South Africa surveillance, monitoring and reporting,

Kevin Christison

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

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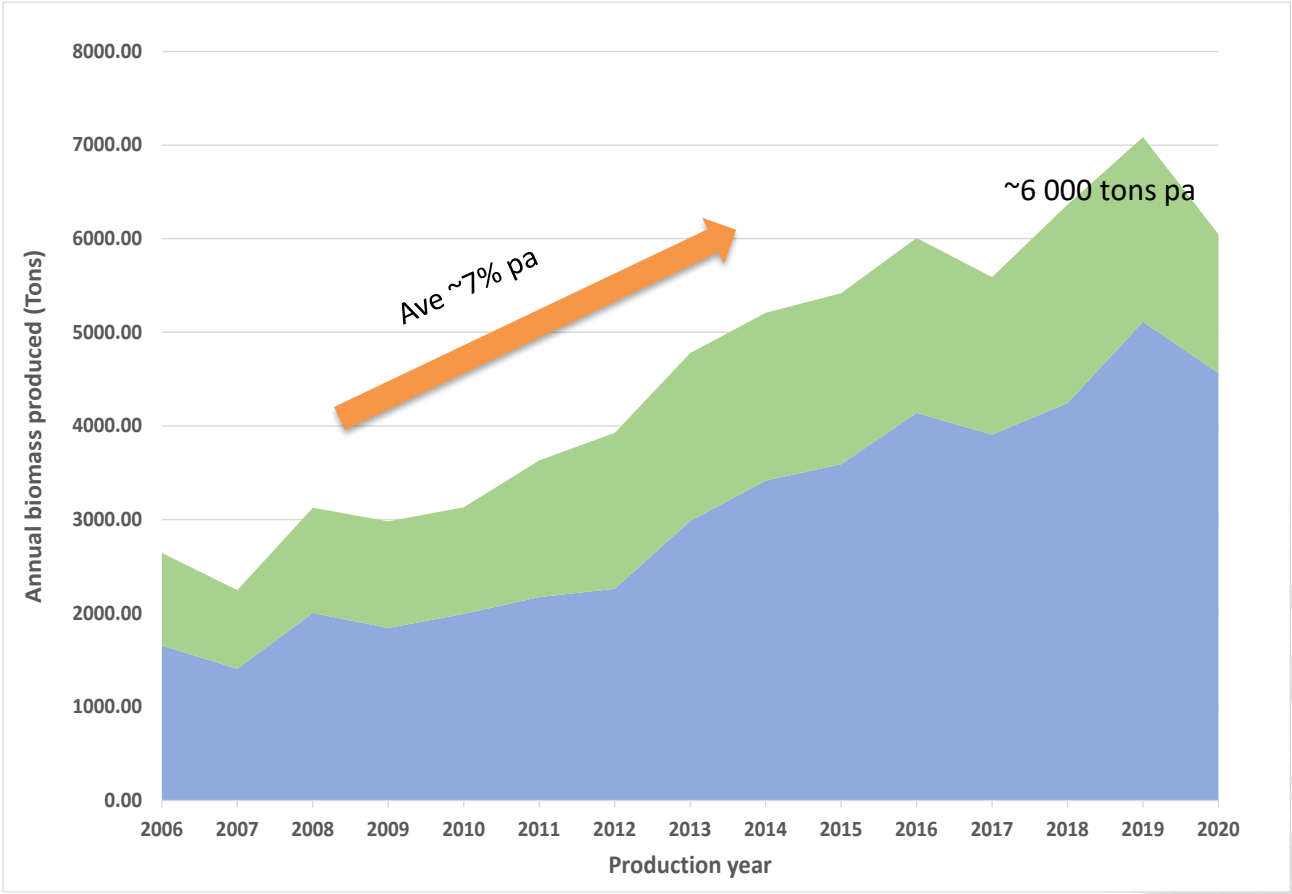
AMANZI
BIOSECURITY

