

Diseases of Victorian and New South Wales Wild Abalone Stocks

KEEPERS
WATCH
BIOSECURITY NEW ZEALAND

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Disease in the news:

Herpes-like virus threatens Vic abalone stocks

ABC News 5 June, 2006

Controls to limit abalone virus spread in Victoria's South-west

Victorian Department of Primary Industries February, 2006

Abalone virus on the move

Warrnambool Standard 28 July, 2006

Ganglioneuritis Virus Outbreak Threatens Abalone Industry

ABC News 18 July, 2006

DPI awaits abalone virus test results

ABC News 28 July, 2006

Affects of abalone virus unknown

ABC News 11 July, 2006

Virus Hits Victorian Abalone Aquaculture

Victorian Department of Primary Industries February, 2006



Abalone Diseases in Australia

- **Bacterial**

- *Vibrio* (Vibriosis)



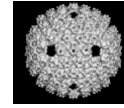
- **Parasitic**

- *Perkinsus olseni* (Perkinsosis)



- **Viral**

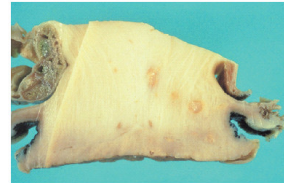
- Herpeslike virus (“Ganglioneuritis”)



Perkinsus olseni (Perkinsosis)

- **Disrupts connective tissue and skin cells**

- Blistering of the foot and mantle
- Mantle shrinkage
- Retarded growth
- Emaciation



- **Reduced marketability; stock losses (30-40 % mortality)**



Perkinsus olseni (Perkinsosis) II

- **No effective or practical drug treatment**
 - Cool water temperatures (<15° C)
- **No mechanisms for eradication**
 - Other species of shellfish as a reservoir



- **Cockles**
 - *Austrovenus stutchburyi*
 - *Macomona liliana*
 - *Barbatia novaezelandiae*



Perkinsus olseni (Perkinsosis) III

- **Local spread**
 - Direct transmission from infected individuals
 - Released into water column
- **Long-distance spread**
 - Translocation of infected stock
 - Transport of frozen shellfish products



Perkinsus olseni (Perkinsosis) IV

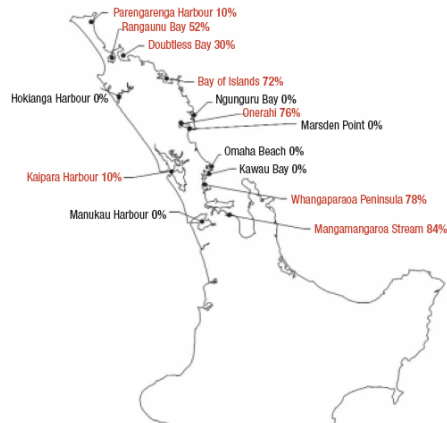


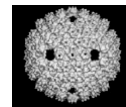
Figure 1: Prevalence of *Perkinsus olseni* in clams (*Austrovenus stutchburyi*) at 14 sites around northern New Zealand. No infections were detected in clams collected at other sites in the Coromandel Peninsula, the Marlborough Sounds and the Otago coast. (Hine & Diggle 2002)

- **Occurs in New Zealand**

- Limited distribution
- Cockles, wedge shells, pipis



Herpeslike virus (HLV)

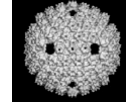


Davison et al., 2005

- **Herpesviruses are found in birds, mammals, fish, reptiles, amphibians**
- **Invertebrates**
 - Bivalves (1992)
 - Crustaceans (1976, 2005)
- **Host-specific**



Herpeslike virus (HLV) II

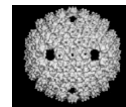


Davison et al., 2005

- **Most bivalve HLV infections are probably caused by a single species:**
 - **Ostreid herpesvirus 1 (OsHV1)**
- **Likely spread via oyster translocations**



Herpeslike virus (HLV) III

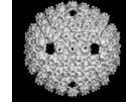


Davison et al., 2005

- **Affects nervous tissue, muscle surrounding nerves**
 - Muscle stiffness
 - Mantle recession
- **No known cures or treatments**
 - Water temperature may influence level of impact



Herpeslike virus (HLV) IV

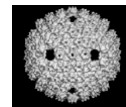


Davison et al., 2005

- **Local spread**
 - Direct transmission from infected individuals
 - Released into water column
- **Long-distance spread**
 - Translocation of contaminated aquaculture equipment, fishing & diving gear



Herpeslike virus (HLV) V



Davison et al., 2005

- **Origin?**
 - Currently unknown
 - 2003 Taiwan outbreak
 - Import of contaminated abalone food product;
 - An import (or imports) of virus-contaminated aquaculture equipment or diving gear;
 - Aquaculture conditions favoring or promoting an outbreak of a naturally-occurring abalone HLV;
 - OsHV1 jump to new host



Herpeslike virus (HLV) VI

- **Current status**

- Port Fairy, Victoria
- Quarantine prohibition of:
 - Commercial fishing and abalone equipment;
 - Recreational fishing equipment;
 - Anchoring of vessels and fishing equipment;
 - Collecting abalone and all shellfish, rock lobster, sea urchins, all other invertebrates and substrate.



Import Health Standard (IHS)

IMPORT HEALTH STANDARD FOR THE IMPORTATION
INTO NEW ZEALAND OF EQUIPMENT ASSOCIATED WITH
ANIMALS OR WATER

Issued pursuant to Section 22 of the Biosecurity Act 1993
Dated: 7 December 2005

- Visually clean
- Completely dry
- Cleaned in country of departure
- Treated if used within past 30 days



Summary

- **Commercially significant diseases of abalone in Australia — *Perkinsus olseni* and HLV**
 - Marketability, mortality
- **Spread by stock translocation**
- **Current IHS practices are effective**
- **Prevention**
 - *P. olseni*: guarding against changes to pathogenicity, environmental tolerance
 - No cures or treatments for *P. olseni* or HLV
 - Testing and monitoring of stocks

