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Scientific Submission: Australian Prawn Farmers Association- issues associated with the current prawn import policy and IRA.

A Submission to Biosecurity advice No 2018/06: Request for Scientific Submissions on specific issues with Australia's current prawn import policy.

By Alistair Dick

on behalf of APFA

To be submitted by 02 July 2018 and directed to:

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1. Introduction:

It has been some years since the Department has undertaken a comprehensive review of specific issues of, the *Final generic import risk analysis report for prawns and prawn products 2009* (Prawn IRA) and Australia's current prawn import conditions are once again up for consideration as part of this review (2016/06). In the ensuing time since the last review some of the risks highlighted in previous IRA's have been brought to bear, and Australia's environment, prawn fishing and prawn aquaculture industries are likely to have been permanently damaged or at the very least seriously compromised.

My name is Alistair Dick, my history with the prawn farming industry goes back some 30 years, and prior to this I was involved with the prawn fishing industry in Northern Australia. In my current role as General Manager of Gold Coast Marine Aquaculture I saw the utter devastation caused by the recent White Spot Disease (WSD) outbreak on the Logan River in the summer of 2016/17. Never before has a pandemic disease event occurred in the history of our industry, and certainly never at the hands of an exotic viral agent such as *White Spot Syndrome Virus* (WSSV). The almost total loss of crop across all farms on the Logan River during that outbreak was far and away the most devastating single event that our industry had ever witnessed, highlighting the extremely contagious nature of such disease. The Logan River farms are likely to feel the ongoing financial and personal toll of these events for a long time to come, with the real potential for some of the farms to never operate again. My personal association with previous IRA's, as well the recent senate enquiry into biosecurity risks associated with the importation of seafood and seafood products, led me being put forward on behalf of our association to prepare this submission.

In the aftermath of the outbreak, believed to have cost across the board more than $100M (IGB report, 2018), there's one thing that has been highlighted above all else. Prevention is better than cure, and as I have stated several times through various other recent submissions, had the risks been properly represented and managed through the advent of real and effective control measures then it is extremely likely that WSSV would remain an exotic virus to Australia for generations to come. What has been the most frustrating issue for our industry to endure is that, whilst many would try and have us believe that this was somehow a random event caused by the alignment of other random factors, nothing could be further from the truth. Given the previous 18 years or more of extensive lobbying of the Department of Agriculture and Water Resources (DAWR) by our association and other associations (QSIA and others), the Queensland Government and international experts on the subject, this was a highly predictable event. Failure on behalf of DAWR to recognise real high-risk pathways and apply recognised control mechanisms to these risks is the underlying reason why the current import regime has failed our country and our industries so poorly. Below is a quote from the pre-eminent Professor Donald Lightner, who prior to his retirement, was considered the number one prawn disease expert in the world. The quote below is from his time reviewing the IRA in 2006 as part of an expert panel put together by the Australian government.

June 9, 2006: *"As you correctly concluded, I view imported commodity shrimp/prawns as a significant and high risk to shrimp aquaculture, to aquatic ecosystems and to fisheries. My lab has published a number of papers to fill in knowledge gaps identified in government risk assessments. My lab and others have confirmed the frozen commodity shrimp/prawn products are anything but safe commodities. The awareness is increasing that there are direct pathways for disease introduction to*

wild or farmed shrimp/prawns with imported infected shrimp/prawns being used as bait or as waste from value added reprocessing of these products."

Donald V. Lightner, Professor and Director OIE Reference Laboratory for Shrimp Diseases Aquaculture Pathology Laboratory Department of Veterinary Science and Microbiology

Through the science Professor Lightner speaks of, and with the unfortunate but real precedence and the power of hindsight, glaring risk factors can no longer be passed off as hypothetical, and that with a common-sense approach based on scientific fact, and presented evidence, real and meaningful changes to import conditions can be implemented to provide real and lasting phytosanitary protection to Australia's aquatic ecosystems and prawn sectors.

Any sound risk-based approach should go through the exercise of apportioning risk profiles/likelihood to various events and then the consequences for those risks should they eventuate. With the power of hindsight, we can now see that of the possible risk pathways for the incursion of WSSV for instance. One of the reasons why the IRA of 2009 has failed our industry in terms of keeping WSSV at bay was that it misappropriated both the likelihood and consequence of such an incursion occurring. We now know that not one country that has incurred the wrath of WSD has restored its disease-free status, where eradication attempts over the longer term have failed.

2. The need for a review of prawns and prawn products from all countries for human consumption:

This review of Australia's current prawn import policies, which were originally developed during the 2009 Import Risk Analysis for prawn products (Biosecurity Australia 2009), is not a routine or planned review. It is a requirement following failures of the original sanitary arrangements which resulted in a devastating incursion of the exotic, OIE listed White Spot Disease into Moreton Bay and the prawn aquaculture farms on the Logan River in SE QLD in the summer of 2016/17 (Scott-Orr et al. 2017). Recent surveillance results from March 2018 have confirmed the persistence of WSSV infections in wild prawns and crabs in Deception Bay, in northern Moreton Bay. The persistence of WSSV in these wild crustacean populations within the White Spot Disease Biosecurity Zone (QLD Biosecurity Act 2017) some 18 months on is causing ongoing concern for the significant prawn and baitworm fisheries in the affected zone, particularly since the cycle thresholds (CT values) are equivalent in some cases (CT 14) and indicate equivalent viral loadings to clinical WSSV outbreaks (personal observations, 2016-2018). And because of this, fishery operators are no longer able to domestically trade uncooked prawns or baitworm products outside of the affected zone (QSIA 2018). This creates a particularly uneven and unfair trading environment whereby Biosecurity Queensland, through their implementation of valid control measures (cooking and/or gamma irradiation), and DAWR by upholding the current import regime, have created a situation whereby importers are able to access Australian markets with raw prawns whilst domestic producers are held to account to a higher standard. Such trade restrictive practices are mentioned in section 109 of the Australian constitution. To avoid future and ongoing inconsistencies in trade barriers and phytosanitary controls, DAWR would be well advised to adopt the control measure of cooking as for the Queensland state jurisdiction.

Australia's current prawn import policies:

With the liberalization of international trade through the General Agreement on Tariffs and Trade (GATT) in 1947, and the subsequent establishment of the *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement) in 1994 (WTO 1994), World Trade Organization (WTO) member countries, such as Australia, may employ sanitary or phytosanitary measures to the extent necessary to protect human, animal and plant health. Under the SPS Agreement, these sanitary measures must be based on international standards, guidelines and recommendations, which in the case of sanitary measures for aquatic animals and their products, is the World Organisation for Animal Health's (OIE) *Aquatic Animal Health Code* (OIE, 2018a).

WTO member countries may adopt higher levels of standards than those specified in the Code, however, they are required to use the *risk analysis* process as a means to justify these additional restrictions on international trade (see WTO 1994, Rodgers 2004, OIE 2018a). Risk analysis (RA) is thus an internationally accepted science-based method for assessing whether trade in a particular commodity (in this case prawns) poses a significant risk to human, animal or plant health, and if so, what measures could be adopted to reduce that risk to an acceptable level.

The OIE code (OIE 2018b) requires that Australia reviews and modifies import measures following an outbreak of exotic disease and, prior to any subsequent claim for freedom from that disease. Decisions pertaining to what ongoing control measures are applied should be apportioned by relative risk factors.

3. Likely incursion pathway for White Spot Syndrome Virus:

For this review to be effective and take action against the most significant potential biosecurity risks, it is important to use the past, its mistakes and omissions, to direct future efforts in maintaining effective phytosanitary protection. And, whilst WSSV will lead the discussion in terms of a recent incursion at the hands of commodity prawn imports, it should be noted that there are a range of emerging pathogens not currently considered under the existing IRA (refer Table 2), and so a similar level of potential risk and therefore proportionate response through controls should be applied on this basis.

