

Northern Territory policy for movement of live decapod crustaceans



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1.0	November 2023	Brett Herbert	First version-draws heavily on NSW and Qld policies for prawns, but added in sections for nauplii and spermatophores, endemic diseases and domesticated stock. Includes <i>Panulirus ornatus</i> and scope for other species.

Acronyms	Full form
NT	Northern Territory
PL	Post larvae. This includes crustaceans that have metamorphosed into the adult form and may be lobster juveniles, prawn PL or crab stage juveniles.
AHPND	Acute Hepatopancreatic Necrosis Disease-An internationally notifiable disease of mainly Penaeid prawns including <i>P. monodon</i> .
AHPND-like disease	A disease endemic to some areas of Australia similar in expression to the internationally listed AHPND but does not meet the WOA (OIE) case definition. The Australian disease is associated with Pir-AB toxin gene detection in the absence of <i>Vibrio parahaemolyticus</i> and/or 70kbp plasmid. Also known as <i>Penaeus monodon</i> mortality syndrome or PmMS.
Clinical disease	Expression of a disease through clinical signs. This can be sickness or death, behavioural changes, or histological changes
Disease	As per WOA definition disease means 'infection with'. It does not imply that the disease is being expressed, but that the animal tests positive for the pathogen therefore may carry it and potentially transmit it to other animals. Can be asymptomatic.
F1	First generation animals spawned in captivity.
SPF	Specific pathogen free means something is free of a specific list of pathogens to a known risk acceptance level for any given activity.
Pir-AB	The genes carried in bacteria either in a plasmid or in bacterial DNA that code for a toxin that affects hepatopancreatic tissue. The genes are only expressed when conditions are suitable. Presence of the genes indicate potential for disease to occur if triggered.

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1. Legislation

The NORTHERN TERRITORY FISHERIES ACT 1988 (The Act) (as in force 1 January 2022) provides governance for fisheries resources throughout the Northern Territory. This includes general guidance on translocation and biosecurity.

Part 4, Division 3 of The Act prohibits movements of fish without proper documents. The regulations in Division 5 of The Act have provisions around movement, release and other activities that may be of biosecurity concern.

The Fisheries Regulations 1992 are subordinate legislation to The Act. In the regulations Part 3, Division 1 has specific regulations around movement of fish or aquatic life, and Division 2 has regulations governing disease and contaminated fish and noxious species. Division 3 informs about permits required for movements of fish or aquatic life. The regulations apply to all movements of aquatic life into and within the Northern Territory. Approval from the Director of Fisheries using a Section 13 permit is required to bring fish or aquatic life into the Northern Territory, or move it within the Northern Territory (see appendix 5).

The Northern Territory translocation policy objectives are:

1. To provide a framework for risk assessment and guidelines for decision making when assessing applications for translocations of aquatic organisms into, and within, the Northern Territory including for aquaculture purposes.
2. To manage the movements of aquatic organisms into and within the Northern Territory, to prevent the introduction or spread of aquatic pests and diseases, and to protect existing and potential industries, the environment and biodiversity.

As part of these objectives the following specific policy for decapod crustacean (including prawns, crabs, lobsters, bugs) translocation has been developed. It draws strongly on the NSW and Qld prawn translocation policies to promote consistency in policy across jurisdictions.

This guidance supersedes policy written in 2008.

The Act and subordinate legislation can be accessed at:
<https://legislation.nt.gov.au/Legislation/FISHERIES-ACT-1988>.

2. Translocation, hatchery and farming policy

The 'National policy guidelines for the translocation of live aquatic animals' ([National policy for translocation](#)) should be used as overarching guidance for what to consider before translocating aquatic animals for any purpose.

Penaeus monodon is the main species specifically considered in this document, as currently it is the only prawn species being investigated for farming in the Northern Territory. The previous prawn translocation policy considered all species present, or potential candidates. However, this policy is intended as guidance for translocation of other, decapod crustaceans, including other prawn species and lobsters.

The translocation or movement of crustacean broodstock into the NT requires sampling and treatment procedures that minimise the risk of transmission of diseases that may impact crustaceans or other aquatic species in the NT. It must also minimise risk that escapees may pose to native populations, including from genetic differences.

This policy outlines the specific requirements for translocating crustaceans or their gametes into the NT for eventual placement into grow-out environments. It includes requirements for the nauplii, spermatophores, and transit of early-stage larvae imported and held in tanks prior to stocking.

Broodstock used to produce any life stages or gametes being translocated under this policy should be sourced from a pathogen-free population where possible. Wild caught or non-SPF domesticated stock need to be tested and held securely (to prevent them acquiring infection from any sources) prior to spawning. It is recognised that some endemic pathogens have high prevalence, but often may have low pathogenicity. Positive detection of pathogens endemic to the NT does not preclude translocation.

Confirmed detection from broodstock of a pathogen which is exotic to NT will preclude translocation into the NT pending risk assessment.

Documentation requirements relating to translocation of prawns, other crustaceans or their gametes into the NT under this policy must be provided to AquaticBiosecurity@nt.gov.au (see Appendixes 5 and 6).

2.1. Purpose

This policy describes the permit conditions and requirements for translocating decapod crustaceans or gametes to the NT from hatcheries, and stocking of resultant juveniles into NT farms or holding facilities. This includes: pre-translocation requirements; pre and post spawning testing requirements for broodstock; juvenile testing requirements; and monitoring of nauplii/PL/ progeny of translocated gametes held in NT farm grow-out facilities. The requirements within this policy have been developed to reduce the risk of translocating notifiable and emerging crustacean diseases (known or unknown) to the NT.

The policy also stipulates sources of broodstock for producing stocks to reduce risk of potential effects from different genetic populations being released into NT waters. Risk can be determined partly on the security of farm sites and infrastructure, so will be determined on a case-by-case basis. Domesticated, selectively bred and SPF stock will be covered by this process.