2030 NDP

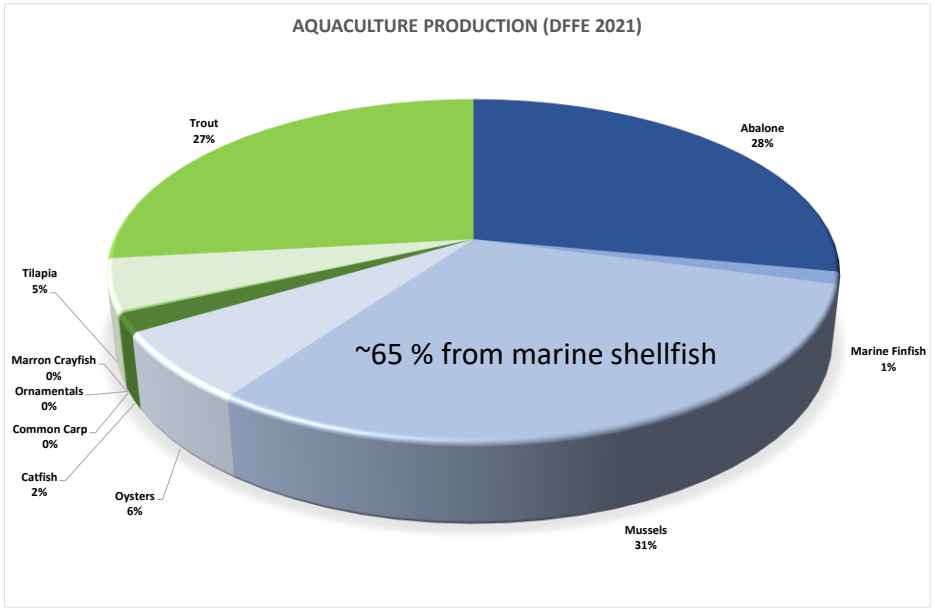
Aquaculture Production

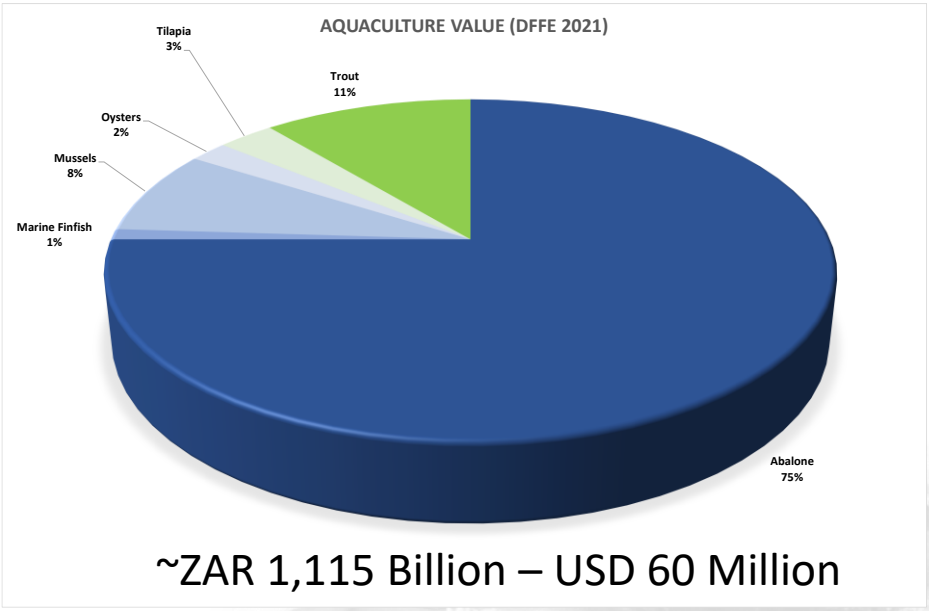


~1% Aquatic Animal Production in RSA

~0,3% African Aquaculture Production

Aquaculture Production





~ZAR 1,115 Billion – USD 60 Million

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AMANZI BIOSECURITY

2030 NDP

National Aquatic Biosecurity Challenges

WOAH Listed Aquatic Animal Diseases:

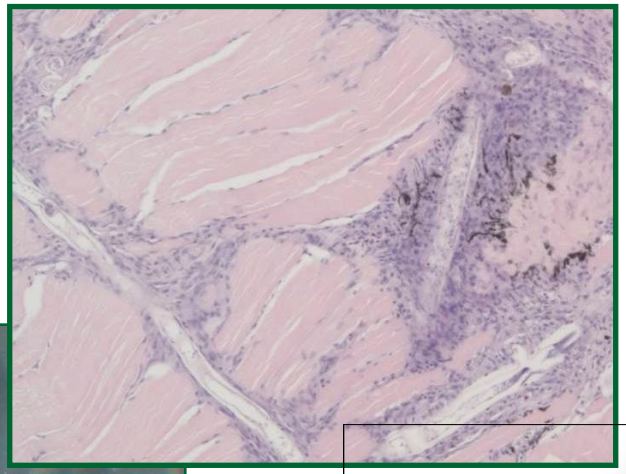
- Infection with koi herpesvirus
- Infection with *Aphanomyces invadans* (Epizootic Ulcerative Syndrome)