WSSV was exotic to Australia (Scott-Orr et al. 2017, Mc Coll 2004, East et.al 2004) up until the time of the 2016 incursion, and while the original source of the WSSV in the incursion in Moreton Bay and the Logan River may never be known with absolute, 100% certainty, there is a very high probability (estimated at 98-99% certainty, Diggles, 2017) that the incursion pathway was due to use of imported, uncooked WSSV-infected prawns used as bait or burley by recreational anglers. This is because genetic analysis suggests the WSSV strain in Moreton Bay is very closely related to WSSV strains in China (Knibb et al. 2018). Furthermore, high prevalence (80% or more), of often heavily WSSV infected uncooked imported prawns were found in supermarkets near the Logan River (Scott-Orr et al. 2017, Future Fisheries Veterinary Service 2017), and recreational anglers were found using WSSV-infected prawns as bait near the affected prawn farms at the time of the disease outbreak (Scott-Orr et al. 2017). Epidemiology of disease spread through the prawn farms on the Logan River, but not elsewhere, proves that the virus was not introduced via infected broodstock or aquaculture feed, but instead, probably entered farms via intake water (Diggles 2017a).

Other theoretically possible alternative entry pathways of the virus (via ballast water discharge or biofouling of international shipping at the Port of Brisbane) appear far less likely (Diggles 2017b). This is because ballast water discharge or biofouling would not explain the emergence of the disease in the Logan River (which does not accommodate international shipping), nor have these two pathways ever been confirmed as methods of introduction of WSSV into new areas anywhere in the world. To date, whilst an overwhelming body of evidence has emerged to show that WSSV infected prawns have entered Australia as a frozen commodity, not one (1) single piece of credible evidence has emerged to date to validate any other path of entry in Australia. So, whilst bait or burley use is considered far and away the most likely incursion pathway (Diggles, 2017, Scott-Or et.al, 2017), it is almost certain that the infective material that caused the WSSV outbreak of 2016 came into Australia in a shipping container, on a ship. Possible entry and incursion pathways have been explored by a number of different groups post the 2016 WSSV outbreak. The Department of Agriculture report (DAWR, 2017), Report into the cause of WSSV outbreak in the Logan River area of Queensland 2016, explores a number of possible causes for the outbreak, including;

The virus was introduced from raw prawns being used as bait:

There is both strong evidence and precedence to support this argument. In the report (DAWR, 2017) there is reference to investigations undertaken by the department, whereby on the 19th December 2016 fisherman were interviewed on the Logan River close by IP 1 (the first white spot infected property), were found to have in their possession white spot infected, supermarket bought prawns. The infectivity and transfer pathway for commodity prawns was also confirmed by the Darwin incident of 2000 (East, et.al, 2004), and challenge tests performed at the Australian Animal Health Laboratory from supermarket bought prawns in that area (Geelong, Victoria), the results being that

experimentally exposed farmed *Penaeus monodon* fed on infected material developed terminal white spot disease (McColl, 2004). There are also numerous international scientific papers validating this pathway of infection specifically targeted toward import risk analyses, including, (Durand et.al, 2003 & Oidtmann et.al 2011) that investigated the viral loading of white spot in commodity prawn tissues.

The report's conclusion, 'as it currently stands, the department has not been able to determine the origin of the viral outbreak and a number of plausible pathways exist' (DAWR, 2017). Some 18 months on, this plausibility seems to have made way to plausible deniability, as no further evidence has ever emerged in the ensuing time to support any other incursion pathway. In a later DAWR report (DAWR,2017) of the Senate Enquiry at point 1.32 highlights the need for further genetic analysis to shed light on the origin of WSSV to Australia, it has now been confirmed that this is likely to have come from an exotic source (Knibb, 2018) most likely China.

I would argue though, that the actual mechanism and incursion pathway is only one issue, given the precedence for commodity prawns to transfer WSSV (McColl, 2004, East et.al 2004), that if enough infective material becomes present within our borders that by random chance enough infective material will inevitably enter those high-risk pathways. It was even suggested during the Senate Enquiry (DAWR, 2017) that given the naïve population of prawns in Australia that even a single virion was capable of starting an infection. Although unlikely, it does point to the extremely virulent nature of such a disease.

The virus was introduced via imported aquatic feeds or feed supplements:

To date there has been no credible or validated information to support feeds as a likely entry or incursion pathway. As APFA had been asking for, through over more than 18 submissions over 15 years, all compound feeds produced or imported into Australia are heat treated (effectively cooked) to control potential pathogens including virus and bacterial agents. As Dr Patrick Hone, the FRDC chair acknowledged during a Senate Estimates hearing, *"I would say from a science perspective we have ruled out the feed as a pathway" (*DAWR, 2017*).* Heat treatments have certainly been well validated as a control measure for managing major viral pathogens in feed, as it is for managing major pathogens in commodity prawns.

The virus was introduced through diseased broodstock or their progeny:

Under the existing translocation policy in effect for a number of years prior to the 2016 incursion, it had been a requirement to test a percentage of incoming broodstock for a variety of pathogens, including WSSV. Also, under operation Cattai investigations, an FOI was performed to detail all lab reports from the state government lab for Logan River farms, and no positive test results have ever in the history of the Australian Prawn Farming Industry been found. And, I believe some archived samples had been re-tested, again with no positives found. At 1.15 of the Senate Enquiry interim report (DAWR, 2017) it is noted that by definition WSSV remained an exotic disease to Australia, and at 1.18 of the report confirms that during proof of freedom testing done under the OIE guideline that of 3051 samples from 64 sites, not a single positive test result had been found. So, in actual fact, the only positive test results that were continuing to show up in Australia prior to 2016 were those from commodity prawns being tested as part of importation protocol. We now know there were many hundreds, if not thousands of such positive test results which should have resulted in that stock being destroyed or returned to their country of origin.

The virus was introduced via a human element, including the importation of associated equipment:
To date not a single piece of credible evidence nor even a credible hypothesis for this as a valid incursion pathway has emerged.

WSSV was present in Australia, but had not been detected previously:
As stated above at Section 3. By the definition of the DAWR and OIE through the rigour of a number of proof of freedom surveys performed (East, 2004), that by definition, WSSV remains to this day an exotic disease to Australia, and all phytosanitary measures should be directed to maintaining this status. This is the brief of the DAWR in providing entry level biosecurity.

Probably the most contentious and offensive argument brought forward by the Seafood Importers Association in their submissions, that was also mentioned by various departmental staff upon farm visits (Personal Observations, 2017), was that had 'modern' biosecurity measures been employed on farm, that we would have been protected from WSSV. This line of thinking was also included in the May 2017 report from DAWR (DAWR, 2017). This thinking is flawed in several ways, firstly, methods developed throughout the rest of the shrimp (prawn) farming world were developed in response to the devastation of WSSV. Because WSSV has over 100 wild crustacean hosts (whilst virtually all other known prawn viral diseases are single host), filtering water to a micron size that excludes these would NOT apply to other prawn diseases in most cases. Professional and experienced aquaculture experts would understand this a counter intuitive and retrograde step, as normally this natural productivity is considered advantageous to prawn production in terms of water stability, natural foods etc, as well as counter-productive in terms of production costs.

As industries that rely on the DAWR to manage entry level biosecurity, how in good faith can industries be expected to protect themselves from the systemic failings of the government's own systems. I liken this argument to asking the beef cattle industry to abandon grazing, etc on their land and bring all their cattle into feed lot sheds, to be fed only sterilized water and feed, just in case the DAWR makes a mistake and allows foot and mouth disease into the country. What all industries in Australia expect is for governments to provide adequate phytosanitary protection. Where on-farm biosecurity measures employed should be commensurate to the level of risk. Our industry would argue that given the extreme level of risk and precedence now apparent through the recent WSSV incursion that neither the correct level of risk nor consequence had been applied in ensuring the correct control measures were put in place.

