

Chapter 4

WSSV and testing of prawn imports

4.1 This chapter focuses on the biosecurity testing regime. It considers testing undertaken prior to the outbreak of WSD as well as the enhanced testing system imposed following the detection of WSD.

Testing for WSSV

4.2 While a number of tests are available for detecting WSSV, in most cases various types of polymerase chain reaction (PCR) testing is recommended, to the standards developed by the OIE. However, PCR testing is unable to distinguish between infectious and non-infectious virus.¹

4.3 Under the 2009 IRA, it was determined that PCR testing on prawns for WSSV, as determined under the OIE guidelines, would be required to provide 95 per cent confidence of detecting the virus, if it was present at a prevalence of five per cent. The IRA therefore provided that some WSSV may be in Australia, but at a sufficiently low prevalence. The IRA went on to provide that:

The level of protection provided by testing would depend on the availability of effective tests (including with respect to their sensitivity and commercial availability, as well as sampling and other operational procedures). The option of testing off-shore would need to be considered on a case-by-case basis...

...Given uncertainty about the sensitivity of available tests for prawn pathogens, this option alone is not expected to reduce the likelihoods of entry and exposure sufficiently to reduce the overall risk to an acceptable level, but may be effective in combination with other measures.²

4.4 According to DAWR:

WSSV testing was an import permit condition; it is the responsibility of importers to meet import permit conditions. Biosecurity officers obtain samples of imported prawns and direct the samples for testing. Importers would choose one of the accredited laboratories for testing. Importers were responsible for testing expenses.³

4.5 DAWR does not undertake its own WSSV testing, instead approving laboratories for 'testing imported aquatic animals for biosecurity purposes according to established policy'. The three laboratories approved by DAWR to test for WSSV in imported prawns are AgriGen, Advanced Analytical Australia (AAA) and the Elizabeth Macarthur Agricultural Institute (EMAI), run by the NSW Department of

1 Department of Agriculture and Water Resources, *Submission 9*, p. 12.

2 Biosecurity Australia, *Generic Import Risk Analysis Report for Prawns and Prawn Products*, October 2009, p. 181.

3 Department of Agriculture and Water Resources, *Submission 9*, pp. 12-13.

Primary Industries. Prior to the current WSD outbreak, test results were provided within three to five days.⁴

4.6 Under the conditions prior to the WSD outbreak, if an approved laboratory returned a negative WSSV test result, the prawn product could be released from biosecurity control. If the test results were positive for WSSV, the importer was required to export or destroy the consignment.⁵

Enhanced testing regime

4.7 The Australian Animal Health Laboratory (AAHL), operated by the CSIRO, undertakes tests in line with OIE standards, but has developed additional WSSV testing processes. These include an additional real time PCR test.⁶ The two AAHL tests approach the virus differently:

There is a test that picks up a fragment of DNA. The OIE test and the test that AAHL have developed pick up different fragments of DNA, so they are testing different parts of the virus, because it is testing the DNA of the virus. It is not isolating the whole virus; it just picks up a fragment. That is why there are two different tests. They are both testing for white spot syndrome virus, but they target a different part of the genome. That is why you can have different results from the test.⁷

4.8 AAHL commenced using this second test under an enhanced testing regime, following the implementation of the import suspension of raw prawns and prawn product in January 2017. DAWR was unaware of any other laboratories completing the same tests as AAHL, and therefore was unaware of other laboratories that could test AAHL processes.⁸

4.9 DAWR confirmed with the committee that following the WSD outbreak, any negative test results from AAA, AgriGen or EMAI would result in automatic retesting at AAHL. DAWR considered that this was 'a very conservative approach', relying on AAHL as the 'premier lab in Australia for animal health issues'. DAWR noted that prior to the release of any uncooked product for sale, a 'very high level of confidence' was required that the prawns were white spot free.⁹

4.10 The Fisheries Research and Development Corporation (FRDC) advised the legislation committee that through its testing for WSSV, it was taking samples to try and help determine the country of origin of the virus that appeared in the Logan River.