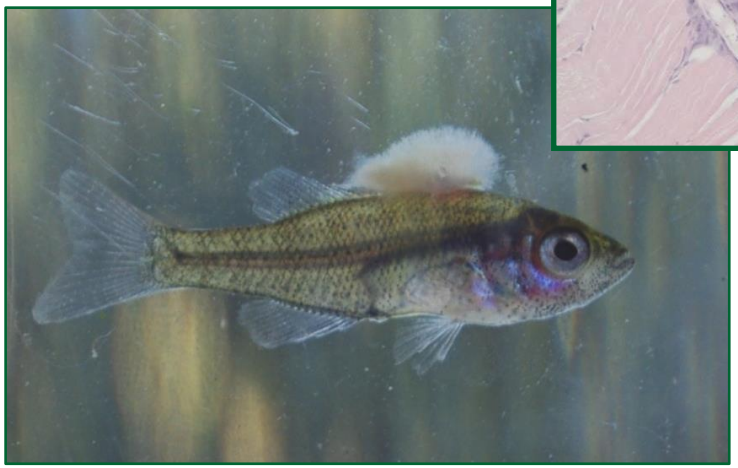
KHV in South Africa

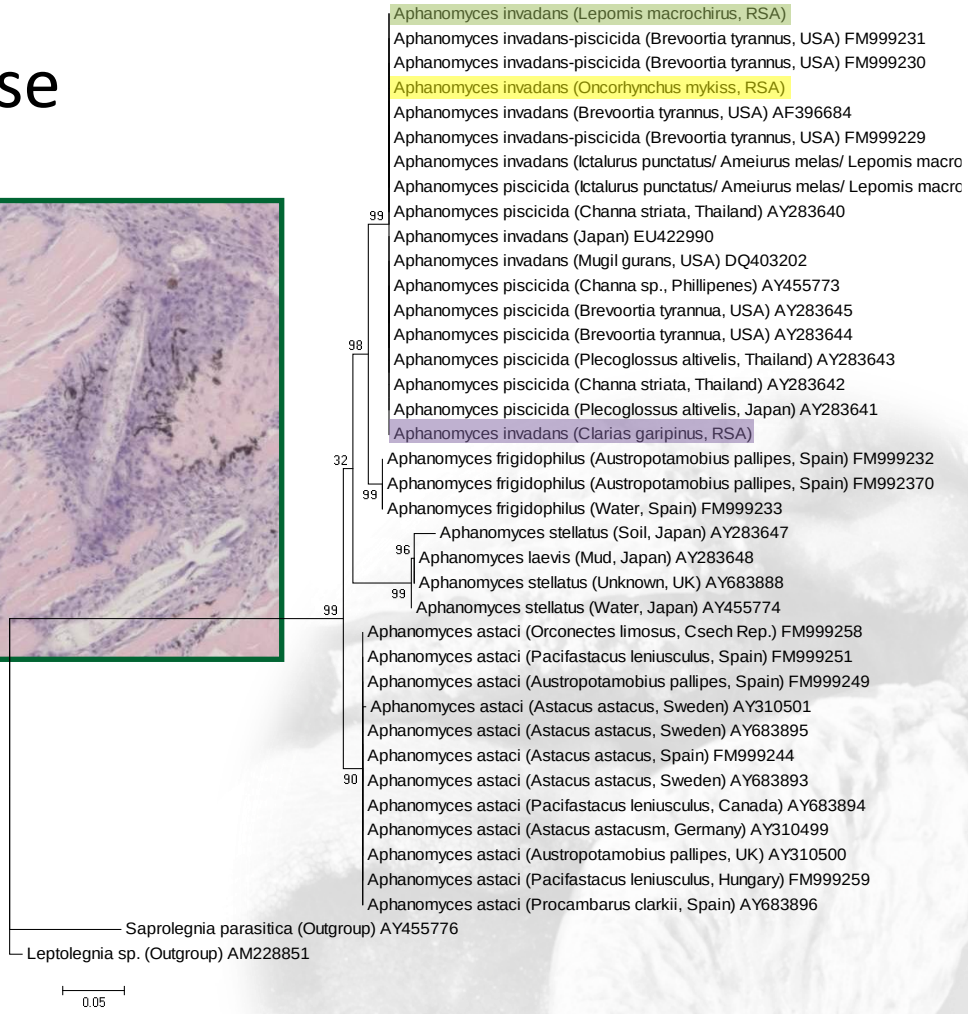
- First Case 2003 index case and initial spread due to Koi Show.
- Subsequently regularly diagnosed in ornamental koi.
- Recently KHV associated with common carp mortality events.
- Some isolated compartments registered as export facility with Veterinary authority.

EUS in South Africa

December 2010 First EUS case







EUS in South Africa

>> SA BASS CONSERVATION

E.U.S. NOW IN SOUTH AFRICA

>> Dr. Olaf Weyl*

The fish disease, Epizootic Ulcerative Syndrome or EUS for short, was diagnosed by researchers from the Aquaculture Research Division of the Department of Agriculture, Forestry and Fisheries in 2010 in bluegill and bass from Arrieskraal Dam and then in 2011 in barbel from a farm dam near Stellenbosch. The disease is caused by a fungus that is originally from Southeast Asia, but has been spread to many other parts of the world by the movement of live fish and, possibly by the transport of contaminated water.