4. Evidence of ongoing systemic failure of biosecurity measures at the border post incursion and effectiveness of current control measures:

One of the most disturbing aspects to the recent and catastrophic failures in the entry of white spot infected raw prawns into Australia was the return to the business as usual approach without adequately addressing ongoing or emerging risk factors. On the 6th of January 2017, the then Deputy Prime Minister and Minister for Agriculture suspended the importation of raw prawns, citing the fact there has been detections of WSSV in supermarket shelves and that there was concern these could be used as bait and that, 'it means that if they get into waterways they can infect prawn farms'. The truth is that WSSV had been detected on supermarket shelves numerous times previously (2000, 2004, 2007, 2009, 2016), the only difference this time, and as noted in a Senate Estimates hearing, the final piece of information required to call for the suspension of imports, was the reported incursion on the Logan River by November 2016. This was despite Operation Cattai having been started some months earlier identifying 25 out of the 40 approved importers as being under investigation. Using a disease incursion as an entry level biosecurity measure is a clear breach in the duty of care and general biosecurity obligations of the DAWR. This is also an OIE requirement under the Aquatic Animal Code (OIE, 2018a)

Had the Queensland government and APFA been notified of the heightened risk for WSD, then when the vets at the Queensland Biosecurity Laboratory (BSL) first saw infected prawns coming through their lab, they would have been more able to provide the correct advice, rather than the farmer at IP 1 being told to exchange water. We now know some 18 months on, given recent environmental surveillance results from Moreton Bay, that this crucial period may have actually been the only period of time where eradication, at the pond level, and therefore from Australia, was a realistic outcome. We can see from the various reports, that as was suggested in early 2017 from the Senate Enquiry Interim Report (DAWR, 2017 pp1.12), eradication from the wild once stablished is considered unlikely. As the expert panel report eludes (Glanville et.al 2017). after the OIE imposed, two (2) year proof of freedom surveys fail as they now have to date, a scenario of 'contain and control' should come into effect. Effectively this is where the industry now finds itself, after giving eradication from farms and the local environment the best possible chance of success during the imposed stand down period. Under a 'contain and control' situation as proposed under scenario 2 of the expert panel report (Glanville et.al 2017) which is yet to be formally announced or declared by the Aquatic CCEAD, WSSV is considered to be endemic to 'the control area', and a range of measures employed to limit the further spread of the disease to areas outside of the control area, including monitoring movements of live-stock and adherence to minimum biosecurity standards. However, it needs to be acknowledged that there may be a natural spread of the virus over time, and continuous surveillance would need to be performed to uphold the disease-free status in the rest of the country whereby phytosanitary protection at the border would still be upheld, and WSSV testing, among other pathogen screening, still be imposed as a trade barrier to protect other Australian industries and environment.

As WSSV has some 110 susceptible hosts it will be extremely important that the IRA review considers the significant risk for a separate incursion, via the now validated pathway of commodity prawns to the wild. There are several other fisheries of major economic importance that may be at high risk, such as the Western Australian Rock Lobster industry. There is evidence of host susceptibility in Europe, for instance to the European Lobster (Bateman et.al, 2012). Furthermore, as has been seen in recent weeks from Moreton Bay, naïve hosts may be highly susceptible to WSSV where wild crustacea, crabs and prawns, have been tested with CT values that were equivalent to those seen under epizootic conditions in diseased ponds (Biosecurity QLD, 2018).

Figure 1: May 2018 (source Biosecurity Queensland)

Current loopholes:

The effectiveness of current control measures at the border must form part of this IRA review, they have been open to abuse as evidenced through Operation Cattai (DAWR, 2017) and this continues to this day. As and we have seen recently, and as evidenced in a letter from a seafood importer (Ezekiel, 2018), some importers will go to great lengths to get around the import conditions. Last year a loop hole was exploited whereby commodity types such as garlic marinated prawns, were brought in by certain importers, with the marinade to be later washed off. This particular loophole has been closed, and now mandatory testing applied, according to Ezekiel, (2018) the importation of garlic prawns in that format had abruptly stopped. But another loophole opened as evidenced by the letter, then there was battered prawns and most recently crumbed prawns. All these loop holes are essentially the same whereby importers and exporters conspire in many cases to knowingly importing partly processed WSSV infected product to evade testing. One only exploits such loopholes in the knowing that the prawns would otherwise fail testing at the border. As had been the case leading up to operation Cattai in the early parts of 2016.

The assumption that these products will not enter high risk pathways and enter aquatic ecosystems cannot be validated through this type of re-processing, hence there will always be a risk for this type of behaviour and the potential for another catastrophic disease incursion via this pathway. As these products are all for later cooking, the only valid control measure for such products to enter Australia should be cooking to a minimum standard that is known to deactivate WSSV and other known pathogens.

The other main current loophole is that of cooked prawns coming into Australia, as it currently stands these containers are not required to undergo any testing. And given that 25/40 importers, most of these with approved arrangements are essentially able to manage these containers on their own sites in many cases, the potential, as we saw during operation Cattai to mis-declare the contents of containers is a real and ongoing risk for substitution of other higher risk products (i.e. raw), essentially hidden by mis-labelling the contents of containers. It would be prudent for DAWR border officials to randomly check the contents of these containers declared as cooked prawns from seals in tact containers.

With substantial international trade in raw frozen prawns, verifying the actual country of origin can become problematic, this pathway has also been found to have been exploited in the past on numerous occasions. As Australia has different trading arrangements with different countries which have been negotiated around the free-trade of certain goods, it is seen as a major advantage to make sure that certain countries of origin appear on import documents. The attached link shows a case where an esteemed Western Australian Laboratory has found traces of nuclear power plant cooling water, the only problem is the country shown as the country of origin, Indonesia does not have any nuclear power plants, so clearly this batch of prawns were not produced in Indonesia. (WA News, 2016). https://www.perthnow.com.au/news/wa/perth-company-uncovers-where-your-food-really-comes-from-ng-8578a1c331605d11c0719657033b8023

Pre-export testing (as now heavily relied upon under the new import regime) assumes all important diseases are known and assumes testing can accurately detect their presence. Given recent history and the emergence of the diseases listed in Table 2 below, such assumptions appear to be invalid when evidence is applied against that hypothesis. As we saw following the resumption of trade and the failure of a number of consignments certified WSSV free by their country of origins competent authorities (DAWR, 2017).

This is relevant because, under the OIE Aquatic Animal Health Code at Chapter 1.1 (OIE, 2018a), member countries shall make available to other member countries through OIE, whatever information is necessary to minimise the spread of important diseases, and to assist in achieving better worldwide control of the pathogens they list as notifiable, these include WSSV as well as the pathogens listed in Table 2. Member countries shall comply with a specified set of notification guidelines, where an 'event' means a single outbreak or a group of epidemiologically related outbreaks of a given disease, and its geographical range. This is a critical management issue that is required by the competent authorities in member countries and serves as an early warning advice to importing countries as to the emergence and related risk in relation to exotic pathogens. If country of origin and provenance and reporting guidelines are not followed through substitution, then early warning signs from relevant competent authorities may be overlooked.

Under OIE's provisions for epidemiological information, the detection of the pathogenic agent of a listed disease should be reported even in the absence of clinical signs, clearly given the volume of WSSV infected products coming into Australia over an extended period, our trading partners are clearly not testing for a range of pathogenic agents or not reporting them. Either way they are not compliant with the spirit of the OIE in containing and controlling listed disease agents in many cases.