4 Department of Agriculture and Water Resources, *Submission 9*, pp. 12, 24.

5 Department of Agriculture and Water Resources, *Submission 9*, p. 24.

6 Department of Agriculture and Water Resources, *Submission 9*, p. 13.

7 Dr Robyn Martin, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 5.

8 *Committee Hansard*, 28 March 2017, p. 9.

9 Mr Tim Chapman, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, pp. 4-5.

This would provide a better understanding of the outbreak, and help eradication and prevention programs.¹⁰

Testing results

Tolerated levels of white spot

4.11 The IRA provides that a sampling regimen should provide 95 per cent confidence of detecting a disease agent, if it is present at a prevalence of 5 per cent.¹¹ The department confirmed to the committee that, under these conditions, it was 'always aware that white spot positive prawns would approach the border' and could pass through biosecurity controls, 'notwithstanding the 100 per cent testing requirement'.¹²

4.12 DAWR argued that these testing parameters were intended to be supplemented by other biosecurity measures, including peeling or cooking the prawns. Dr Andrew Cupit, Assistant Secretary in the Biosecurity Animal Division of DAWR noted that testing was just one way to measure the risk of disease, and while testing can detect viral particles, these may not necessarily be infective and do not necessarily indicate an infection or outbreak will occur.¹³

Initial white spot detection

4.13 On 24 June 2016 and as part of its ongoing investigations into non-compliant importers, the department first received positive test results for WSD from retail outlets. DAWR commenced work to determine how and why this was occurring, in light of the 100 per cent testing requirement at the border, and how to stop non-compliant behaviour (through Operation Cattai).¹⁴

4.14 During the period between August and December 2016, there were elevated numbers of positive test results for WSD.¹⁵

4.15 On 22 November 2016, Biosecurity Queensland was first made aware of biosecurity issues on a prawn farm. Samples were taken on 28 November 2016 from that farm and tested by AAHL.¹⁶

10 Dr Patrick Hone, Fisheries Research and Development Corporation, *Committee Hansard*, 28 February 2017, p. 35.

11 Biosecurity Australia, *Generic Import Risk Analysis Report for Prawns and Prawn Products*, October 2009, p. 191.

12 Mr Tim Chapman, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, p. 126.

13 Dr Andrew Cupit, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, pp. 153-154.

14 Mr Tim Chapman, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, p. 148.

15 *Estimates Hansard*, 28 February 2017, p. 154.

16 Dr Robyn Martin, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, pp. 122-123.

4.16 On 1 December 2016, testing confirmed the presence of WSD on a prawn farm in the Logan River area. Following these results, department investigators tested uncooked prawns obtained from retail outlets in the area, as well as raw prawns being used by recreational fishers as bait. Testing on both products returned positive results for WSD.¹⁷

4.17 As previously noted, the IRA provides that WSSV will be tolerated in Australia, if its presence is detected at a rate not greater than five per cent (with 95 per cent certainty). However, evidence provided to the committee by DAWR, at Table 4.1, indicates that the five per cent prevalence rate has been exceeded a number of times in recent years.

Table 4.1 – Raw prawn virus testing failure rate by consignments as at 31 March 2017¹⁸

Financial Year	Consignments tested	Consignments with a testing failure	Percentage failed of total	Percentage failed of completed [#]
FY 2009/10	623	110	18%	18%
FY 2010/11	534	59	11%	11%
FY 2011/12	834	31	4%	4%
FY 2012/13	726	51	7%	7%
FY 2013/14	950	101	11%	11%
FY 2014/15	757	32	4%	4%
FY 2015/16	697	54	8%	8%
July - Dec 2016	350	82	23%	23%
Jan - March 2017	376	46	12%	57%*

[#] *Consignments with completed Agriculture Import Management System directions (tests finalised)*

* *At 31 March 2017 there were 297 out of 376 consignments with test results pending*

4.18 This table shows that in the 2009-10, 2010-11, 2012-13, 2013-14, and 2015-16 financial years, the prevalence of WSSV exceeded the five per cent rate of tolerance determined by the IRA.

