in Natural Heritage Trust – National priority pests: Part 11, Ranking of Australian marine pests. February 2005. This report stated that from a database of 1582 marine and estuarine species 207 of these the invasion history was not known however 128 were attributed to ballast water and a further 50 to hull fouling.
http://www.environment.gov.au/system/files/resources/02d33408-ad61-4d11-b5a4-6bf1aa333776/files/priority2.pdf

Further evidence relates to a publication - 1999 The State of Queensland, Department of Primary Industries developed “A Guide to Phytoplankton of Aquaculture Ponds. Collection, Analysis and Identification” by Chris Stafford. Some fourteen years later in 2014 farms are finding species that were not identified or known back in 1999 which is confirmed by the Natural Heritage Trust – National priority pests: Part 11, Ranking of Australian marine pests - February 2005.

APFA believe current detection and eradication and containment are not effective for new and emerging species - an article by Shrimp News International on November 29, 2014 entitled "What are Microsporidians" – *"a phylum of spore-forming unicellular parasites that can produce highly resistant spores and are capable of surviving outside their host for up to several years."* Could mean that Australia lacks the ability to detect these parasites and detection could take several years.

By the time the parasite is detected it was stated that Enterocytozoon hepatopenaei (EHP) could be more devastating than early mortality syndrome (EMS) a statement that triggers fear for Australian Prawn Farmers. An extract of the article has been copied below:

If you're a shrimp farmer and have not yet read the Network of Aquaculture Centres in Asia-Pacific's (NACA) report on Enterocytozoon hepatopenaei *(EHP), a disease caused by a microsporidian parasite, I recommend that you read it before you read this item. One farm manager told me that EHP might turn out to be more devastating than early mortality syndrome (EMS)! The Thai shrimp farming industry's slow recovery from EMS is probably associated with the presence of EHP.*

According to Wikipedia, microsporidia constitute a phylum of spore-forming unicellular parasites. They were once thought to be protists, but are now known to be fungi. Loosely 1,500 of the probably more than one million microsporidia have been named. They are restricted to animal hosts, and all major groups of animals host microsporidia. Most infect insects, but they are also responsible for common diseases of crustaceans and fish.

Microsporidia lack motile structures, such as flagella, and produce highly resistant spores capable of surviving outside their host for up to several years. Spore morphology is useful in distinguishing between different species. Spores of most species are oval or shaped like a flame or pear, but rod-shaped or spherical spores are not unusual.

***Sources: 1.** Wikipedia. Microsporidia. Website visit on November 28, 2014. **2.** Bob Rosenberry, Shrimp News International, November 29, 2014.*

http://www.shrimpnews.com/FreeReportsFolder/NewsReportsFolder/ThailandWhatAreMicrosporidians.html

In summary APFA believe that more needs to be done to keep out invasive marine pests and should increase measures to be able to detect, eradicate and contain known and unknown organisms:

- There should be a greater understanding and awareness of what remains alive or dormant in marine ship ballast water and on hull fouling

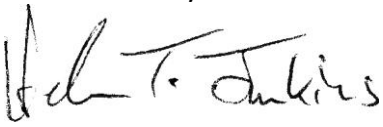
- There should be measures in place to detect and deal with microsporidia

- Worldwide overuse of antibiotics (estimated total antibiotic market consumption world-wide to lie between 100 000 and 200 000 tons) and used for a range of purposes from human health; animal husbandry for growth, via feed and health. Run off and waste eventually end up in the environment the results of which are not fully understood, the World Health Organisation (WHO) was requested in May this year to develop a global action plan for antimicrobial resistance.
  http://jac.oxfordjournals.org/content/52/1/5.full
  http://www.who.int/drugresistance/en/

- Pathways currently exist that can potentially allow devastating global diseases to enter Australia such as the use of imported prawns as bait

- APFA fears that Australia's ALOP (testing 5% of some imported seafood products) and complacency will put its Australian environment and industries at risk unless environmental biosecurity is taken more seriously and introduces new measures or upgrades existing protocols to ensure invasive species, pests and diseases are kept out of Australia.

Yours sincerely



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