Algal bloom wildlife post-mortem report

Government of South Australia
Department for Environment and Water

Species – Little penguin

Date collected – 30 June 2025

Location – Boomer Beach, Victor Harbor

History relating to the animal

An adult little penguin (*Eudyptula minor*) was found washed up at Boomer Beach, Victor Harbor on 30 June 2025 following some rough weather.

Clinical examination

The animal was already dead and so could not be examined prior to death.

Necropsy

The necropsy (looking at the whole body) revealed that the animal had very little effect from post-mortem decomposition. There were no external signs of trauma (injuries), and the bird was in good body condition with good muscle over the pectoral (breast) bone. The air sacs (part of birds' lung anatomy) were normal. There was some food material present in the gastrointestinal tract. There were multiple lesions (abnormal tissue) present in the liver, consistent with hepatitis (inflammation of the liver).

Tissues were collected to test for avian influenza and Newcastle disease, and for histopathology (looking at tissues under the microscope for more detailed information). Testing for brevetoxins and other algal biotoxins, a possibility due to the algal bloom, was requested. Samples were collected for other testing that might be indicated after these tests were performed.

Histopathology

Samples from every major body system were examined under the microscope. The skeletal muscle (the muscle type that is attached to bones and enables voluntary movements, like walking) and kidney had signs of inflammation. The bird had a moderate amount of liver flukes (*Mawsonotrema eudyptulae*, liver parasites). These flukes are not uncommon in wild little penguins and moderate amounts, such as found in this bird, often don't cause disease. Round worms (gut parasites, e.g. *Contracaecum* species and *Anisakis* species) were in the proventriculus (the top part of a bird's stomach). These are normal findings in most marine birds and generally do not cause disease. There was some hyperaemia (increased red colouring due to increased blood flow) of the capillaries (small blood vessels) in the lung. All other tissues appeared normal.

The liver flukes may have contributed to the illness of this bird. The inflammation found in multiple tissues was thought to be due to bacteraemia (bacterial infection in the blood).

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Culture

Following the histopathology findings, which suggested a possible infection, the liver was cultured to try to identify bacteria. There was a light growth of *Clostridium perfringens* (a common, widespread bacteria) and a moderate growth of mixed organisms (e.g. bacteria), but anaerobes (those bacteria that do not need an oxygenated environment),including *Salmonella* species, *Listeria* species and *Yersinia* species, were not isolated. The bacteria found were not clinically significant (not likely to be causing disease) .

Brevetoxins

No samples were above limits of reporting.

Other algal biotoxins

No samples were above limits of reporting.

Avian influenza

Results were negative.

Newcastle disease

Results were negative.

Summary

There were liver flukes found in this animal which may have contributed to the bird being unwell. This is not an unusual finding in a wild little penguin. Laboratory testing for avian influenza and Newcastle disease was negative and there was no evidence of the presence of brevetoxins or other algal biotoxins.

Outlook

PATH RESULTS: WILD, (Wi) [redacted]

From [redacted]
Date Wed 13/08/2025 4:54 PM
To [redacted]

[redacted]

Tested on 01/07/25
Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**

DEPT OF ENV WATER & NATURAL RE
[redacted]

[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

Number of samples 7

CASE MANAGEMENT DETAILS

Case Managed by:
Case Management Requested by:
Case Management Requested on:

[redacted]

Case Details: Found dead at Victor Harbour (penguin).

MOLECULAR DIAGNOSTICS

INFLUENZA A RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)

Specimen type: Swabs in VTM

SPECIMEN ID	Type A	H5	H7
PENGUIN	Not detected		

Validated by [redacted], Laboratory Scientist.

[redacted]

Tested on 01/07/25
Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**
[redacted]

DEPT OF ENV WATER & NATURAL RE
[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

[redacted]