While confirmed diagnosis requires histological examination of the tissue and genetic screening for the presence of the fungus, I have recently received an alarming number of reports of fish with lesions from all over southern Africa. Lesions on fish may be due to a variety of causes including parasite infestations and abrasions as well as EUS. Waters where lesions are reported therefore need to be considered as "suspect" sites which may need follow up investigations. Waters where suspect fish have been reported include Theewaterskloof Dam, Buffelsjagts and Arrieskraal Dams in the Western Cape and more recently in Hartebeespoort and Vaal Dams in Gauteng. I have also received photos of bass from Zimbabwe that appear to have similar ulcers. EUS has been present in the Upper Zambezi and the Okavango Rivers for a couple of years.

The fish disease, Epizootic Ulcerative Syndrome or EUS for short, was diagnosed by researchers from the Aquaculture Research Division of the Department of Agriculture, Forestry and Fisheries in 2010 in bluegill and bass from Arrieskraal Dam and then in 2011 in barbel from a farm dam near Stellenbosch.

Once introduced, the disease is fairly indiscriminate and has been reported to affect most fish species including popular angling species such as bass, barbel, carp, nembwe and tigerfish. Infection of fish requires the breaking of the skin for the fungus to get hold and once infected, the disease follows three stages. First, pinhead sized red spots form on the body and fins of the fish. These develop into small (2-4cm) ulcers which finally form large open ulcers which eventually kill the fish. The distribution of the disease in South Africa is currently unknown and we unfortunately do not know what its long term impact will be on our native fish stocks. What we do know is that disease spreads aggressively through fish populations once introduced.

Unfortunately, there appears to be no feasible way to control this disease once it affects wild fish populations. The only control measure is to try to limit its spread in the country. It is therefore vital that all anglers understand that - The only way to control this disease is to control its spread to new waters.

VAAL DAM (LOUIS COOPER)

HARTIES (RUDI DREYER)

THEEWATERS KLOOF (GUY PAULEY)

BANKET DAM ZIMBABWE (DENHAM PARKER)

Anglers can contribute to limiting the spread of this disease in the following way:

- Do not move any fish, live bait or fish parts from one body of water to another. Fish with no clinical signs may be carriers of the disease.
- Do not keep infected fish in your livewell is may result in the fungus being transmitted to healthy fish.
- Use knotless landing nets to minimize abrasions on the fish.
- Empty your live-well and bilges before leaving the launch site.
- Clean boats, trailers, fishing gear and drain livewells and bait buckets between fishing trips. If you have been outside South Africa, consider taking the extra precaution of soaking your live-well and bilge area with a solution of 1 tablespoon of bleach (Jik or Jeyes Fluid) to 5 litres of water for 10 minutes. Then rinse thoroughly to get rid of any remaining bleach (watch your carpets!).
- Help educate other anglers in the dangers of disease transmission.

Please send photos of suspicious fish and GPS coordinates of where they were found to Dr. Weyl as he would like to monitor the situation. His e-mail address is o.weyl@saiab.ac.za

Dr. Olaf Weyl is Senior Aquatic Biologist, South African Institute for Aquatic Biodiversity, Grahamstown.

32 SA BASS
April 2012

- Many recreational fishermen in South Africa.

- Opportunistic reporting from people who observe abnormalities.

- Awareness!!!