The bait issue:

Using education as a control measure to 'train' recreational fishers to not use imported prawns as bait has been shown to have repeatedly failed. This should not, and given recent events (WSD incursion

2016), cannot continue to be seen nor used as a valid control method for entry level biosecurity. Given the extreme consequences for repeated and ongoing failures and high risk for repeated incursions, abrogation of the DAWR biosecurity obligations should not slide to the final potential entry point and given to the general public to effectively decide whether or not an exotic pathogen will or will not be introduced. By the departments own investigations, the recreational fishers found to have been using infected prawns in the Logan River in December 2016, did not heed warnings on packages (DAWR, 2017), and admitted to using these imported prawns on a number of prior occasions.

In the same way speeding signs do not deter all motorists from speeding despite speeding cameras, mobile radars and heavy fines. In that same vein, there are three groups of potential perpetrators, one group that can't read or write English, one group that think they know better, "if those prawns are ok to eat, of course there good enough for bait", and another group that simply don't care. The latter being the group responsible for instance of throwing rubbish out the windows of their cars. And when you think about the use of bait, putting them on a hook is one thing, disposing of them correctly at the end of a day's fishing is another. As it currently stands there is limited or no powers to enforce this position, so again this essentially remains a largely uncontrolled activity. When applied against the bait surveys performed, as shown below we can extrapolate how much potentially infected prawn materials find their way into Australian waterways, see Table 1 below (after Diggles, 2017). So, when previous bait use surveys are extrapolated against the latest bait use survey figures performed by the Queensland Government (2017), and given that prawns are one of, if not the most preferred bait used by fishers in estuaries, we find that up to 41.5 MT per year of prawns may find their way into the same environment (estuaries) where prawn farms operate.

Table 1: Temporal trends in use of supermarket green prawns as bait by recreational fishers in Australia using WSSV as an example of risk.

	A	B	C	D[+]	E	F	G[++]	H
Date	% of fishers using prawns sold as seafood as bait	Weight of seafood prawns used as bait (tonnes)	% of seafood prawns used as bait that are imported	Quantity of imported prawns used as bait	% increase in weight of imported prawns used as bait	% prevalence of WSSV in retail prawns	Quantity of WSSV +'ve prawns used as bait	% increase / decrease in WSSV +'ve bait by weight since 2002
2001/2002[1]	6%	50.5 t	4%	2,020 kg	-	50% (est)	1,010 kg	-
2006[2]	7.9% (+33%)	59.6 t (+18%)	11%	6,556 kg	324%	50% (est)	3,278 kg	+324%
2012 (est)	10.5% (est)	70.3 t (est)	18% (est)	12,654 kg	626%	5%*[4]	632.7 kg	-38%
2017 (est)	14% (est)	82.9 t (est)	25% (est)	20,725 kg	1,025%	5%*[4]	1,036 kg	+2.6%
2017[3] actual	>50%[3]	82.9 t (est)	>50%[5] (est)	>41,450 kg	>2,051%	50-83.6%[6]	>20,725 – 34,652 kg	> +2,051 to 3,430 %

* 5% prevalence based on "as designed" testing program from 2009 IRA (65 prawns per shipment sampled at border assuming 100% test sensitivity /specificity)[4]

[+] Quantity of imported prawns used as bait calculated D = B x (C/100) x 1000 [++] Weight of WSSV+tve prawns used as bait calculated G = D x (F/100)

(est) = 5-year growth estimates for years 2012 and 2017 based on linear extrapolation of % growth trends documented between surveys done in 2001 and 2006. Actual % increase in imported bait use may far exceed this[3] hence actual quantities now used (2017 actual) are likely to be underestimates.

[1] Kewagama Research (2002). National survey of bait and berley use by recreational fishers. Report to Biosecurity Australia, AFFA. December 2002. Kewagama Holdings, Pty. Ltd., Noosaville, Queensland, Australia. 137 pgs.

[2] Kewagama Research (2007). National survey of bait and berley use by recreational fishers: a follow-up survey focussing on prawns/shrimp. Report to: Biosecurity Australia, AFFA.

[3] Biosecurity QLD (2017). Online Survey. (Unpublished).

[4] Biosecurity Australia (2009). Generic Import Risk Analysis Report for Prawns and Prawn Products. Final Report. Biosecurity Australia, Canberra, Australia. 7 October 2009, 292 pgs.

[5] FRDC (2017). Australian Seafood Trade Database. http://frdc.com.au/trade/Pages/Crustacean-Full.aspx

[6] Future Fisheries Veterinary Service (2017). Assessing compliance and efficacy of import conditions for uncooked prawn in relation to White Spot Syndrome Virus (WSSV). FRDC Project 2016-066 Report to Australian Prawn farmers Association. 103 pgs.

There is good reason why the use of imported prawns as bait has continued to increase, with the advent of social media forums for recreational fisherman we have seen the mass communication of the price differential. Whereby, appropriately labelled bait prawns are consistently more expensive to purchase and visually inferior in quality, most often bait prawns are smaller and often degraded and freezer burnt as they do not have to meet human food safety nor organoleptic parameters. Typically bait prawns (head on) retail at around $35/Kg[1], $20/Kg[2] for whole Australian banana prawns with imported prawn meat typically around $32/Kg[3] (refer Figure 1). Previous bait use surveys as were used in the 2009 IRA failed to adequately consider the considerable leakage of human consumption prawns that might be used for bait, as well as not considering quality and price differentials that might influence this.

[1] Source Tuross Head Servo 16 April 2018 $7/200gm

[2] Regular "special" Coles and Woolworth's catalogues 2017/18

[3] Regular "special" Coles and Woolworths catalogues Jan-April 2018

The Australian Government as high up as the Inspector General of Biosecurity also failed to recognize the significant and ongoing risks for such leakage of bait use occurring. In the incident referred to as the 'Dunn Incident', whereby a number of container shipments of imported commodity prawns which failed import testing for WSSV were accidentally released into the supply chain, but subsequently not recalled, because the findings of the then Interim Inspector General of Biosecurity found that; 'human error and/or oversight was the most likely cause that led to prawns being released', and that 'under existing clearance arrangements, a similar occurrence could occur again', he went on to find; 'a range of measures **could** be implemented to improve processes and reduce the risk of similar errors occurring again in the future'. He goes onto state 'there is an **extremely** low likelihood of the raw peeled prawns entering high risk pathways and a **negligible** likelihood of them causing WSSV to establish in Australia (DAWR, 2010).

These findings were in direct contradiction to the findings of Biosecurity Australia from a year earlier when in the final report of the Generic Import Risk Analysis for Prawns and Prawn products (DAWR, 2009). Which states that, 'The LR (likelihood of release) of WSSV via the unrestricted importation of non-viable, farm sourced, frozen, uncooked whole prawns intended for human consumption is estimated to be **high**'. And, given 'infectious material has been detected in Australia in imported uncooked prawns intended for human consumption' (Biosecurity Australia, 2009). The report also concedes that, 'Given this, WSSV in uncooked prawns or associated wastes is likely to remain viable at the point of exposure, be it susceptible animals in hatcheries, farms or the wild,' (Biosecurity Australia, 2009). In the conclusions of the report it goes on to state, 'use of imported prawns as bait for recreational fishing in prawn farm inlet channels (resulting in infected prawn tissues entering ponds through intake waters), are potentially significant WSSV exposure pathways,' and that, 'bait use represents a significant pathway by which wild crustaceans could become exposed to WSSV' (Biosecurity Australia, 2009).