The policy draws on the NSW and Qld policies for prawns to promote consistency between jurisdictions. However some of the stipulations of other jurisdictions have been clarified and corrections made after comment by industry, pathology providers and researchers.

2.2. Scope

This policy covers farms with an Aquaculture Licence issued under the NORTHERN TERRITORY FISHERIES ACT, Part 2A, Division 1 Section 10/11, and the Fisheries Regulations Part 10, Division 1 & 2 authorising the farming of crustaceans. The policy takes effect as a special permit condition. Please note that all other relevant legislation also applies.

Note: At any time a formal legal instrument can take effect that may override either parts of, or the entire, policy.

2.3. Source of Broodstock

Penaeus monodon broodstock used for production of juveniles or gametes destined for the NT must be sourced from either NT waters, adjacent WA waters near the Joseph Bonaparte Gulf, or the Gulf of Carpentaria. *Penaeus monodon* from these areas is of the same genetic stock (Vu et al., 2020; Vu et al., 2021). PLs derived from broodstock sourced from east coast Queensland or WA waters in the Exmouth area, must not be translocated into the NT without the completion of a risk assessment by Fisheries NT. This risk assessment would include farm location, farm security (e.g. escape of animals, flood risk), farm

practices to reduce risk of escape, provenance of stock. Most of these will be covered in the farm biosecurity management plan which identifies risks and how they are managed in that enterprise.

Recent studies have indicated that *Panulirus ornatus* stocks from the Exmouth area are genetically distinct from those across northern Australia and eastern Qld (Farhadi et. al, 2022). Therefore juvenile lobsters derived from broodstock from the Exmouth area, are not to be translocated into the NT.

Special consideration may be given at the discretion of the Director of Fisheries for alterations to this direction, particularly as it may apply to domesticated stock or other species. As indicated above, risk can be determined partly on the basis of the security of the receiving facility.

2.4. Pre-translocation health certification requirements

- A. An inspection of the exporting facility must be carried out by a competent authority prior to shipment of any PL/juveniles/gametes. This is to ensure that the exporting facility engages in best hatchery practice, including but not limited to appropriate biosecurity, quarantine and health investigation measures, and is able to comply with this policy. The hatchery assessment will be valid for 12 months from the date of issue by the competent authority conditional upon maintenance of existing facility procedures and infrastructures. This assessment is particularly important where health and maintenance of broodstock is known for early life stages or gametes where testing of the life stages or gametes is not practical. This inspection is normally part of the state licencing requirements for the facility so a note to that effect (of inspection in the last 12 months and noting compliance with licence conditions) is sufficient.
- B. As an attachment to the health certification, a declaration from the hatchery (Health declaration- see Appendix 6) must be included. This form includes origin of stock, declaration of previous disease detections, and disease history of the stock since arrival in the hatchery.
- C. Pathogens to be confirmed as not detected prior to translocation are: White Spot Syndrome Virus, Yellowhead virus genotype 1 and Yellowhead virus genotype 7; for marine prawns Pir A and Pir B genes which are indicative for potential of AHPND as per international definition and AHPND-like disease as expressed in Australia. Currently AHPND or AHPND-like disease has not been reported from the NT.

If a hatchery is in an area with an established disease present, history and results of testing need to be provided. The health statement will indicate if significant mortalities have been associated with the presence of the pathogen (e.g. GAV may be present in stock but if it has not caused clinical disease, translocation can be permitted). It is a business decision of the operation to accept stock with endemic pathogens that pose minimal biosecurity risks to the NT environment. It is expected that stock expressing clinical disease prior to shipment would not be shipped. If new NT endemic diseases are identified they will be treated as per existing endemic diseases.

2.5. Pre-translocation requirements for the receiving NT Decapod crustacean farm

- A. An inspection of the NT farm must be carried out by NT Fisheries prior to translocation of any PL/stock onto the farm under this policy. Inspection is to confirm that the farm facilities engage in best industry practice, including but not limited to appropriate biosecurity and health investigation measures. NT Fisheries will consider suitable quarantine facilities, water retention/treatment capacity, on-farm biosecurity plans and health testing of all incoming and recently arrived stock. Each inspection will be considered on a case-by-case basis as risk may differ depending on the systems, source of stock, and rearing methods used. The assessment will be valid for 12 months

from the date of issue or as stated on the Aquaculture Licence, conditional upon maintenance of existing facilities, procedures and infrastructure, and demonstrated compliance with relevant policies and permit conditions.

- B. Those species listed in Appendix 1 may be translocated into the NT under this policy from the specified location(s) of origin. Other species may be considered at the discretion of the Director of Fisheries.

Note: Prior to translocation, NT Fisheries must be notified of the intent to import gametes/nauplii/PL, and the intended destination. Copies of any enterprise level biosecurity plans and health certificates of the imports must be supplied. Notification must be received by NT Fisheries no later than two full business days prior to the expected date of importation into the NT to allow issuing of a relevant S13 translocation permit. Earlier notification or discussion with NT Fisheries prior to importation will be better, to allow clarification of outstanding issues well before translocation dates are set.