1. Description of EUS

2. What needs to be reported.

3. Who should be reported to.

4. Contact details for focal person.

- Clinical signs / gross pathology only

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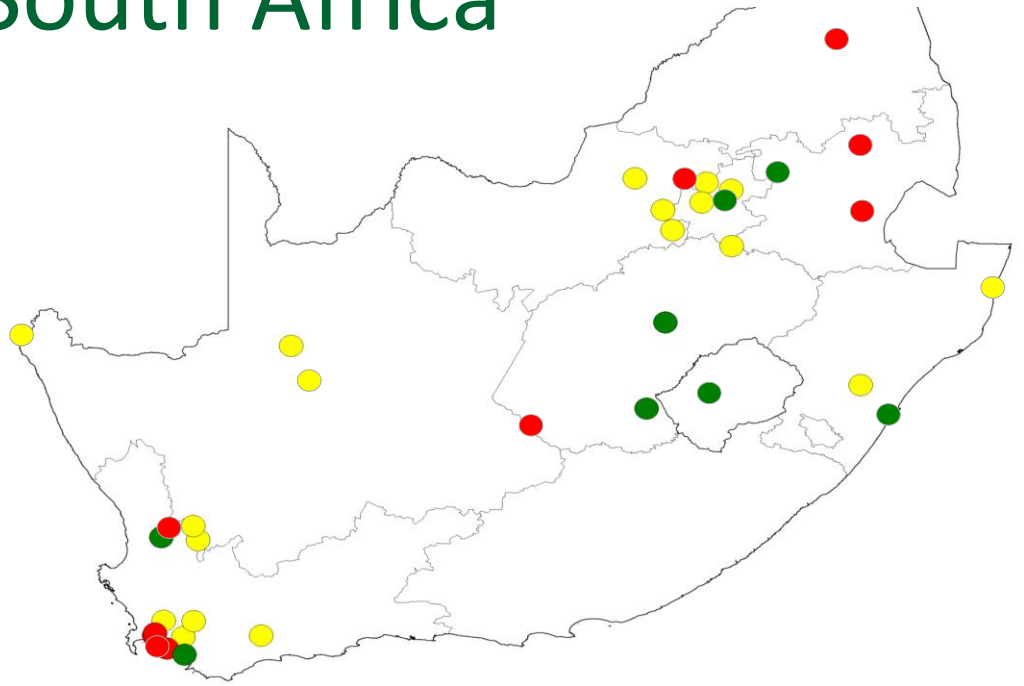
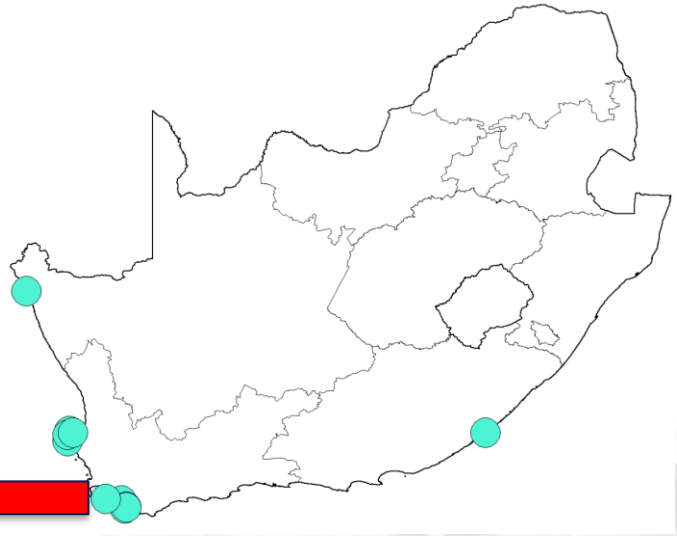
Epizootic Ulcerative Syndrome in South Africa



- Suspect cases based on prevalence of gross clinical signs
- Unconfirmed tested cases
- Confirmed cases

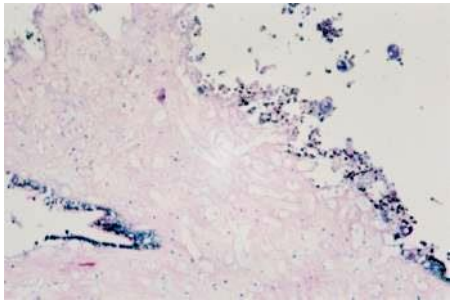
Abalone aquaculture

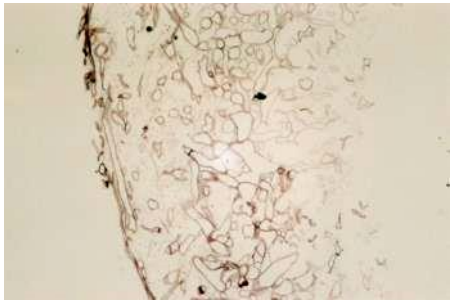


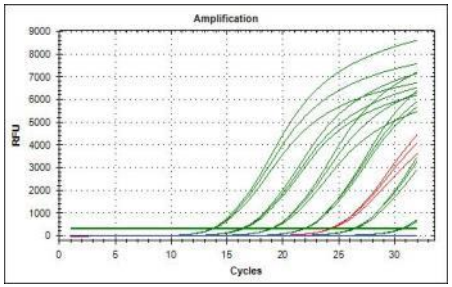
17 Grow on sites

Demonstration of disease freedom

Targeted Surveillance (Apparently Healthy Animals) for Export since 2009







Zone	Infection with:	Diagnostic Test	2019	2020	2021	2022
East Coast Zone (1 Farm)	Abalone Herpesvirus (AbHV)	Histopathology	0	265	0	0
		PCR	60	0	70	69
	Perkinsus olseni	Histopathology	91	265	0	0
		PCR	0	0	70	69
	Xenohaliotis californiensis (Whithering Syndrome)	Histopathology	91	265	0	0
		PCR	0	0	0	69
South Coast Zone (12 Farms)	Abalone Herpesvirus (AbHV)	Histopathology	2804	3497	176	241
		PCR	0	0	1265	572
	Perkinsus olseni	Histopathology	2804	3497	0	241
		PCR	0	0	1244	572
	Xenohaliotis californiensis (Whithering Syndrome)	Histopathology	2804	3497	0	241
		PCR	0	0	892	572
West Coast Zone (5 Farms)	Abalone Herpesvirus (AbHV)	Histopathology	1001	416	0	85
		PCR	0	0	131	285
	Perkinsus olseni	Histopathology	1001	416	0	85
		PCR	0	0	131	285
	Xenohaliotis californiensis (Whithering Syndrome)	Histopathology	1001	416	0	85
		PCR	0	0	131	285