Given the recent incursion and ongoing environmental persistence of the virus in Moreton Bay (Biosecurity QLD, 2018). The ongoing risk and consequences appear to have been grossly under-estimated, and in the report of 2009, states, 'In the event that one or more index cases were to occur, virus establishment or spread to other susceptible animals would be unlikely in the case of wild crustaceans, because infected crustaceans (particularly those clinically infected) are likely to be predated upon by non-susceptible finfish. The same logic was used by the department during a 2017

Senate Estimates hearing (Chapman, per obs, 2017, Senate Estimates, 2017), citing that prawns used for bait were not a significant risk because fishing activities targeted finfish which were not susceptible to WSSV. With international precedence and recent incursion and environmental testing to provide guidance it appears this ongoing risk and consequence has been misappropriated.

Since introduction of WSSV into Australia, much effort has been made to educate consumers not to dispose of seafood into waterways and alert recreational anglers not to use supermarket products as bait. However, the correct way to control risk along a supply chain is to apply appropriate mitigation at appropriate critical control points. It makes no sense to try to apply risk mitigation after the retail sale is made, and to rely on people being educated and "doing the right thing", as after the point of sale the routes of entry to high risk pathways are too abundant and widely dispersed, making effective enforcement impossible. Education of anglers and consumers has been considered to be one way of potentially mitigating the risk of introduction of diseases such as WSSV via the bait and burley pathway. However, it is always difficult to engage all recreational fishers in educational campaigns and there is evidence that compliance will decline over time unless the educational message is followed up with strong enforcement. But it is impossible to enforce some acts, such as someone “feeding the fish” or “feeding the crabs” with imported seafood in a backyard BBQ held on a waterway or houseboat. And without adequate enforcement, there is no incentive for people to educate themselves or "do the right thing". Clearly the only proper way to control risk in this supply chain is either pre-border, or at the border. Once these products clear quarantine, and enter the retail supply chain, all control of the end use is lost. Recent (March 2018) observations from fisheries officers in NSW and other states continue to find people using imported uncooked prawns as bait, demonstrating that efforts to educate anglers and get them to heed labelling on imported products that say they are “not to be used as bait or burley” are simply not effective. Reliance on consumers abiding by food labels for national biosecurity is not tolerated in terrestrial livestock industries in Australia (Australian Pork 2017), so the question must be asked, why is it being forced upon the seafood industry?

As a final observation of the effectiveness (or lack thereof) of current end use import conditions, despite all the effort put into education programs with anglers and consumers to try to prevent disease spread from imported seafood products, what is often not talked about in risk analyses are the real risks of deliberate introductions and even industrial sabotage (Jones 2012, Scott-Orr et al. 2017). Not everyone wants to "do the right thing", and in the real world, there is an unfortunate but real risk of industrial sabotage of our local seafood production industries how significant a threat to Australia's food security nobody knows, but so long as infective materials are readily available, this remains a risk. The findings of Operation Cattai demonstrate that some people are willing to deliberately break the law, hence the risk of industrial sabotage must also be considered real, providing yet another reason why strong border controls are necessary. The revised IRA must therefore deliver safe prawn products using sanitary arrangements free from loopholes that can be exploited to enhance the pecuniary interests of unscrupulous importers, even where a minority of these exist.

There appears to be no effective measures being taken to prevent cross contamination between loose and defrosted prawns sold loose from the deli (see Figure 2), with deli staff often unbale to see, understand and enforce separation and labelling standards. In fact, to this day bait freezers are often located within the deli section at supermarkets (see Figure 3), reinforcing the disconnect in consumer understanding between food grade and bait products. Some imported frozen pre-packaged prawns have labelling indicating they should not be used as bait. Labelling is invariably though in small writing on the back of the packet and usually only in one language, English.

Figure 2: Assorted uncooked imported prawns being sold at supermarkets on the Gold Coast in December 2016. At none of the dozens of supermarkets in SE QLD visited were there any signs or information informing consumers not to use these products as bait or burley.

Figure 3: In some SE QLD supermarkets examined, bait freezers (arrow) were located within the seafood section, encouraging consumers to relate the two together.

5. Emerging disease risks not currently considered under existing IRA:

The 2009 prawn IRA is now well out of date. New technical information is now available on risks related of not only WSSV, but a range other emerging (post-2009) pathogens (Table 2) in imported prawn commodities (see papers by Overstreet et al. 2009, Ma et al. 2009, Stentiford et al. 2009, Oidtmann and Stentiford 2011, Reddy et al. 2011a, 2011b, Bateman et al. 2012, Stentiford et al. 2012, Stentiford 2012, Jones 2012, Shields 2012, Behringer 2012, Lightner et al. 2012, Tran et al. 2013a, 2013b, Reddy et al. 2013, Nunan et al. 2014, De La Pena et al. 2015, Cowley et al. 2015, Li et al. 2016, Thitamadee et al. 2016, Bateman and Stentiford 2017, Qiu et al. 2017, amongst many others).

The reason why Australia has not yet succumbed to some of these new pathogens may be pure luck. For example, the toxin related components of the bacterium that causes Acute Hepatopancreatic Necrosis Disease (AHPND) appear to be inactivated by freezing, which is fortunate, otherwise Australia could be included in the estimated $5 billion US annual global losses experienced by overseas prawn producers due to AHPND (Tran et al. 2013a, 2013b, Chamberlain 2013, Thitamadee et al. 2016). While freezing may stop transmission of AHPND, it may not prevent release of the genes responsible for toxin formation, leaving the door open for introduction of this disease into Australia. New pathogens continue to regularly emerge in intensive prawn farming, and many of those nations are our trading partners, it is well known that many important pathogens of crustaceans were spread widely before their cause was identified and diagnostic tests became available (Lightner 1999, Jones 2012). If pathogen testing programs are chosen instead of cooking which is not recommended), to keep risks within the ALOP, the import risk assessments underpinning Australia's sanitary arrangements need to be updated very regularly, probably every year or 2 years given the high rate of emergence of new pathogens in cultured prawns (Table 2).

While a risk analysis has been conducted to assess the risk of domestic bait translocation (Diggles 2011), its terms of reference meant that it did not adequately consider risks associated with use of imported fish or shellfish products as bait. Any risks of use of imported products via the bait and burley pathway were supposed to be considered and mitigated in the appropriate IRA's for the imported commodities. It appears when that is not carried out effectively, these risks "fall through the cracks" and Australia is left vulnerable to aquatic disease incursions. Given the scale of the biosecurity breaches that have been recently revealed at the international border (Scott-Orr et al. 2017), and the potentially severe consequences of introduction of exotic diseases to Australia's environment, fisheries and aquaculture industries, and food security, it is clear that the biosecurity controls imposed on the importation of uncooked prawns and prawn meat into Australia have been both inappropriate and ineffective. A comprehensive review and full update of the IRAs for not only prawns, but many other seafood products, is clearly required to reduce risks to within the ALOP.

Table 2: List of some of the pathogens of prawns that were not included in, or have emerged since the 2009 Import Risk Assessment (data collated only from Thitamadee et al. 2016, Li et al. 2016, Bateman and Stentiford 2017, Qiu et al. 2017 and is not an exhaustive list).

Pathogen name	Date emerged	Pathogen agent	Mitigated by existing sanitary measures?
AHPND	2009 (China)	Bacterium w. toxic plasmid	Yes*
Secret Death Disease	?	Possibly AHPND or mixed aetiology	?
Empty Stomach Disease	?	?	?
Aggregated transformed microvilli (ATM)	2009 (China)	Vermiform gregarine-like bodies	?
Covert Mortality Disease (CMD)	2009 (China)	Nodavirus	?
Hepatopancreatic microsporidiosis	2009 (Thailand)	Microsporidian (*Enterocytozoon hepatopenaei*)	?
Hepatopancreatic haplosporidosis	2009 (Indonesia)	Unnamed haplosporidian	?
New strains of YHD	2013 (China)	*Okavirus*	?
Shrimp hemocyte iridescent virus *(SHIV)*	2017 (China)	Iridovirus	?
Pandalus montagui bacilliform virus	2007 (North Sea)	*Nudivirus*	?