2.6. Broodstock testing requirements

2.6.1. Wild caught broodstock

Prior to the translocation of any Decapod crustaceans into the NT, a health check of broodstock must be completed by submitting samples to an approved Animal Health laboratory (refer to Appendix 3 for the list of currently approved accredited laboratories). The lab must be approved by the Chief Veterinary Officer (CVO) of the jurisdiction in which the stock or gametes were produced. The results from all laboratory testing completed, including but not limited to notifiable diseases (Appendix 4), must be provided to the NT Director of Fisheries who reserves the right to withhold approval for translocation pending consideration of testing results. Detection of pathogens that are endemic in the Northern Territory, such as GAV, but not causing clinical disease in the hatchery, does not preclude translocation into the Northern Territory. The following requirements must be met:

- A. Individual broodstock must appear clinically healthy with an absence of significant mortality within the collected cohort during the capture-transport to hatchery period. Significant mortality is usually more than 10% of stock after a stressful event such as capture and holding, but factors such as handling and water quality can influence this greatly. All broodstock are considered to have been stressed through the capture and transport process, making it more likely that they will express detectable signs of disease if present. Broodstock must be held for at least 24 hours after arrival at the hatchery before spawning and observed for signs of abnormal behaviours or disease.
- B. After 24 hours, the terminal end of two pleopods from each broodstock animal are to be collected from each broodstock animal into individually labelled new sample tubes. In some instances, in accordance with published scientific literature, alternative tissue samples may be provided for species specific pathogens e.g. hemolymph sample from lobsters is an appropriate sample for milky haemolymph disease and *Panulirus argus* Virus (PaV) The sampling tool used to remove any tissue samples must be sterile or disinfected to destroy any contaminant nucleic acids between each individual animal. A protocol to achieve this could be: the cutting surface of scissors and pleopod holding surfaces of tweezers can be dipped in 70-90% ethanol, then flame sterilised until the metal goes red, followed by cooling in sterile fresh water before use. Cleaning of utensils with a rough scourer or similar should be practiced regularly (e.g. between every 5 prawns being sampled) before flame sterilisation to ensure all coagulated haemocytes are removed enabling proper sterilization and destruction of nucleic acids between sampled animals. The use of 2 or more sets of utensils during sampling will allow you to rotate equipment and work to a time frame that is suited for live animals.

Alternatively the cutting surface of scissors should be soaked in a container of 10% bleach (containing a minimum final concentration of 0.55% w/v sodium hypochlorite) for a minimum of five (5) minutes, then rinsed thoroughly in freshwater before reusing for subsequent samples (A.M. Prince, L. Andrus, PCR how to kill unwanted DNA, Biotechniques 12 (1992) 358–360).

- C. Pleopod samples must then be submitted in accordance with the requirements of the receiving laboratory for PCR testing for White Spot Syndrome Virus, Yellowhead virus genotype 1 and Yellowhead virus genotype 7. (Laboratory advice - For viral disease testing, pleopods are to be tested in pools no greater than ten individual pleopods [i.e. pleopods from no more than five individual broodstock per pool]).
- D. Laboratory results for stock held for repeated spawning and held in a secure facility will be considered valid for 12 months from the date of sampling, if no other stock from any other source (unless SPF) are brought to the facility during that timeframe. Extension of this period may be considered if there is no further addition of external broodstock to the population.
- E. At the completion of spawning (or when the female being spawned is no longer required), the head segment of each broodstock prawn (whole cephalothoraxes inclusive of hepatopancreas from each prawn) must be removed, placed in new individual sample jars or bags, and frozen for six months after spawning to allow for testing if disease occurs during the production cycle.

The following applies to marine prawns only for AHPND or AHPND-like disease toxin genes:

The AHPND disease definition refers to disease caused by *Vibrio parahaemolyticus* hosting the Pir-AB toxin gene encoded within the AHPND 70kbp plasmid. AHPND-like disease for the purpose of this translocation policy refers to the detection of the Pir-AB toxin gene. Faeces samples should be collected from each shipment of broodstock. Since sampling each individual is impractical, faeces samples can be pooled into groups, with one representative sample per 20 animals (e.g. 10 samples for 200 individuals). The details of this sampling can be adjusted as required to suit the situation. Samples should be submitted in accordance with the requirements of the receiving laboratory for PCR testing for PIR-AB genes associated with Acute Hepatopancreatic Necrosis-like Disease.

OR

Faecal samples are to be collected using equipment free of viable pathogens (e.g. expressing faeces directly into the sample container to avoid cross contamination OR siphoned (using chlorine disinfected tubing) from individually housed broodstock) from each broodstock prawn into individually labelled new sample tubes. Faecal samples must be submitted in accordance with the requirements of the receiving laboratory for PCR testing for the Pir-AB toxin gene. Once in the laboratory faecal samples are to be tested in pools no greater than from five individuals.

Note: Consideration should be given to the time required to process broodstock samples at the laboratory (confirm time frames with the receiving laboratory), and the required laboratory submission date to ensure results are received before the planned PL stocking date. As this is PCR testing time frames are considerably shorter than bacteriology.

TRANSLOCATION OF STOCK, AND STOCKING OF NT PONDS MUST NOT OCCUR BEFORE PRE-SPAWNING BROODSTOCK AND STOCK PCR TEST RESULTS ARE RECEIVED (tests listed at 2.6.1 a) – e) and 2.7 a) and c))

- F. If stock are being transported, the laboratory report must be received by NT Fisheries aquatic biosecurity (AquaticBiosecurity@nt.gov.au) no later 2 working days prior to the intended translocation into the NT. Notification of intent prior to this period will be beneficial to expedite processing. Release of stock from the hatchery in the NT is dependent upon laboratory results (except for histopathology, however water cannot be released into the environment without

sterilisation by chlorination (see note below) until these results have been finalised). Other sterilisation methods may be considered on a case-by-case basis.

Additional sampling requirements:

- G. Broodstock that display any health or behaviour issues, as well as observed moribund animals, should be notified to the aquatic biosecurity agency in the jurisdiction in which the hatchery is located and sampled (freshly sampled, kept cool, not frozen) in addition to the specified numbers above.
- H. Any broodstock which have died in transit or on site should be sampled and labelled separately for PCR testing (these samples may be frozen if required). These should be sent to the state testing laboratory (in Appendix 3) immediately if there is any suspicion of disease (i.e. individuals in an otherwise healthy batch, expressing symptoms of infection) to ensure early detection and management of disease if present.