Documenting disease freedom

Active surveillance – Non-targeted (Stock Inspections)

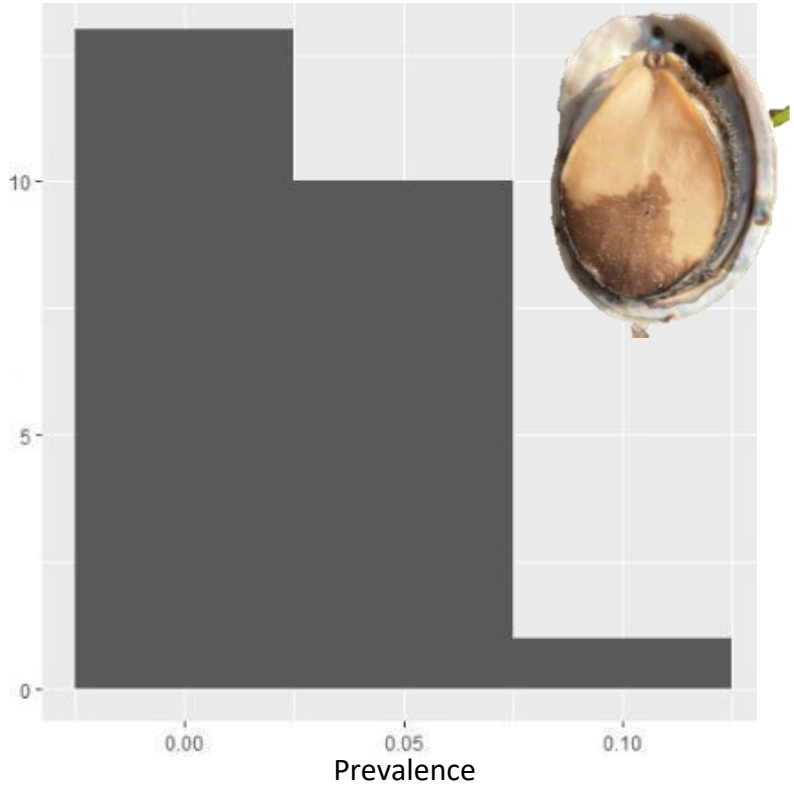
Stock Inspections (DFFE & Private Veterinarian)

Documenting disease freedom

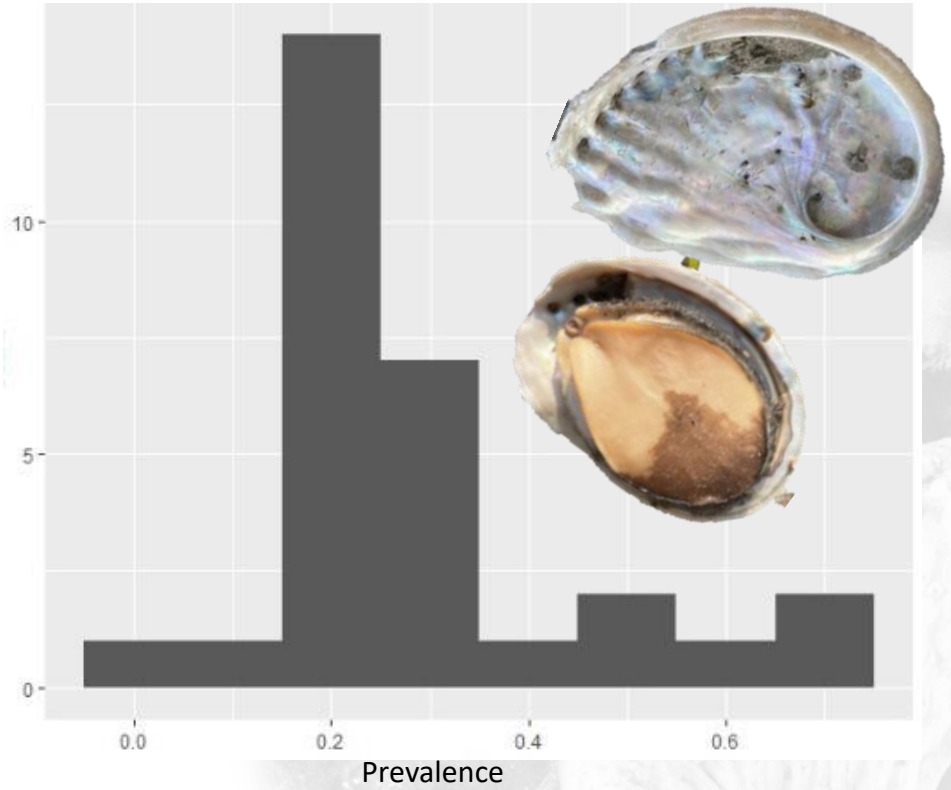
Active surveillance – Non-targeted

Stock Inspections [DFFE (n=1) & Private Veterinarian (n=4)]

Fresh Dead Only



Total Mortality



Documenting disease freedom

Active surveillance – Non-targeted

Stock Inspections [DFFE (n=1) & Private Veterinarian (n=4)]

DISEASE PRESENT? — **YES** → Implement disease control or eradication measures

NO ↓

Disease risk greater than **SEVERE**? — **YES** → Re-inspect within 3 months. Measures MUST be taken to control mortalities

NO ↓

Disease risk greater than **MODERATE**? — **YES** → Re-inspect within 6 months. Measures may be required to control mortalities

NO ↓

No significant disease findings
No further recommendations

Documenting disease freedom

Passive surveillance

Continuous observation at cleaning, grading and splitting.