4.19 Under questioning from the committee, the department confirmed that enhanced testing, using the 'stronger test' of AAHL, was returning higher levels of positive WSSV results following the WSD outbreak. DAWR acknowledged that

17 Ms Lyn O'Connell, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, p. 120.

18 Department of Agriculture and Water Resources, answer to question taken on notice, 28 March 2017 (received 20 April 2017).

results in prior years could have been higher, had the enhanced testing then been in place.¹⁹

4.20 DAWR also acknowledged that higher rates of infection over the past year could be expected as a result of targeted inspection activity against various seafood importers, but that these results would not necessarily be reflective of the whole Australian market.²⁰

4.21 According to DAWR, higher test results could also be a result of retail testing, where the ratio of tested prawns to total product is far lower than that of testing an entire consignment. Retail testing therefore has a higher sensitivity, and could also be open to cross-contamination.²¹

4.22 The FRDC confirmed to the legislation committee its understanding that positive tests for WSSV had been returned for a considerable period of time, including between 1997 and 2007.²²

4.23 Reports in mid-February 2017, citing senior department officials, put the infection rate of WSD in some tested imported prawns in retail outlets 'at more than 80 per cent since December'. Additionally:

Industry leaders have told their lawyers that chief veterinary officer Mark Schipp disclosed in a teleconference late [January 2017] that '50 per cent' of imported prawns bought from retail outlets and tested were positive for white spot disease.²³

Issues with testing

4.24 The committee raised its concerns with DAWR about possible dissimilar approaches taken by the different laboratories to WSSV testing, noting that process variances between laboratories could result in different standards for negative and positive test results.²⁴

4.25 The committee noted that the enhanced testing regime may not go any way to control the WSD outbreak, as the disease has already spread. The committee also

19 Ms Raelene Vivian, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 3.

20 Hedley Thomas, 'Silence was 'to protect prawn virus probe'', *The Australian*, 11 February 2017, <http://www.theaustralian.com.au/national-affairs/state-politics/silence-was-to-protect-prawn-virus-probe/news-story/860ab119e63eaf3528f8a1383504a69c> (accessed 22 March 2017).

21 Dr Andrew Cupit, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, p. 154.

22 *Estimates Hansard*, 28 February 2017, p. 39.

23 Hedley Thomas, 'Devastating prawn virus outbreak reveals biosecurity 'failures'', *The Australian*, 9 February 2017, <http://www.theaustralian.com.au/news/health-science/devastating-prawn-virus-outbreak-reveals-biosecurity-failures/news-story/72916888e9ea7d570d6facf7b7ad6143> (accessed 22 March 2017).

24 *Committee Hansard*, 28 March 2017, pp. 6-7.

queried why negative tests results from AgriGen, AAA and EMAI were not relied on after the outbreak occurred. The department informed the committee that:

post the outbreak of the disease, we took a very conservative approach to make absolutely certain that no prawns that entered the Australian retail market had any trace of white spot in them at all.²⁵

4.26 However, the committee notes that for the operational phases of Operation Cattai, AgriGen and EMAI were specifically engaged by the department for white spot testing.²⁶

4.27 DAWR acknowledged that the tests used by AAHL, and on which the department made its decisions post-outbreak, were 'very, very sensitive'. However, DAWR noted that AAHL tests a different part of the genome to other laboratories, and this does not necessarily mean that it was 'establishing a higher bar' than other tests.²⁷

4.28 In response to questions from the committee, DAWR confirmed that a positive result included the detection of 'any presence of white spot DNA', even if the amount of the virus present was too low to be infectious, or amounted to small amounts of viral fragments.²⁸

4.29 The committee inquired about the possibility of false positives in the AAHL testing. DAWR argued that while there can be false positives in any test, this risk is minimised by having negative and positive controls run with every test. Additionally, AAHL completes all tests in duplicate and multiple tests are completed on the one sample. However, if any of these duplicates are positive, the sample is considered positive for WSSV.²⁹

Impact on importers

4.30 The committee raised the concerns of prawn importers, who, on receiving a positive test result from AAHL, could not have these results tested by another laboratory, using the same methods as AAHL. This was despite the importer willing to bear any expense for further testing.³⁰

4.31 The committee heard that some importers were also unable to release significant volumes of prawn product into the market, following both a positive and negative WSD test result from AAHL. In this instance, importers were unable to get

25 Mr Tim Chapman, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 8.

26 Mr Wayne Terpstra, Department of Agriculture and Water Resources, *Estimates Hansard*, 28 February 2017, p. 166.

27 Mr Tim Chapman and Dr Robyn Martin, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 7.

28 *Committee Hansard*, 28 March 2017, pp. 6-7.