* Existing sanitary measures may prevent direct transmission of AHPND but may not prevent release and establishment of the plasmids and genes responsible for toxin formation.

6. Review of Senate Committee report Recommendations; Biosecurity risks associated with the importation of seafood and seafood products:

The Australian government has recently provided an updated set of recommendations from the Senate Enquiry. Firstly, given the systemic failure of import conditions and the inability of these to protect Australia's freedom from WSSV we would question how seriously the DAWR takes the recent incursion, particularly given the historical context of this as an ongoing issue. None of the nine recommendations put forward provide a satisfactory level of ongoing phytosanitary protection in line with the ALOP's afforded to other industries. The litmus test for these recommendations needs to be, had these been in place prior to the summer of 2016, would they have circumvented the subsequent WSD incursion. The answer to that is emphatic no.

Of the nine recommendations, **recommendation 1** speaks to the need for meeting the departments general biosecurity obligations in alerting relevant jurisdictions to heightened disease risks, which go without saying and should be a basic principal in meeting ones' general biosecurity obligations. This may have helped manage the incursion of 2016 but in no way mitigates the underlying risk.

Recommendation 2 talks about providing amendments to extend the powers of the Biosecurity Act 2015. Our association would argue that based on evidence of systemic failings of the current system for managing over many years in relation to the importation of raw prawns, as shown by the 'Dunn Incident' of 2010 and 'Operation Cattai' (2016/17), extension of powers alone, whatever those powers may be, and in the absence of effective biosecurity control measures (such as cooking) do not alone guarantee the high levels of protection required to protect from exotic disease incursion.

Recommendation 3 talks about the need for improved testing and harmonisation of testing with our international trading partners. Whilst this may be aspirational, we know through the Prawn Liaison officer reports following the resumption of trade that one of the new conditions was that prawn shipments be pre-tested prior to importation by the exporting countries competent authority. And, we know that through that testing, a number of shipments failed from specific countries (Vietnam and China). So again, this as a stand-alone measure is fraught with inherent dangers and conflicts of interests. APFA would ask the question, what happens if there are repeated failures from the same country? How in good faith can Australia rely on these competent authorities to protect Australia's biosecurity interests. Particularly when it is in the interests of those countries, as well as for the importers to see certain pathogens be listed as endemic and no longer an impediment to their trade. We ask DAWR for a 'three-strikes and you're out' policy, both for seafood importers and for the country of origin. If for instance, any three (3) shipments from a certain country fail testing at the border in Australia following specific pathogen freedom certification in a given period (any 5-year period) that this country be disallowed from continuing trade in that commodity with Australia. This is particularly pertinent given that under OIE exporting country guidelines (Sections 8-11 OIE Aquatic Animal Health Code, 2018(a)) it is a requirement for exporting countries to notify importing countries of heightened risks of exotic pathogens, and is up to the importing country to source prawns from countries known to be free from certain pathogens where risks deem this necessary.

Recommendation 4 & 5, these recommendations talk about the need to educate and enforce the use of imported raw prawns as bait. As already mentioned throughout this report, APFA believe that is inappropriate to abrogate such important matters as biosecurity through to the general public, particularly when there is such an overwhelming body of evidence to show the limitations of this through repeated failings. Any reasonable and pragmatic person would realise that following a disease

incursion such as WSD (2016), when a body of evidence is presented for a specific pathway, that the majority of effort for closing a specific pathway needs to be apportioned to closing that pathway. Educating the general public is clearly an inappropriate and disproportionate response under the circumstances and given the overwhelming body of evidence to support the use of raw prawns as a likely incursion pathway and ongoing high risk.

The only real way to close this pathway is to only allow cooked prawns to enter the country, these would neither be as attractive as bait as with raw prawns, nor represent a significant biosecurity risk following the application of a recognised and validated control measure. Remembering that bait use is only one way for infected prawns to enter Australia's aquatic ecosystems and aquaculture facilities. With the avoidance of mistakes in mind, such as the 'Darwin Incident' (2000), where honest mistakes can still be made with grave consequences if infected materials are allowed to be within our borders, accidents can and will happen.

Recommendation 6 speaks for the need for an IRA review. Well, this is a mandatory requirement following an exotic disease incursion. We do hope that the department remains open minded and committed to implementing real and meaningful change, through the submissions provided. Because the recommendations of the Senate Committee do not provide meaningful control mechanisms that would subvert a subsequent incursion. The disappointment of the APFA when DAWR announced the resumption of imports without the formality of a thorough IRA review was palpable. How in good faith can the DAWR continue with a system that has repeatedly failed? What will happen if and when we again find WSSV prawns on our supermarket shelves? How can DAWR be satisfied that someone sitting on their houseboat in the Hinchinbrook Channel, for example (where the largest cluster of prawn farms are located) with packages of raw imported prawns aboard, meters away from disaster should these prawns not get eaten during the trip and disposed of 'over the side'?

Recommendation 7 is in relation to resourcing. We also find that resourcing was an issue mentioned during Operation Cattai as well as in the Senate Enquiry as a reason why due processes were not being followed by departmental staff, which may have been a factor in allowing some dishonest importers to exploit the system. We also note that resourcing would also be required to provide education and enforcement as are mentioned at recommendation 4 & 5 above. APFA would argue that one of the main reasons why ongoing systemic failures have occurred in relation to the importation of raw prawns, is that the system is inherently complex and has been open to ongoing abuse. APFA would like to see the import conditions streamlined and simplified where complex testing regimes, policing of policies, education, etc are no longer required because pragmatic and effective control mechanisms such as cooking are put in place.

Recommendation 8, APFA would concur with this recommendation of having a scientific consultation group. It is important, given the expertise of some of our members and service providers that APFA gets a seat at the table along with internationally recognised experts. I know during the first IRA review of 2006/7, that the expertise of Professor Donald Lightner was sought by the Australian government, as in the quote in the introduction. Had Prof. Lightner's peer reviewed science been taken heed of, showing direct pathways through commodity prawns to bait causing catastrophic exotic disease incursions. The outcome for the future of Australia's prawn farming industry would be looking much brighter than it now does.

7. Assessment of ongoing risk factors with regards to the importation of prawns.

The 2009 IRA correctly identified the risk of WSSV as *high*, however the assessment used to reach this conclusion underestimated several key measures in the overall risk matrix, and subsequently recommended risk mitigation strategies that were not of a strong enough level to prevent WSSV incursion and establishment, ultimately failing local industry and the environment.

- The first error in the risk analysis, which with learning from the recent incursion should now be addressed, is that only one outbreak scenario should be considered – which was *outbreak scenario one* from the 2009 IRA – the impacts and 'likely consequences' of establishment and spread. The second scenario – that the agent will not establish has been proven to be irrelevant.
- The 2009 IRA assumed only small quantities (<5%) of WSSV infected prawns would slip through, with the sampling regime being designed accordingly. This has turned out not to be the case and therefore the wrong sampling regime is being applied.
- It was assumed that all raw prawns would eventually be cooked and not diverted through retail sales to bait use, evidence does not support this as outlined in the reports of Diggles and Landos (2017)

Within scenario one, several other risk levels were underestimated;

- Assigning a low risk for potential exposure to farms (due to underestimating the risk associated with product being used as bait, and virulence of a peeled prawn product).
- Assigning a low risk to the likely consequences of establishment and impact of exposure to wild crustaceans (as evidenced by Moreton Bay establishment)
- Assessing the PLES of farm/hatchery/wild crustaceans as Moderate/Moderate/Very Low. The evidence from the recent outbreak would suggest all three should be high.