Note: Laboratory results for broodstock will be valid for four weeks from the date of sampling excepting domesticated broodstock held as described above that are valid for 12 months. Results validity may be extended if all influent water is treated prior to entry to the hatchery with a minimum of 30mg/L active effective chlorine for 24 hours or 200mg/L active effective chlorine for 2hrs (or equivalent disinfection procedure). Evidence of influent water disinfection must be provided to AquaticBiosecurity@nt.gov.au. For assistance with sampling procedures please contact your local veterinarian or aquatic animal health officer in your state or territory. If a single batch of negative test broodstock is held for sequential spawning validity of tests may be extended if the facility is secure while those stock are held (see below requirements for domesticated broodstock holding).

2.6.2. Domesticated broodstock

Domesticated broodstock will be considered as any generations subsequent to and including F1. They will need to be held in a secure facility isolated from externally sourced crustaceans except those from other secure facilities, or after proof that the additional stocks are free from disease. Feed needs to be assured free of potential disease agents. If using imported feeds these may need irradiation to ensure that no viable pathogens are included. Imported feeds have been shown to test positive for exotic or managed pathogens such as WSSV (although this is generally not viable).

A facility holding domesticated broodstock will have adequate filtration and treatments (e.g. ozonation, UV treatment, chlorination) to inactivate viruses and bacteria entering the facility from source water. If source water does not have connection to open environment (e.g. bore water) this requirement may be reconsidered on a case-by-case basis and if previous testing or experience has indicated biosecurity level.

A single, non-destructive testing of broodstock held in the facility is required to indicate freedom of stock from disease prior to a spawning season (i.e. annually). This includes pleopod tests for viruses and, in prawns, faecal tests for AHPND-like disease as detailed above. Historical freedom is based on a history of regular testing. If a facility has a clear, documented history of production of SPF stock or reproductive material this requirement may be reconsidered.

Any unexpected multiple mortalities require investigation. As this is part of state licensing requirements, it is no different to existing conditions.

2.7. Pre-translocation testing and sampling requirements for post-larvae

A health check of juveniles must be performed before being released from the hatchery for translocation into the NT:

- A. A minimum of three hundred (300) PL samples from each individual batch (with equal representatives of no less than thirty (30) samples from each stocked tank contributing to the overall batch) must be submitted to a laboratory approved by the hatchery's jurisdiction CVO for PCR testing (White Spot Syndrome Virus, Pir-AB toxin gene, Yellowhead genotype 1 and Yellowhead virus genotype 7). Pooling of PL in the laboratory must ensure that adequate target material is sampled without undue dilution from non-target material and pool size (pool size of no greater than 10 or 15 whole PL, depending on the age and size of PL/juveniles tested, or a pool size of no greater than 20 post-larval/juvenile cephalothoraxes). Pooling can be done at farm or in the receiving laboratory. The lab can then divide the sample into lots of ten or 15 to run the tests. Similarly, PL/juveniles should be of sufficient age ('late PL' as per WOAHA manual for WSSV) to facilitate detection of the target pathogen e.g. preferably no younger than PL8, but allow for sufficient time for laboratory testing prior to stocking.
- B. The laboratory report must be received by the NT Fisheries aquatic biosecurity at least 48 hours prior to the intended translocation of PL/juveniles from the hatchery.
- In addition to the above, the following health check of PL must be performed on PL sampled immediately prior to transfer from the hatchery for translocation into the NT:
- C. A minimum of three hundred (300) PL/juveniles samples from each individual batch¹ (with equal representatives of no less than thirty (30) samples from each stocked tank contributing to the overall batch) are to be examined by histopathology for a general health screen by a laboratory-approved by the jurisdiction Chief Veterinary Officer in which the PL/juveniles were produced (i.e. the laboratory report must give results for examination of a minimum of 300 effective animals in total noting not all organs will be observed on all animals, but by chance, all organs will have been observed in a batch). Samples must be collected prior to release from the hatchery.
- The laboratory report must be received by NT Aquatic Biosecurity within 24 hours of it being issued to the farm enterprise.
- D. Should the laboratory report indicate presence of a disease(s) of concern, a Biosecurity Direction, biosecurity advice or other biosecurity instrument may be issued as appropriate in the state of production. Disease of concern include non-endemic to the NT, all listed diseases, and emerging diseases).

Note: The PCR test results are valid for six weeks from the date of sampling. The results from all laboratory testing, including but not limited to notifiable diseases, must be provided to the NT CVO and Director of Fisheries. Validity can be extended if the facility is demonstrably secure from ingress of external pathogen sources, and animals from additional sources are not brought into the facility.

Notifiable diseases are listed in Appendix 4.

Each batch is defined as post-larvae coming from one shipment of wild broodstock or from one maturation run of domesticated broodstock. Every larval rearing tank from the batch must have 30 individuals sampled, and if less than 10 tanks are produced per batch, then more than 30 must be sampled per tank to reach the 300 PL samples per batch.

2.8. Pre-translocation testing and sampling requirements for other stages or reproductive material

As nauplii are:

- produced in a secure environment

- will be transported into a secure environment with biosecurity measures in place
- are held in the hatchery for a short period
- are produced from parents that have been adequately tested to minimise risk of disease transmission;

they are considered a lower risk than PLs or juveniles. Spermatophores are also considered lower risk for similar reasons as they are produced from parents that have been tested and are held in an environment where contact with potential disease carriers is absent.

2.8.1. Nauplii

PL produced from imported nauplii will be tested before stocking out into an external environment in the NT. It is therefore necessary that all effluent from the hatchery be treated as quarantine waste until testing of PL is complete (from PL8 to 15 will be the usual testing age range).