29 Dr Robyn Martin, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 8.

30 *Committee Hansard*, 28 March 2017, p. 9.

the prawns tested at another laboratory, including any located overseas, as AAHL was being used by the department as the 'final arbiter' on the presence or absence of white spot.³¹

4.32 Stakeholders argued that the new testing regime for WSD resulted in prawns being held in storage until they could be tested. However, 'given the high rate of diseased prawns already recorded it was unlikely they would ever return to supermarket shelves'.³²

WSD and retail conditions

Uncooked prawns already in Australia

4.33 The committee received evidence from DAWR as to how it was approaching prawn product already in Australia and on sale in retail environments. DAWR estimated that over 10 000 retail outlets across Australia sold prawn product, and the decision was made to 'effectively choke the domestic supply chain'. Testing at the largest supermarket chain distribution centres was undertaken, resulting in some prawns testing positive for white spot and subsequently being destroyed or re-exported.³³

4.34 DAWR noted that there were potentially thousands of locations and distribution centres across the country where prawns could be stored. It was therefore utilising techniques to stop prawn product reaching retail outlets, via work with importers, entities with approved arrangements and through examination of large-scale cold storage units.³⁴

4.35 DAWR explained to the committee the complexities of the supply chain in relation to testing, and the difficulties this presented when determining the quantity of prawns in the market. The department advised that:

we have gone to enormous effort to make sure that stock that was already in Australia is tested. We have done that by going straight to warehouses of the major supermarkets because that is where most of the product is. The supermarkets have worked incredibly well with us, and all of that has been tested. Where it has been found to be positive it has been withdrawn from sale. We cannot guarantee that there are not some prawns out there at retail level that are still white spot positive but we have done a heck of a lot of testing and an awful lot of withdrawal from sale to try and make that the situation.³⁵

31 *Committee Hansard*, 28 March 2017, p. 5.

32 Marty McCarthy, 'All imported raw prawns to be pulled for white spot testing; fears that prices will rise', *ABC News*, 20 February 2017.

33 Ms Raelene Vivian, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 2.

34 Ms Raelene Vivian, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 3.

35 Ms Lyn O'Connell, Department of Agriculture and Water Resources, *Committee Hansard*, 28 March 2017, p. 10.

4.36 Approximately 300 tonnes of prawn product at distribution centres across Australia had been tested as of April 2017, with a 'significant volume' returning positive results, and being removed from retail sale. Wholesale facilities and cold stores were also tested, with infected product barred from entering the retail environment.³⁶

4.37 As of 20 April 2017, approximately 2 million kilograms of imported uncooked prawns were being held in secure storage facilities across Australia, as worked continued on testing this product for WSSV.³⁷

4.38 On 5 May 2017, DAWR advised that it was continuing its inspection regime with the aim of completing inspections and sampling 'within the coming weeks'. Prawn products were under the control of biosecurity while the risk assessments were taking place.³⁸

36 Department of Agriculture and Water Resources, *Department's action on imported prawns – update April 2017*, 20 April 2017, <http://www.agriculture.gov.au/about/media-centre/media-releases/dept-action-white-spot-april> (accessed 1 May 2017).

37 Department of Agriculture and Water Resources, *Department's action on imported prawns – update April 2017*, 20 April 2017, <http://www.agriculture.gov.au/about/media-centre/media-releases/dept-action-white-spot-april> (accessed 1 May 2017).

38 Department of Agriculture and Water Resources, *Weekly Imported Prawn Suspension Update*, 5 May 2017.