The Biosecurity Import Risk Assessment Guidelines (2016) (BIRA), provides an outline of the Biosecurity Risk Assessment processes. The guidelines indicate;

> *"The review process will be science and evidence based and will consider the biosecurity risks associated with the importation (from all countries) of cooked and uncooked prawns and prawn products for human consumption and recommend appropriate import conditions to manage the biosecurity risks."* The biosecurity risks to be considered include those that related to risks to agricultural production, the environment and human health.

Determinations considered in the IRA processes includes the expression of **risk** based on:

- the considerations of likelihood of presence of targeted significant pathogens,
- likelihood of those agents being viable and being exposed to susceptible Australian populations;
- followed by considerations of the consequences of the exposure to the targeted pathogens.

Following a determination of the level of medium or higher risk, consideration is directed towards policy and practises that can reduce the risk to "Acceptable Level of Risk" (ALOR). *"Australia's ALOP is expressly aimed at reducing risk to a very low level, but not to zero"* . Typically, in an effort to prevent the restriction of international trade, processes to obtain an ALOR of import of material from countries which are known to harbour targeted high risk exotic pathogens involve Sanitary and Phytosanitary (SPS) measures.

In line with the BIRA this submission to the review of the IRA for prawn imports makes reference to consideration of the following within the IRA:

1. Likelihood of Exposure (LE)
2. Likelihood of Release (LRE)
3. Partial Likelihood of Establishment or Spread (PLES)
4. Acceptable Level of Risk Protection (ALOP)
5. Sanitary and Photosanitary Measures (SPS)

IRA 2009: LE, LRE and PLES and ALOP

With reference to several pathogens considered exotic and significant threats to prawn production at the time, the IRA 2006 reached the conclusion that:

> "The unrestricted risk associated with **WSSV** is determined (by combining the three partial annual risks associated with each exposure group) **to be *high***. The unrestricted risk exceeds Australia's ALOP and, therefore, risk management is deemed necessary.
>
> The unrestricted risk associated with **TSV** is determined (by combining the three partial annual risks associated with each exposure group) to be ***low*.** The unrestricted risk exceeds Australia's ALOP and, therefore, risk management is deemed necessary.
>
> The unrestricted risk associated with **YHV** is determined (by combining the three partial annual risks associated with each exposure group) to be ***high*.** The unrestricted risk exceeds Australia's ALOP and, therefore, risk management is deemed necessary.
>
> The unrestricted risk associated with **NHPB** is determined (by combining the three partial annual risks associated with each exposure group) to be ***negligible* for *frozen*** product. As the unrestricted risk estimate for frozen product achieves Australia's ALOP, no risk management is considered necessary.
>
> The unrestricted risk associated with **NHPB** is determined (by combining the three partial annual risks associated with each exposure group) to be ***moderate* for *chilled*** product. The unrestricted risk for chilled product exceeds Australia's ALOP and, therefore, risk management is deemed necessary.

Evidence has been presented to suggest the risks were significantly underestimated. However, considering the 2006 IRA reached the conclusion that the risk of pathogen exposure and introduction was above thresholds required to initiate SPS there is little to be gained by further discussion on the presented risk determinations.

Aside from the underestimation of risk, with reference to LE, LRE and PLES of the agents considered in the IRA, since 2006, other pathogens of significant impact on prawn health and culture have emerged that should be considered. Determining additional risks which should be considered in an RA are difficult because:

- With the recent increased frequency of emergence, not all significant pathogens have reached the status of OIE notifiable.
- Some diseases such as Monodon Slow Growth syndrome have undetermined aetiologies or dubious disease definitions.
- Newly recognised risks to human health such as the prevalence of antibiotic residues and the world-wide transfer of bacterial species with antimicrobial resistant genes are not well defined by the OIE or WTO. As both are emerging areas of study there is an absence of a large body of scientific evidence on which to base/support an assessment.

Despite the present state of ambiguity, effort should be made to ensure the RA is addressing current risks to both Australian industry, environment and human health. With respect to risks to industry, based on their economic impact to *P.monodon* farming systems, a review of the current lists of concerns within the IRA should be considered and Acute Hepatopancreatic Necrosis Disease (AHPND), Enterocytozoan Hepatopenaeidae (EHP) and Monodon Slow Growth syndrome (MSGS) amongst others, be considered for inclusion as per Table 2 in this submission.

Whilst the APFA does not claim to possess any scientific expertise in antimicrobial resistance, the Review Committee is referred to the results of the studies of Landos et al. for the presence of antibiotic and antimicrobial resistance genes in imported prawn product for evidence to justify an expansion of the items reviewed as "risks" within the current IRA and suggests experts in antibiotic residues and antimicrobial resistance genes should be included within the Scientific Expert Committee.

Acceptable Level of Protection (ALOP):

The APFA agrees with the strategy that "Australia's ALOP is aimed at reducing risk to a very low level, but not to zero".

Sanitary and Phytosanitary Measures (SPS)

The IRA 2006 proposed the following options as SPS measures which would achieve ALOP:

"The IRA team considers that the following risk management measures would each reduce the overall WSSV risk from *high* to at least *very low*, thereby achieving Australia's ALOP.

- Option 1 (country or zone freedom).
- Option 2 (cooking) would be expected to reduce the likelihoods of WSSV entry and exposure for exposure groups 1 and 2 to *negligible* and that of exposure group 3 to at least *extremely low* (Table 15.1).
- Option 4 (high level of processing) would be expected to reduce the likelihood of WSSV entry and exposure for exposure groups 1 and 2 to *negligible* and that of exposure group 3 to at least *very low* (Table 15.1).
- Options 3 (testing) and 8 (head/shell removal) would in combination be expected to reduce the likelihoods of WSSV entry and exposure for exposure groups 1 and 2 to *extremely low* and that of exposure group 3 to at least *very low* (Table 15.1)."

Options 1, 4 and 3 were adopted.

The APFA refers to the report of Landos as evidence that the SPS employed are not sufficient to reduce risk to a very low level. Landos (2017) detected WSSV in very high prevalence (74-86% positives) in imported raw prawns from a wide range of commercial outlets in Australia in 2017. The APFA proposes the significant economic impact inflicted on the QLD and Australian Governments and the prawn farmers and wild fishers in the SE QLD region and the continued risk of repeated incidents necessitates a review of the SPS arrangements to ensure further incidents are not repeated. It should be noted that at Option 8 (head and shell removal), was seen as part of a control measure in mitigating WSSV risk. It is the authors belief that this strategy was originally put forward as a generic measure in controlling the risk of other viral agents that typically infect organs contained within the cephalothorax, such as the lymphoid organ and hepatopancreas. As evidenced in the paper by Oidtmann and Stentiford (2011), WSSV is more or less uniformly distributed across a number of tissue types, manifesting in cuticular epithelium in particular. And so, head and/or shell removal does not alter overall WSSV loading on a per weight basis, and may actually increase risk when used as bait, increasing overall exposure risk.

APFA still endorses cooking as the only viable way to manage the biosecurity risks associated with the importation of raw prawn and prawn products. The risk assessment matrix from the 2009 IRA remains valid, when coupled with strong, seals intact border inspection regimes. This would be an effective tool in reaching Australia's ALOP.