CLINICAL HISTORY
Fresh little penguin carcass washed up on Boomer Beach at Victor Harbour. Some rough weather at present. TO be submitted via [redacted] couriers tonight
SAMPLES SUBMITTED
One dead Little Penguin, weight = 1kg
NECROPSY FINDINGS
The carcass is relatively fresh with minimal post-mortem autolytic changes. The bird weighs 1kg.
There are no external signs of trauma. The bird is in good condition with adequate coverage over the keel bone.
The air sacs are clear. The gizzard contains partially digested green food material. The intestinal contents are brown and pasty.
There are multifocal, white to tan, irregular, round, flat lesions within the liver parenchyma. The largest lesion is approximately 5 x 4mm.
GROSS DIAGNOSIS
Open - possible multifocal hepatitis
SAMPLES COLLECTED & TESTING
Tracheal and cloacal swabs in VTM -AI/ND PCR
Fresh tissues in 50 mL pots (liver, intestines, kidney, lung) - stored in -80
Fresh tissue in 5 mL tubes (liver, spleen, heart, kidney, brain, lung) - stored in -80
Swab of liver lesion - stored at 4
Fresh liver lesion - stored at -80

Comment: please await histopathology

[redacted]
Specialist Pathologist
[redacted]
Resident

Validated by [redacted], Veterinary Pathologist.

[redacted]

Tested on 01/07/25
Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**

E

[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

MOLECULAR DIAGNOSTICS

NEWCASTLE DISEASE VIRUS RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)

Specimen type: Swabs in VTM

Number of specimens: 1

SPECIMEN ID	F Gene	M Gene	L Gene
PENGUIN	Not detected	Not detected	Not detected

Validated by [redacted], Laboratory Scientist.

REFERRED TEST

Disease/Test : Biotoxin and brevetoxin testing in penguins

RESULT : See imaged/emailed results

This test was performed by: Analytical Services Tasmania

Validated by [redacted], Laboratory Scientist.

[redacted]

Tested on 01/07/25
Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**

RE

[redacted]

[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

HISTOPATHOLOGY FROM NECROPSY

REF: [redacted]
The typographical error is corrected 13/8/2025

CLINICAL HISTORY
2 Little Penguin carcasses washed up on Boomer Beach at Victor Harbor. Some rough weather at present.

MACROSCOPY
1 = heart and skeletal muscle
2 = liver lung and spleen
3 = eye and trachea (decal 4 hours in formic acid)
4 = brain
5+6 = GIT

MICROSCOPY
Skeletal muscle: Focally between the interstitium of low numbers of myocytes there is an aggregate of low to moderate numbers of heterophils. (Mild, focal, subacute, heterophils, myositis)

Kidney: Multifocally surrounding collecting ducts and extending into the interstitium surrounding the pelvis there are moderate numbers of lymphocytes, plasma cells and macrophages admixed with karyorrhectic debris. (Moderate, multifocal, subacute to chronic lymphocytic, plasmacytic, histiocytic interstitial nephritis)

Liver: Multifocally and randomly there is effacement and replacement of the hepatic architecture by lytic necrosis, moderate numbers of heterophils, lymphocytes, plasma cells macrophages admixed with fibrosis and biliary hyperplasia. Within the necrosis there are multiple cross sections of oval trematode ova approximately 30 micron in diameter.

Lung: Diffusely there is hyperaemia/congestion of the capillaries within

the interstitium lining air capillaries. (Pulmonary hyperaemia / congestion)

There is moderate autolysis of elementary sections.

Proventriculus: There are multiple sections of nematodes within the lumen. The nematodes are approximately 30 in diameter with smooth cuticle, platymyarian musculature, pseudocoelom, lateral cords and

[redacted]

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Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**

RE

[redacted]

[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

alimentary tract lined by a monolayer of columnar epithelium (spi

Those tissues not described appear normal.

DIAGNOSIS
Liver: Hepatic Mawsonotrema eudyptulae
Kidney: Moderate, multifocal, subacute to chronic lymphocytic, plasmacytic, histiocytic interstitial nephritis
Skeletal muscle: Mild, focal, subacute, heterophils, myositis
Lung: Pulmonary hyperaemia / congestion
Proventriculus: Proventricular nematodiasis

COMMENTS
Hepatic Mawsonotrema and secondary hepatitis contributed to morbidity for this bird (Harrigan et al 1991). The multi-organ inflammation likely reflects a secondary bacteraemia.

The proventricular nematodiasis (Anisakis or Contracaecum sp.) is an incidental finding.

Harrigan, K.E., 1991. Causes of mortality of little penguins Eudyptula minor in Victoria. Emu-Austral Ornithology, 91(5), pp.273-277.

[redacted]

Specialist Veterinary Anatomic Pathologist

[redacted]

Validated by [redacted].

