

Standard operating procedures: decontamination for commercial abalone divers

Aquatic Biosecurity and Risk Management

This Primefact presents some key hygiene protocols for abalone divers to help protect abalone stocks in NSW from disease. These standard operating procedures have been designed to minimise the disease translocation risk posed by abalone fishing.

Abalone viral ganglioneuritis

Abalone viral ganglioneuritis (AVG) is a herpes-like disease that was first detected in Australia in 2005 in southern Victoria, initially in farmed abalone and subsequently in wild stocks in 2006. The disease has resulted in extensive mortalities of greenlip and blacklip abalone in affected areas. Various management actions, including a fishing closure, have been unsuccessful in containing the disease, which currently spans almost 200 km of Victorian coastline.

Although similar to a virus found in farmed abalone overseas, AVG is not thought to be an introduced disease. Rather, it is considered to have been latent in native abalone populations, with disease expression triggered by accumulated stressors.

Figure 1. Healthy abalone (Photo: Mike Heasman)



Figure 2. Diseased abalone displaying a symptom of AVG – curling of the foot (Photo: DPI Victoria)

There are no public health or food safety implications associated with this disease and it has not been reported in any other Australian states.

Symptoms

AVG affects the nervous system of abalone and symptoms include swollen mouthparts, curling of the foot resulting in exposure of shiny edges of the shell, difficulty adhering to surfaces, and lethargy, often causing death.

How is the virus spread?

Possible ways AVG is spread include direct contact between infected and healthy abalone, viral particles shed into the water column, and contact with infectious material (such as mucus) or contaminated equipment that has been used on diseased and then healthy abalone.

Detecting AVG

At present there are no diagnostic methods to detect this disease in asymptomatic abalone. However, Victoria DPI researchers, in conjunction with the Australian Animal Health Laboratory (AAHL), are working to develop a genetic-based

diagnostic tool to detect this disease in abalone which may not be exhibiting obvious signs of disease or sickness.

Although there is no indication of this disease in NSW, NSW DPI is currently collecting and archiving abalone samples which, once a specific diagnostic tool is developed, will be used to investigate any presence of the disease agent in NSW.

Perkinsus

Perkinsosis is a disease that was first detected in NSW abalone stocks in 1992. It is an infection of molluscs caused by the genus of parasite *Perkinsus*, with *Perkinsus olseni* being the particular species that infects abalone. The disease has different symptoms from AVG. It causes abscesses, particularly in stressed abalone, which can result in mortality.

Perkinsus mortalities have contributed to stock decline, resulting in (ongoing) fishing closures. The impact of *Perkinsus* in NSW demonstrates the importance of safeguarding remaining abalone stocks from further disease incursions.

Hygiene protocols – standard operating procedures

To protect NSW abalone stocks from disease risks and the potential spread of diseases such as AVG and *Perkinsus*, NSW DPI wants to work with industry to develop standard operating procedures (SOPs) based on biosecurity best practice guidelines. The risk of aquatic disease outbreaks can be greatly reduced by applying appropriate biosecurity protocols through thorough hygiene practices. This SOP is designed to minimise the risk posed by activities associated with abalone fishing. Other SOPs are currently being developed to address risks associated with other sectors that deal with abalone, including abalone processors.

Decontamination

- Decontamination is important in preventing the transfer of disease.
- Decontamination procedures should be carried out when moving to a different fishing zone. To make decontamination more practical, divers should limit the spatial extent of their diving within each day.
- Decontamination procedures should be carried out when diving has ceased for the day. In particular, decontamination is recommended when diving in a different area from the previous day, e.g. diving in a northern area and then travelling south of the original diving location the next day.

- All equipment and persons that come into contact with abalone should be decontaminated.
- Effective decontamination generally requires a two step process, and involves a detergent wash followed by treatment with a disinfectant.
- Detergents remove gross organic matter, which impede the ability of disinfectants to inactivate pathogens. Disinfectants are then able to effectively inactivate or kill the pathogens.
- While diving, attention should be given to ensuring that equipment, divers and decks are clean and routinely rinsed and kept free of any residue and organic matter such as seaweed, shell, sand etc. to promote effective decontamination.
- Although little is known specifically about AVG, similar viruses are inactivated by immersion in soapy water alone. However, as a precaution, and as part of best practice biosecurity decontamination measures, equipment should also be treated with a disinfectant.