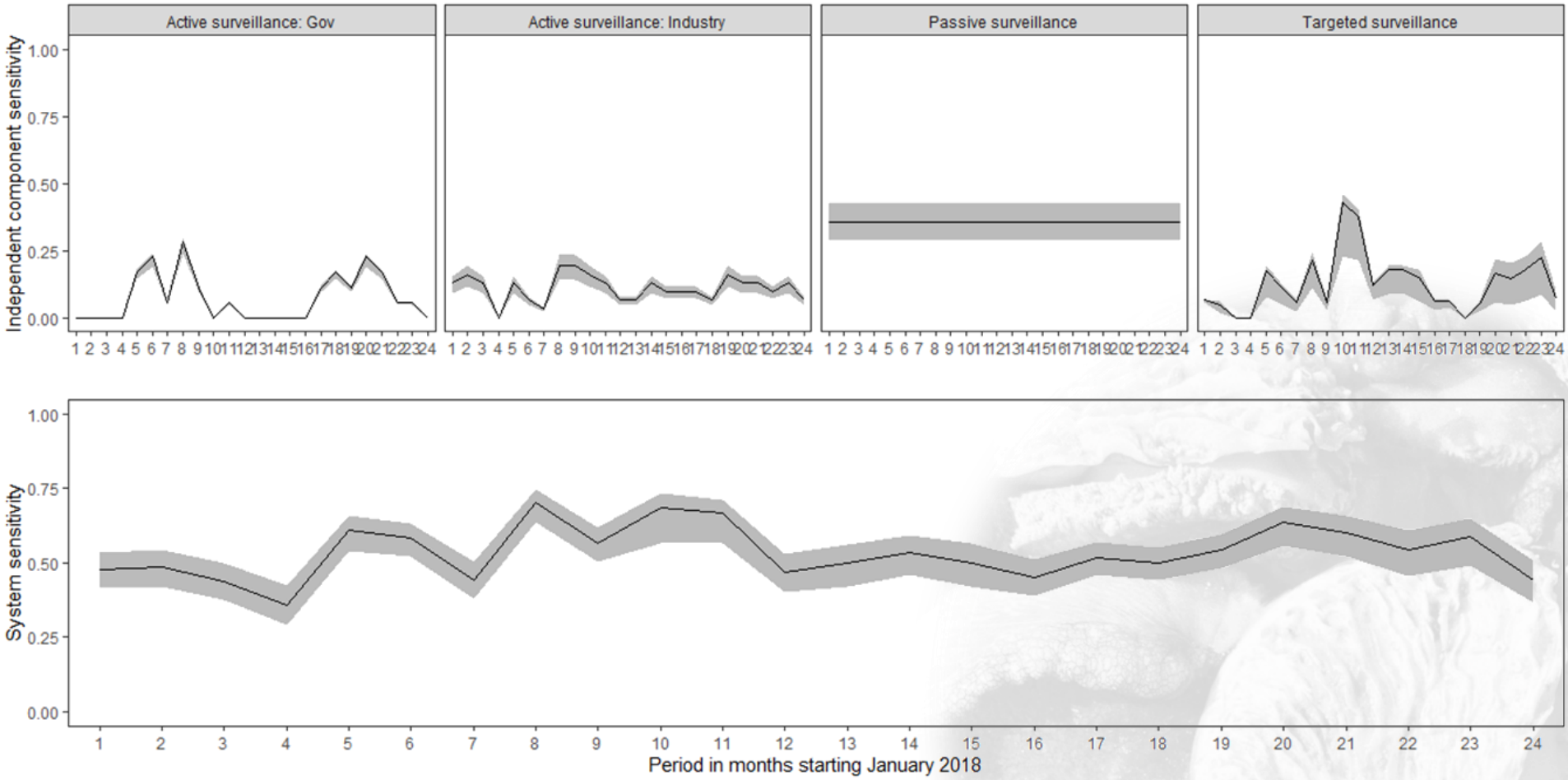
World Organisation for Animal Health
Founded as OIE