[redacted]

Tested on 01/07/25
Reported on 13/08/25 17:24
Referred on 30/06/25 **by:**

E

[redacted]

[redacted]

Owner:
WILD

VICTOR HARBOR 5211

Animal/s:
Wild Birds

DOB: N/A

Collected: 30/06/25 14:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

SUMMARY DIAGNOSIS
Liver: Hepatic Mawsonotrema eudyptulae
Kidney: interstitial nephritis

COMMENTS
Hepatic Mawsonotrema and secondary hepatitis contributed to morbidity for this bird (Harrigan et al 1991). The multi-organ inflammation likely reflects a secondary bacteraemia. Microbiological cultures are unremarkable.

Harrigan, K.E., 1991. Causes of mortality of little penguins Eudyptula minor in Victoria. Emu-Austral Ornithology, 91(5), pp.273-277.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted].

MICROBIOLOGY

SPECIMEN: Liver
ANIMAL ID:NO ID

MICROSCOPY
No bacteria seen.
A small number of leucocytes. Numerous epithelial cells.

CULTURE
1. Light growth of Clostridium perfringens

2. Moderate growth of Mixed organisms

COMMENT: No Salmonella sp., Listeria sp. or Yersinia sp. isolated.

_____Final Report_____
18/07/25
Validated by [redacted], Laboratory Scientist.

ANALYTICAL SERVICES TASMANIA
18 St Johns Avenue New Town 7008 TAS
03 6165 3300
enquiries@ast.tas.gov.au
www.analyticalservices.tas.gov.au

Submission Number: [redacted]
Report Number:
Issue Date: 25/07/2025
Status: Final

This report is a reissue, replacing report number: [redacted]
Reissue Reason: Finalised since last issue.

CERTIFICATE OF ANALYSIS

Customer: [redacted]
Address:

Submission Description: Biotoxin and brevetoxin testing in penguins [redacted]
Sample Received Date: 17/07/2025
Contract Number:
Client Order Number: [redacted]
Program/Quote Reference: [redacted] Biotoxin and brevetoxin testing in penguins

Sample(s) analysed as received. Sampling date and time data supplied by the client. The document shall not be reproduced except in full.
Additional information relating to this submission can be found in the sample receipt notification.
This report supersedes any previous reports with this submission number.
Many tests specify a holding time which gives the recommended timeframe by which a sample should be preserved/extracted and/or analysed after the sample is taken.
Holding time information can be found on the AST website https://analyticalservices.tas.gov.au/our-services/containers-samples-and-submissions .
Whilst every effort is made to analyse samples within these timeframes, situations can occur where this is not possible.
Where a test has been conducted outside the recommended sample holding time this should be taken into account when interpreting results.

The results in this report were authorised by:

Name	*Position*
[redacted]	**Chemist**

Test Information:

Method ID	*Test Description*	*Date Commenced:*
3411	Lipophilic Toxins in Shellfish by LC-MS/MS	22-07-2025
3411A	Brevetoxins in Biota by LC-MS/MS	22-07-2025
3416	PST in Biota by LC-MS/MS (Boundy Method)	22-07-2025

Chemistry Test Results (Biota - Food)

		Sample Description	[redacted]	[redacted]	[redacted]	[redacted]
		Sampled Date/ Time	Kidney 02/07/25 0:00	Liver 02/07/25 0:00	Lung 02/07/25 0:00	Brain 02/07/25 0:00
Method ID	Analyte	Units	324421	324422	324423	324424
	AZA1	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB	<0.05*	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
3411	GYM	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 2	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	Brevetoxin 3	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*
	C1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
3416	dcGTX1	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	dcNEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*

* NATA accreditation does not cover this result

Chemistry Test Results (Biota - Food)

		Sample Description	[redacted]	[redacted]	[redacted]	[redacted]
			Kidney	Liver	Lung	Brain
		Sampled Date/ Time	02/07/25 0:00	02/07/25 0:00	02/07/25 0:00	02/07/25 0:00
Method ID	Analyte	Units	324421	324422	324423	324424
	dcSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	doSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	GTX1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	GTX2	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	GTX3	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
3416	GTX4	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	GTX5	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	GTX6	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	NEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*
	STX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*
	Total PST	STX.2HCl eq. mg/kg	<0.10*	<0.10*	<0.10*	<0.10*

* NATA accreditation does not cover this result