Harvesting equipment decontamination

- All equipment that has come in contact with abalone, such as baskets, abalone irons, gloves, measures and catch bags, should be scrubbed clean and soaked in soapy water (which acts mainly as a detergent) for 30 minutes, then rinsed with fresh water.
- All such equipment should then be soaked in a 200 ppm effective chlorine solution prepared

Appendix - Preparation of a 200 ppm effective chlorine solution

Chlorine solution should be made up fresh for disinfection and not stored for any longer than 24 hours. Chlorine solution needs to be kept out of light and kept cool in order to minimise breakdown of chlorine.

To prepare a chlorine solution from granular pool chlorine:

1. Use only registered products containing 650 g/kg available chlorine present as calcium hypochlorite as the only active constituent as outlined in permit PER10929.
2. Dissolve 31 grams granular pool chlorine in 100 litres of water to produce a 200 ppm effective chlorine solution.

Note: adhere to all other instructions as indicated in permit PER10929 (valid until 27 Sept 2010).

Refer to the chemical product's Material Safety Data Sheets for instructions regarding the safe use of this chemical. This information should be available from the distributor when you purchase the product or by contacting the manufacturer.

from calcium hypochlorite e.g. pool chlorine (see Appendix) for an additional period of not less than 20 minutes, and then rinsed with fresh water.

- Throughout the diving operation, divers, equipment and decks should be rinsed to remove any organic material.
- Diving equipment that has not had direct contact with abalone, such as masks, buoyancy vests and regulators, can be washed with fresh water.
- After decontamination procedures are completed, allow equipment to dry in the sun before the next use.

Vessel decontamination

- Throughout diving activity, decks and boating equipment should be regularly washed down (with fresh water if possible) and scrubbed, to remove all organic material such as sand, shell and seaweed.
- On returning to port, a thorough vessel cleaning should be undertaken. Cleaning should start from the highest point and work down to ensure all areas are cleaned. The deck and all parts of the boat that have had contact with abalone or abalone equipment should be thoroughly rinsed with fresh water, washed with disinfectant and rinsed again with fresh water.
- Once vessels are removed from the water the hull should be cleaned to remove any fouling organisms and organic material and should be hosed down with fresh water. Bungs should be removed for drainage and bilge areas rinsed with fresh water.
- Detergents specifically designed for cleaning boats should be used.

(Photo: John Matthews)



Decontamination of people and clothing

- Wherever possible, divers should rinse with fresh water between dives.
- Divers and any person who has handled abalone should wash their hands with soapy water.
- After diving, wetsuits should be washed both inside and out with a neoprene wash or with liquid soap or shampoo.
- Waterproof clothing should be rinsed with soapy water, rinsed with fresh water and dried in the sun.
- Gumboots and any footwear worn on the boat should be washed with soapy water, rinsed with fresh water and dried in the sun.
- Clothes should be washed with laundry detergent.

Decontamination of transport containers

- Containers which hold abalone should be thoroughly cleaned and disinfected after use.
- Remove any residue and organic material from containers.
- Soak containers with detergent, soak or wipe insides with disinfectant (a two minute contact time is recommended) and thoroughly rinse containers with fresh water. A thorough rinsing is necessary to ensure no harmful chemicals remain which can affect the next catch of abalone.

Decontamination procedures should be carried out away from the water's edge to prevent detergents and disinfectants from entering the marine environment.

Care should be taken to ensure that waste water from bilges is not discharged into the waterway.

Disposal of abalone shell, meat and gut

- Abalone should not be shucked at sea.
- Shell, meat and gut should not be discarded into marine waters and should instead be disposed with rubbish.

Reporting disease

1. If you observe any abnormality in abalone which may be indicative of disease, collect a sample and stop fishing.
2. Place the sample in a sealed plastic bag and add oxygen to the bag if possible. Keep the bag on ice and record the zone, specific location, GPS coordinates, depth and symptoms the abalone is exhibiting.

3. Contact the NSW DPI Aquatic Biosecurity and Risk Management Unit on (02) 4982 1232 to provide details and to make arrangements for NSW DPI to collect the sample.

Help to protect abalone in NSW

- Decontaminate equipment and vessels during and after abalone diving.
- Plan your work to avoid or limit diving in different zones.
- Do not discard abalone or any part of abalone at sea.
- Divers are encouraged to not hang abalone outside the subzone in which they were collected, as this practice increases the risk of disease transmission from one location to another.
- Report anything you may notice in abalone that is unusual and could be an indication of disease to the NSW DPI Aquatic Biosecurity and Risk Management Unit on (02) 4982 1232.

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