Any broodstock producing nauplii for translocation must have been tested and cleared before nauplii shipment occurs. As long as the facility has been using treated water since the last breakdown and clean period, and has no indication of clinical disease in broodstock held and tested, nauplii produced in the hatchery may be transported into the NT without further testing.

Spermatophores collected from stock held under the same conditions may also be transported to another hatchery without further testing. Progeny of those spermatophores would need to be tested before release into growout systems.

2.9. Monitoring of stock after arrival on an NT farm

2.9.1. Post larvae

Prawns or lobsters resulting from this policy must be subject to thorough and regular visual inspection for any signs of disease. Any signs of unusual behaviour, mortality or morbidity during this period must be recorded and this information provided immediately to NT Fisheries aquatic biosecurity (0413 381 094) and wastewater discharge checked to ensure thorough decontamination.

If an environmental cause cannot be confirmed, reporting and checking is essential. It is accepted that in some cases environmental causes (e.g. ammonia spike, oxygen depletion) may cause mortalities unrelated to disease. However, stressors such as these events may allow previously undetected pathogens to emerge.

Note: for the purposes of this policy 'unusual mortality' is defined as one of the following:

- A. for each juvenile or adult population that are kept in a single tank, pond or raceway:
 - 10 or more dead animals observed within any 24-hour period; or
 - 50 or more dead animals observed within any 7-day period.
- B. for each population that are kept in a single broodstock tank, 10 or more per cent of that population observed to be dead in any 24-hour period, but excluding any spent broodstock, or
- C. any mortality in conjunction with any two of the following criteria:
 - PL coming to the edge of the tank/pond
 - PL demonstrating unusual swimming patterns
 - reduced feeding and failure to thrive

- unusual changes in the physical appearance of PL such as red or black coloration, erosion of the tails, fouling of the gills or any other physical abnormality.

2.9.2. Nauplii or other reproductive material

As nauplii will be held in a secure hatchery environment on arrival, and parent stock are known to be free of disease, only treatment of effluent water from the hatchery until testing for disease is completed, is required to minimise any risk of transfer of disease into the environment.

Other checks as required above for PL will also be required.

PL developed need to be tested for disease as per the policy for post-larvae detailed above in section 2.7. After that, they can be released for grow-out in the system of choice.

For progeny from transported spermatophores, testing at PL8 or older will be required, as per the PL testing policy.

2.10. Record keeping

Records must be kept for the following activities under this policy:

- A. Broodstock samples collected for laboratory testing (including date, numbers, tank number, type of sample, etc.)
- B. Any life stages including gamete samples collected for laboratory testing (including date, numbers, tank number, type of sample, etc.)
- C. Mortality in broodstock and juveniles (dates, numbers, etc.)
- D. Sources and records of all feeds used in conditioning broodstock.
- E. Shipment Documentation

In relation to the dispatch of each batch of life stages or spermatophores from the exporting hatchery into the NT, the shipper must:

- Obtain approval to translocate using the Section 13 application form (Appendix 5), prior to dispatch, stating:
 - the species of crustacean shipped;
 - the number of crustacean juveniles/spermatophores shipped; and
 - that the requirements of this policy have been met.

Copies of the: laboratory results from testing must be emailed to Fisheries licencing (FisheriesLicensing@nt.gov.au) and NT AquaticBiosecurity@nt.gov.au as they are required for issuing a Section 13 permit

Appendix 1. Species of crustaceans specifically covered by this policy

Species	Jurisdiction of Origin	Restrictions
<i>Penaeus monodon</i>	Queensland (Qld)	Not sourced from east coast Qld.
	Northern Territory (NT)	No restriction
	Western Australia	Not sourced from south of Derby
<i>Panulirus ornatus</i>	Australia	Not sourced from WA in the Exmouth region.

Other species of crustaceans may be considered using protocols for translocation as outlined in this policy. Other species may be added to this list pending assessment of risks.

Import of live crustaceans into Australia from overseas is not permitted (*Artemia* cysts excepted).

Appendix 2. Diseases of crustaceans of potential significance identified in Australia but exotic to the NT

1. *Penaeus monodon* mortality syndrome (AHPND-like disease)
2. White tail disease caused by *Macrobrachium rosenbergii* Nodavirus.
3. White spot disease of crustaceans caused by white spot syndrome virus
4. YHV-7 has been identified in NT (Joseph Bonaparte Gulf) sourced broodstock held in Qld hatcheries. While it cannot be ascertained whether infection was attained in the hatchery or from the wild it would be premature to say that YHV7 is confirmed to be exotic to the NT.

Appendix 3. Laboratories approved for testing under this policy*

*Additional laboratories may be added if approved by the authorities in other jurisdictions.

1. **Berrimah Veterinary Laboratory (Territory Laboratory)**
29 Makagon Road, Darwin, NT 0828
GPO Box 3000, Darwin, NT 0801
Ph: (08) 8999 2249
Email: bvl.ditt@nt.gov.au
2. **Elizabeth Macarthur Agricultural Institute (NSW State laboratory)**
Woodbridge Road, Menangle NSW 2568
Ph: 1800 675 623
Email: laboratory.services@dpi.NSW.gov.au
3. **Biosecurity Sciences Laboratory (Qld State Laboratory)**
Specimen Receipt (Loading Dock 12)
Health and Food Science Precinct
39 Kessels Road, Coopers Plains QLD 4108
Ph: (07) 3708 8762 (submission enquiries)
Fax: (07) 3708 8860
Email: bslclo@daf.qld.gov.au
4. **JCU AquaPath Lab** (Approved for WSSV and YHV PCR testing only)
Building 32 Lab 007
James Cook Drive, JCU Townsville, QLD 4811
Kelly Condon
Ph: (07) 4781 6842 (office)
(07) 4781 5537 (lab)
Email: aquapath@jcu.edu.au
Kelly.Condon@jcu.edu.au
5. **Genics Pty Ltd** (Approved for WSSV, YHV1, YHV7, PirA & PirB testing, Approved for all Histopathological analysis)
Level 5, 60 Research Road
St Lucia, QLD 4067
Ph: +61 437 025 821
Email: info@genics.com
Melony.Sellars@genics.com.au

Appendix 4. Northern Territory list of notifiable diseases of aquatic animals.