Pathways for demonstrating freedom from disease

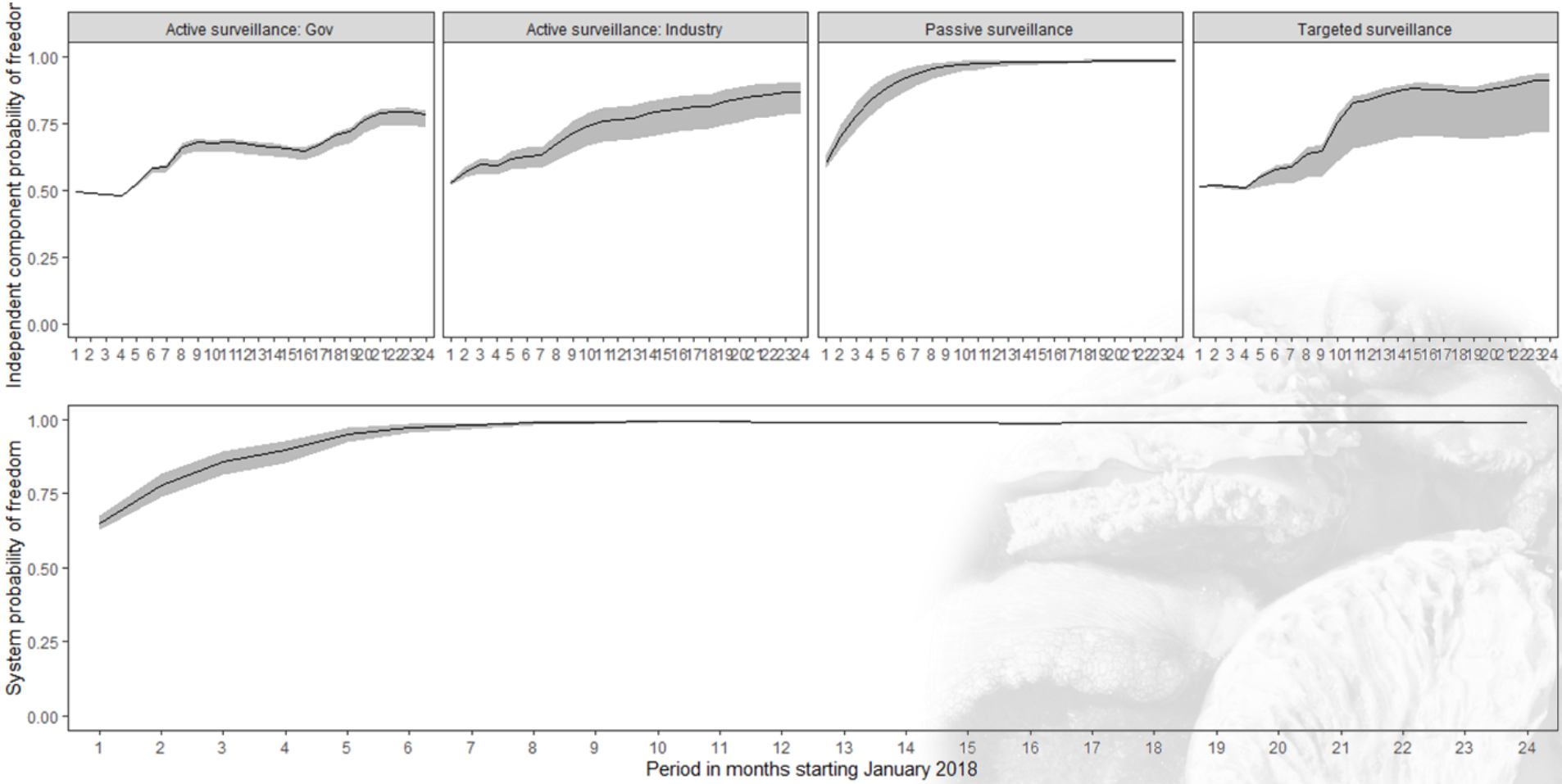
Pathway	Primary Evidence	Secondary Evidence	Level of application
1. Absence of susceptible species	Surveys, historical data, import records, environmental information	None	Country, Zone
2. Historical freedom	Passive surveillance (Early Detection System)	Targeted surveillance	Country, Zone
3. Targeted surveillance	Targeted surveillance	Passive surveillance	Country, Zone, Compartment
4. Returning to freedom	Targeted surveillance	Passive surveillance	Country, Zone, Compartment

WOAH Aquatic Animal Health Code Chapter: Chapter 1.4 Aquatic Animal Disease Surveillance
Adopted May 2022

Results - Sensitivity



Results – Probability of freedom



Lessons learnt

- The traditional paradigm of targeted surveillance in isolation may not support pathogen detection outside of sampling periods.
- Early detection reduces the time between pathogen discovery and the appropriate characterisation of the disease threat.
- Early detection and intervention can significantly reduce impact and losses
- Disease surveillance requires the application of appropriate validated diagnostic tools.
- Reporting of negative data for passive surveillance allows for a better description of the level of observation of the population in question to support documentation of disease freedom.

Thank You

Dr Kevin Christison

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