Measure	**WSSV**			
	LR	**PLE (F)**	**PLE (H)**	**PLE (W)**
Unrestricted likelihood value	H	H	H	H
Cooking	VL	N	N	N
PALEE		N	N	N
Consequences		H	H	H
Risk		N	N	N
Overall risk	NEGLIGBLE			

Testing

Original 2009 Assessment;

Measure	**WSSV**			
	LR	**PLE (F)**	**PLE (H)**	**PLE (W)**
Testing	VL	L	H	H
PALEE		VL	VL	VL
Consequences		H	H	L
Risk		L	L	N
Overall risk	LOW			

- Pre-border testing failures (by overseas Competent Authorities) – as advised by DAWR
- Adequate resourcing – inherent complexity (DAWR, 2017)
- Despite biosecurity protocols requiring testing of 100% of shipments imported into Australia, which should have resulted in no more than 5% prevalence of prawns in the Australian marketplace, large quantities of WSSV-infected frozen green prawns were transiting through border quarantine resulting in >50-80+% prevalence of WSSV in imported green prawns sold at the retail counter at supermarkets in Australia in November/December 2016.

8. Conclusions and Recommendations:

At a domestic level, within the current white spot control area, the risk of further establishment of WSSV is being managed by ensuring all product in the affected zone is cooked. We are not testing product, or highly processing it, as we (APFA) and the Queensland Government believe cooking is the only legitimate way to manage the risk adequately.

Having been involved with the APFA and the Australian prawn farming industry for around 30 years and being involved with previous IRA reviews and more recently with writing two separate submissions to the Senate Enquiry, I can say that unlike the terms of reference to this IRA review which relies solely on evidence and science, clearly there are also political and trading issues at play here. We know this with some certainty, as during the period in early 2017 while the importation of raw prawns into Australia was under suspension, several countries were applying pressure at the WTO and potentially looking at the possibility for not importing certain goods from Australia in response.

Some months ago, during the suspension of trade, cattle exporters received advice from the Federal Government to "work on contingencies" in case there was a trade disruption with Vietnam, Australia's second-biggest customer for live cattle. The concern was Vietnam, which exports about $55 million of prawn product to Australia each year, might retaliate because of Australia's raw prawn ban and enforce some of its own trade restrictions on cattle.

There is an obvious and apparent need to import prawns and other seafood into our country given we import some 70% of what is consumed here, however we rely heavily on the Federal Government to get the balance right in managing risks and protecting emerging industries that didn't get a seat at the free trade table. The importers will argue that there is a demand for raw prawns that is not being met through domestic production (wild caught and aquaculture) and use this argument to test the boundaries in terms of what is or isn't acceptable in terms of phytosanitary control measures. It is critical throughout this whole process, and as stated in the 2018 IGB report (Scott-Or et.al, 2017), the clients for Australia's biosecurity risk management team needs to be recognised as the Australian community, industry and our environment. DAWR needs to closely consider this as being the manager of risk rather than the creator of risk. It was noted in the IGB report (Scott-Or, et.al, 2017), that importers and operators of cold stores were seen as trusted clients, with the department striving to complete prescribed inspections quickly to save importers money and facilitate trade. This adversarial approach clearly does not meet the requirement for a sound biosecurity system.

We also note the similarities between the ongoing importation of raw prawns and WSD incursion, and the importation of bananas and the recent incursion of Panama disease. If Australian biosecurity matters continue to be taken out of the realm of science and into the realm of politics and free trade, one can only assume other industries will inevitably fall victim to exotic diseases. Once risk assessments delve into attempts to control essentially uncontrollable agents (bacteria, fungi and virus) given the extreme consequences and adaptive environmental pathogenicity of such agents, they are destined to fail. IRA's must not be allowed to be continued to be used in a proxy manner to seem to address biosecurity matters when in fact their intended purpose was facilitation of trade.

APFA would argue that given the catastrophic results of exotic disease incursions and the poor prospects for eradication once disease agents are established in Australian waters, a market need alone can never be allowed to outweigh obvious and apparent biosecurity risks. In getting the balance right, APFA believes that in banning all raw imports into Australia, and only allowing cooked and adequately processed products in, that given time and market forces that a re-balancing in commodity types, trading and production would occur. In other words, this would provide an ongoing opportunity

for prawn farming enterprises to fill that market need and our industry would grow in response to that need, a win-win for Australia.

Following the application of a validated control measure, that of cooking, a greatly simplified and more manageable import regime for prawns as a commodity will result. No longer open to the abuse of some importers, no longer open to the vagaries of under-resourcing, no longer would government agencies consider the abrogation of responsibility for such important matters as Australian biosecurity to the general public and the ongoing education programs this would entail. And, no longer will Australia be at such significant and ongoing risk of incursion due to emerging exotic diseases.

The 2009 prawn IRA is now well out of date. New sanitary information is now available on risks related to not only WSSV, but many other emerging (post-2009) pathogens (Table 2) in imported prawn commodities. Under existing conditions of entry, it is impossible to classify the potential of entry and spread of exotic prawn diseases as any lower than moderate and given recent events should be classified as high potential.

Similarly, the consequences of pest entry and spread must be classified as at high considering recent catastrophic events and poor eradication potential. APFA believes that once these and other risk factors are applied at the risk matrix level, this will underscore the need for increased stringency of mitigation measures to meet Australia's ALOP. These measures should align across industries as they were intended to meet those applied to other more established commodity traded goods such as chicken, pork and others.

As evidenced throughout this report, if the DAWR continues to stand by an importation system that has failed on so many previous occasions, it is now probably difficult to actually count, then it is inevitable that we will see in the future, further exotic disease incursions through a variety of potential pathways related to commodity trading. As this report readies for final submission we now find through APFA's retail supply chain testing evidence of further positive detections for frozen raw prawns in supermarkets (Landos, pers comm, 2018), whereby 1/18 supermarket samples from supermarkets in South East Queensland area turned up positive for WSSV. These samples have been confirmed as positive having been tested by a NATA lab and were from post-resumption of imports samples as evidenced by use-by-dates and other. The ongoing position of the DAWR must now be viewed as untenable and immediate action to suspend all raw prawns must now be taken by the department. A subsequent disease incursion for WSSV or other exotic following this IRA review would need to be taken very seriously, given the gravity and historical context of the evidence now at hand.

Cooking is the only sanitary measure which could readily achieve an acceptable reduction in risk associated with the import of prawn commodities into Australia. A validated temperature and time protocol needs to be established to show the level of cooking demanded meets the phytosanitary control for deactivation of a range of pathogens as per the recommendation of the IGB report (Scott-Or et.al, 2017). And, further measures, as recommended in the 2017 IGB Report (Scott-Orr et.al, 2017), whereby containers of cooked prawns are periodically checked as a matter of routine, along with a post border surveillance program throughout various points of the supply chain needs to be conducted to ensure importers do not find new routes to evade detection for raw prawns carrying exotic disease agents.

- All imported prawn and prawn products must be cooked on arrival to a core temperature level of no less than 70°C (or highly processed e.g. prawn spring roll, samosa etc) - 100% of all

cooked imports should be subject to seals intact inspection to ensure no raw product is included (substituted).

- Random sampling of seals intact mixed seafood containers should occur to ensure Seafood Importers are not attempting to bring raw prawn products in alternative seafood packaging
- Heavy on-the-spot penalties should be applied to importers caught deliberately trying to bring raw prawn products into Australia

WHY?

- Clear evidence, that **even post the 2017 ban** with the resumption of imports, importers continued to try and circumvent the implemented border controls through abusing the allowance of breaded and crumbed product, and "blanched" prawns (IGB, 2018).
- Post entry testing of product would no longer be required.
- The requirements for inspection staff to perform their role effectively, within current resourcing structures, and at manageable levels of training (being able to distinguish a cooked and raw prawn) would be achieved.
- The other likely recommended risk management measures mentioned throughout our submission are all highly unlikely to give real protection, and are easily open to abuse, and are in no way enforceable (e.g. bait education, fishing bans etc).
- The combination of Country of Origin Labelling, and respect for Australian Law would guarantee that the major supermarkets could not display peeled imported raw prawn cutlets and meat for sale, which would be a major disincentive for importing companies to continuously try and find ways to circumvent Australia's biosecurity controls.

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