NOTE: All nationally reportable diseases are in the NT list. This includes a number of salmon diseases even though salmonids are not present in the NT.

This disease list may be updated periodically and is located at <https://www.agriculture.gov.au/agriculture-land/animal/aquatic/reporting/reportable-diseases>.

The only additional disease listed for the NT is a disease of fish caused by *Streptococcus iniae*.

Current as of July 2024.

Diseases of Finfish

- Infection with epizootic haematopoietic necrosis virus
- Infection with infectious haematopoietic necrosis virus
- Infection with spring viraemia of carp virus
- Infection with viral haemorrhagic septicaemia virus
- Viral encephalopathy and retinopathy (Viral nervous necrosis)
- Infectious pancreatic necrosis
- Infection with infectious salmon anaemia virus
- Bacterial kidney disease (*Renibacterium salmoninarum*)
- Infection with *Aphanomyces invadans* (epizootic ulcerative syndrome)
- Enteric septicaemia of catfish (*Edwardsiella ictaluri*)
- Piscirickettsiosis (*Piscirickettsia salmonis*)
- Infection with *Gyrodactylus salaris*
- Infection with red sea bream iridovirus
- Furunculosis (*Aeromonas salmonicida* subsp. *salmonicida*) (*Aeromonas salmonicida* atypical strains)
- Whirling disease (*Myxobolus cerebralis*)
- Enteric redmouth disease/yersiniosis (*Yersinia ruckeri* Hagerman strain)
- Infection with koi herpesvirus (Cyprinid herpesvirus 3)
- Infection with Singapore grouper iridovirus (ranavirus)
- Infection with infectious spleen and kidney necrosis virus

Infection with turbot reddish body iridovirus

Infection with scale drop disease virus

Infection with salmonid alphavirus

Infection with Tilapia lake virus

Streptococcosis (*Streptococcus iniae*)

Diseases of Molluscs

Infection with *Bonamia ostreae*

Infection with *Bonamia exitiosa*

Infection with *Mikrocytos mackini*

Infection with *Marteilia refringens*

Infection with *Marteilia sydneyi*

Infection with *Marteilioides chungmuensis*

Infection with *Perkinsus marinus*

Infection with *Perkinsus olseni*

Infection with *Xenohaliotis californiensis*

Infection with Abalone herpesvirus (Haliotid herpesvirus-1)

Infection with ostreid herpesvirus-1

Diseases of Crustaceans

Infection with Taura syndrome virus

Infection with white spot syndrome virus

Infection with yellow head virus genotype 1

Gill-associated virus

Infection with infectious hypodermal and haematopoietic necrosis virus

Infection with *Aphanomyces astaci* (crayfish plague)

Infection with *Macrobrachium rosenbergii* nodavirus (white tail disease)

Infection with infectious myonecrosis virus

Monodon slow growth syndrome

Infection with *Hepatobacter penaei* (necrotising hepatopancreatitis)

Acute hepatopancreatic necrosis disease*

Enterocytozoon hepatopenaei

Infection with decapod iridescent virus 1

- Although the OIE definition of this disease is for *Vibrio parahaemolyticus* with PirA and PirB plasmid genes, for NT purposes any detection of disease associated with PirA or Pir B genes irrespective of bacterial species is reportable. The OIE defined disease is not present in Australia.

Diseases of Amphibians

Infection with *Batrachochytrium dendrobatidis*

Infection with Ranavirus species*

Infection with *Batrachochytrium salamandrivorans*

*Ranavirus can also be carried by fish and reptiles and may cause clinical disease. EHNV is a piscine ranavirus. The OIE definition for Ranavirus is limited to infections in amphibians.

Appendix 5. Section 11 and 13 of the Fisheries Act

A permit for translocation under Section 13 is applied for; Section 11 of the act describes the activities under the permit.

Application for the Movement of Fish or Aquatic Life

Part 2A, Section 11 and Section 13 of the Fisheries Act

Information Relating to the Applications

This form is to be used by a person who is applying to the Director of Fisheries to move Aquatic Life within the Northern Territory or bring Aquatic Life into the Northern Territory

This is an Application only - once your application has been processed you will be advised of the decision. You are not permitted to carry out any activities in relation to this application until you have been advised of the decision.

No Application Fee: (Note: Under Regulation 206 the Minister may prescribe fees)

Requirement for permit

- (1) A permit may authorise a person to do one or more of the following things:
 - (a) bring into or release in, or cause to be brought into or released in, the Territory live fish or aquatic life;
 - (b) possess or sell noxious species;
 - (c) cause or permit a shock, sound or other vibration, whether by percussion, the use of an explosive or otherwise;
 - (d) use an electric fishing device;
 - (e) introduce a dangerous substance into waters of the Territory;
 - (f) any other thing prescribed by regulation or a management plan as being able to be done only under a permit.
- (2) A person commits an offence if:
 - (a) the person intentionally possesses or sells a thing; and
 - (b) the thing is a noxious species and the person is reckless in relation to that circumstance; and
 - (c) the person is not authorised by a permit to possess or sell the thing.

Maximum penalty: 500 penalty units or imprisonment for 2 years.

Applying for and granting licence or permit

- (1) A person may apply to the Director for a licence or permit.
- (2) After considering the application, the Director may grant a licence or permit to the applicant if

satisfied that:

- (a) the sustainability of the fisheries would not be jeopardised by the grant; and
 - (b) any requirements or matters prescribed by regulation as being relevant to an application for the type of licence or permit to which the application relates have been satisfied; and
 - (c) it is otherwise appropriate to do so, taking into consideration any Ministerial guidelines and any other matters the Director considers relevant.
- (3) If the Director is not satisfied as mentioned in subsection (2), the Director must refuse to grant the licence or permit.

FISHERIES REGULATIONS 1992

Division 3 Exotic fish and import permits

Permit to import live fish or aquatic life

- (1) An application for a permit to import live fish or aquatic life must be accompanied by a statement of the proposed method of treatment and disposal of the water in which the fish or aquatic life is imported.

(Note: Applicants should be aware that the details disclosed in this application form will be recorded on the register maintained under the Act and be available for public search.)

Instructions for Completing an Application for the Movement of Fish or Aquatic Life Section 13 Permit

Before completing the form read these instructions. Please use BLOCK LETTERS when completing the form.

APPLICANT - Specify the full name of the person making the application along with the residential address, postal address and email address (if applicable) of the licence holder(s). Specify the business hours telephone and facsimile numbers.

1. **I am applying to** – Please tick the box relevant to the activity you will be undertaking.
2. Please complete the following questions 2 – 6 of this form by providing as much information as possible. Where necessary provide the business address and full name of the hatchery where the fish or aquatic life originates.
3. **Declaration** – Under Section 35A of the Northern Territory Fisheries Act making false or misleading statements in applications is an offence.
4. **Dates** – Insert the “from and to” dates that you will be translocating the product or insert the “to” date for when the product is to be imported into the NT

Note: A permit will not be issued when the application does not have a “from and to” date for any translocations or the application does not have a “to” date for any importations.

5. **Execution of application**

Individual – The applicant must sign and date the application form.

Declaration

Under Section 35 of the *Northern Territory Fisheries Act* making false or misleading statements in applications is an offence

Changes to legislation

Please note that the *Fisheries Act*, *Fisheries Regulations* and *Management Plans* are amended from time to time. Current versions of these documents are available on the Internet and may be viewed at nt.gov.au.

Privacy Statement

Details in this application will be recorded in a Fisheries Register and certain personal details may be released, but will only be done so, in accordance with section 9 of the *Fisheries Act*.

Office Address

Berrimah Business Park
33 Vaughan Street
BERRIMAH NT 0828

Contacts

Tel: (08) 8999 2183
Fax: (08) 8999 2057
Email: Fisherieslicensing@nt.gov.au

Postal Address

Fisheries Licensing
Department of Industry, Tourism and Trade
GPO Box 3000
DARWIN NT 0801

Application for the Movement of Fish or Aquatic Life

Section 13 of the Fisheries Act

To the Director of Fisheries: The person specified below hereby applies for the grant of a Permit in accordance with Section 13 of the Act.

By proceeding, I **declare** that I have read the 'Information Relating to Applications' and the 'Instructions for Completing an Application for the Movement of Fish or Aquatic Life Section 13 Permit'.

Full name of applicant: _____ Sex: MALE / FEMALE

Date of birth: _____

Business name (if applicable): _____

Residential address: _____

Postal address: _____

Telephone: (B/H) _____ (M) _____ Fax: _____

Email address: _____

1. In accordance with Section 11 of the Act, I am applying to:

- Move fish or aquatic life within the Northern Territory
(Health Certificate may be required to support application)
- Import fish or aquatic life from interstate
(Health Certificate may be required to support application)
- Release fish or aquatic life within the Northern Territory
(Health Certificate may be required to support application)

2. Details of fish or aquatic life to be moved:

Common Name	Scientific Name	Quantity	Size (cm)

3. Reason for movement of fish or aquatic life:

- Ornamental display
- Aquaponics
- Wild release
- Aquaculture
- Stocking
- Other

Additional information: _____

4. Source of fish or aquatic life (select most appropriate and provide details):

Wild

a) Please provide capture location details (latitudes / longitudes) and details of the capture vessel (name, licence number, skipper, contact phone number).

b) Relates to Prawns, if WILD please provide the details of the Australian Fisheries Management Authority Permit/s (if appropriate).

Hatchery / Farm

c) Please provide the business name, address and contact phone number.

Aquarium Retailer

d) Please provide the business name, address and contact phone number.

Other

e) Please provide business name, address, contact phone number and any other relevant information.

5. Movement method and security measures to ensure fish or aquatic life does not escape in transit:

6. **Proposed method of treatment and disposal of the water in which the fish or aquatic life is imported:** Containers or plastic bags associated with the transport of fish are to be disinfected, chlorinated or disposed of in general waste (i.e. to landfill);
- water associated with the transport of fish (not released with fish) will be disinfected/chlorinated before discharge into the environment;
 - disposal of water on site where it cannot reach a watercourse
 - evaporation
 - watering garden
 - other _____

7. Final destination for fish or aquatic life:

a) Address of final destination (if different from residential address):

b) How will the fish or aquatic life be housed?

- Nursery/ Hatchery tank Pond Wild release
- Aquarium Stocking Other (specify)

Provide further information for other (size, construction materials etc.)

c) What security measures are in place to ensure the fish or aquatic life does not escape containment at its final destination (e.g. lids, screened overflows etc.)?

8. Health certificate provided: No Yes (please attach to application) NA

9. Date/s of movement: From: / / To: / /

10. Execution of application form:

I declare that the statements made in this application form and in any additional sheets are true and correct.

(Signature)

(Print name)

(Date)

OFFICE USE ONLY

Appendix 6. Health declaration from source hatchery

Health Declaration

Importation of decapod crustaceans¹ into the Northern Territory, or

Translocation of decapod crustaceans¹ between zones within the Northern Territory

I ^a

of ^b

do hereby declare that I am employed in the position of ^c

within ^d

and that

1. The crustaceans proposed for importation or translocation originate from ^e

.....

2. The crustaceans proposed for importation or translocation are destined for ^f

.....

3. I am personally familiar with the organisation and management of the hatchery, aquaculture farm or holding site from which the crustaceans destined for importation into or translocation within the Northern Territory are resident.

4. I am familiar with all introductions of crustaceans to this hatchery, crustacean farm or holding site which have occurred in the past 12 months.

¹ 'crustaceans' includes all life stages and gametes (e.g. spermatophores)

Northern Territory policy for movement of live decapod crustaceans

5. To the best of my knowledge over the previous two years there have been no significant clinical disease or mortality events on the farm, hatchery or holding site from where the crustaceans destined for importation or translocation are resident.
- or
6. There have been significant clinical disease or mortality events over the previous two years on the farm, hatchery or holding site from where the crustaceans destined for importation or translocation are resident and I attach full and complete details of all such events, including measures taken to identify the cause and copies of laboratory reports pertaining to the disease and/or mortality events. (**Delete 5 or 6 as appropriate**).
7. I declare that the live crustaceans intended for importation into, or translocation within the Northern Territory will originate from:
- i. A hatchery, farm or holding site where diseases on the Northern Territory Declared List of Notifiable Diseases (**Schedule 3**) have never been diagnosed; or
 - ii. A hatchery, farm or holding site where diseases on the Northern Territory Declared List of Notifiable Diseases (**Schedule 3**) have never been diagnosed and which has been subject to an approved disease monitoring and surveillance program; or
 - iii. A hatchery, farm or holding site where diseases on the Northern Territory Declared List of Notifiable Diseases (**Schedule 3**) have occurred, but, after eradication or control, an approved disease monitoring program has been undertaken with negative results; or
 - iv. A population or cohort that has been maintained in quarantine isolation since spawning and in which diseases on the Northern Territory Declared List of Notifiable Diseases (**Schedule 3**) have never been diagnosed.
8. That samples collected and submitted for laboratory examination for health certification purposes are from a population or cohort held on the farm that are destined for translocation and that no crustacean will be exported into the Northern Territory or translocated between zones within the Northern Territory other than from the population or cohort that are subject to laboratory examination, unless otherwise approved by the Director of Fisheries, Northern Territory.
9. I provide / do not provide (**delete as appropriate**) details of growth and mortality data of the population or cohort destined for translocation for up to 12 months prior to the date of this declaration (see over).
10. I acknowledge that an alternative sampling and testing regime may in specific circumstances be developed and approved in consultation with the Director of Fisheries, Northern Territory or delegate.
11. I acknowledge that this General Health Declaration must be forwarded to the Director of Fisheries, Northern Territory prior to the shipment of live crustaceans leaving for importation into, or translocation between zones within the Northern Territory.

Signed ^g..... Date ^h

Northern Territory policy for movement of live decapod crustaceans

- ^a Insert full name of the person making this declaration
- ^b Insert full address of the person making this declaration
- ^c Insert full job title or position of the person making the declaration
- ^d Insert the name of the organisation or company
- ^e Specify the name, address and location of the quarantine facility, hatchery, farm or region from which the crustaceans are to be derived.
- ^f Specify the name, address and location of the quarantine facility, hatchery, farm or region into which the crustaceans are to be imported or translocated.
- ^g Insert signature of person making the declaration
- ^h Insert date

Production Data

Date	Mean Shell size (Shell length)	Mortalities No (% population)

Appendix 7. Procedure for Translocation Processes

Note: at least two testing rounds are required—one for the broodstock and one or two for the stock produced. Testing of progeny will need to wait until after they reach PL8. If fully domesticated broodstock are used, and are known to be free of diseases, additional testing of those stock is not required. However, all stock arriving in the NT must be tested prior to stocking in grow out systems. This general health check provides information on health of the stock and information on condition prior to stocking.

Presence of endemic NT diseases (such as GAV) does not preclude import or stocking – decision to stock is a business decision based on risk to business objective for that crop. Biosecurity risk from endemic diseases is limited to potential for multiplication and large-scale release of pathogens from facilities. Infection risk changes with seasons due to higher (up to 100%) prevalence in wild stocks including broodstock of *P. monodon* the mid-late dry season.

There is a lower testing requirement for nauplii or gamete transfer as they will be held in quarantine in the NT for a longer period of time before stocking out.

Prior to arrival of broodstock at hatchery

Check with testing laboratory and ensure that appropriate equipment is available (sample jars, preservative, bleach etc).

On arrival of broodstock at hatchery

Confirm with testing lab dates for sending samples

Check for health, mortalities, and abnormalities

After 24 hours sample pleopods into jars for each animal, express faecal matter for testing for Pir A and Pir B genes for prawns.

Send samples to lab

Await results while maturation occurs

Spawner selection based on test results can be made, ideally before spawning.

On production of progeny/gametes in source hatchery

Observe health of stock

Inform NT Fisheries aquatic biosecurity of intention to ship stock

Organise testing of stock if being grown out to PL8 or older

Send health check results to NT Fisheries licencing aquatic biosecurity with S11/S13 permit application (use date range of e.g. one week to allow for changes)

Ship stock once S11/S13 permit has been issued

References

Farhadi A., Pichlmüller F., Yellapu, B., Lavery S., and Jeffs A. 2022 Genome-wide SNPs reveal fine-scale genetic structure in ornate spiny lobster *Panulirus ornatus* throughout Indo-West Pacific Ocean. – ICES Journal of Marine Science, 79: 1931-1941

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