

Algal bloom wildlife post-mortem report



Government
of South Australia

Department for
Environment and Water

Species - Little penguin

Date collected – 25 June 2025

Location – Emu Bay, Kangaroo Island

History relating to the animal

An adult little penguin (*Eudyptula minor*) was found dead at the Emu Bay car park (a known ocean exit point for penguins) on 25 June 2025. There was blood present in the pharynx (top part of the throat). Due to its position when found, it was suspected it may have been hit by a car or the victim of a dog attack.

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 showed mild effects from post-mortem decomposition. The bird was in good body condition with good muscle over the pectoral (breast) bone. There was abundant haemorrhage (bleeding) at the base of the heart and within the lungs. The proventriculus (the top part of a bird's stomach) was ruptured indicating blunt force trauma (injury from a blunt object, e.g. hit by car).

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. All organs appeared normal except for the kidney, lung and liver.

In the kidney, there were inflammatory cells present and necrosis (die-off) of tissue. There was indication of inflammation, which was mild to moderate and multifocal (appearing in many places in the kidney). Similarly, in the liver, the same pattern was seen. In the lung, there was diffuse hyperaemia (increased red colouring due to increased blood flow) with haemorrhage (bleeding) into the air spaces in the lungs.

The diagnosis from the histopathology was that there was bleeding into the lungs as well as the ruptured proventriculus (top part of the stomach), which was likely due to trauma (injury) and that this was the cause of death. There was concurrent (occurring at the same time) inflammation in the liver and kidney. No organisms (e.g. bacteria) could be identified in these tissues; special stains are used in the tissue to detect them under the microscope. Because the

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top part of the stomach (the proventriculus) was ruptured and therefore bacteria and other contaminants spread to organs in the body, bacterial culture interpretation would be confounded (confused) by the organisms from the proventriculus.

Culture

No bacteria was seen and no growth occurred after 48 hours. Anaerobes (those bacteria that do not need an oxygenated environment), including *Salmonella* species, *Listeria* species and *Yersinia* species, were not isolated.

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

The cause of death in the penguin was trauma (injury) - likely from being hit by a car. The animal also had inflammation in the liver and kidney. Laboratory testing for avian influenza and Newcastle disease was negative and there was no evidence of the presence of brevetoxins or other algal biotoxins.

PIIMS Laboratory Results Viewer



Result Details Page

Submission No: [REDACTED]

Lab No. - Test: [REDACTED]

Animal/Batch Id: EMU BAY
PENGUIN LITTLE
EMU BAY

Owner:

Submitter:

PIC:

Submitter Id: [REDACTED]

Species: Bird - wild

Clinic Phone:

Age:

Submitted: 27/06/2025

Test: GP - GROSS PATHOLOGY

Reported: 27/06/2025 14:34

NECROPSY REPORT

CLINICAL HISTORY

Please refer to the clinical history on the request form and the clinical notes sent with the request form. A brief summary of the clinical history;

The penguin was found at Emu Bay carpark at a known exit point from the ocean.

May have been hit by car or a dog attack

There were no external signs of trauma

SAMPLES SUBMITTED

One dead adult little penguin, Eudyptula minor

NECROPSY FINDINGS

The bird is in good body condition (convex pectoral muscles) and weighs 800g. There are mild post mortem autolytic changes.

There is abundant haemorrhage at the base of the heart and within the lungs. The proventriculus is ruptured, the torn edges contain clotted blood and proventricular contents are scattered through the coelomic cavity.

GROSS SUMMARY

Acute haemorrhage within coelomic cavity
Ruptured proventriculus

SAMPLES COLLECTED & TESTING

Cloacal and tracheal swabs in virus transport medium will be tested for AI and NDV by qPCR.

Formalin fixed tissues will be processed for histopathology to assess for intercurrent disease.

Fresh liver, kidney, lung, liver and brain are stored for 6 months in case biotoxin testing is required.

Fresh liver, spleen, kidney, heart, lung, brain are stored frozen.

COMMENTS

The cause of death was blunt trauma causing proventricular rupture and haemorrhage within the coelomic cavity. A specific cause for the blunt trauma cannot be concluded.

There are no subcutaneous haemorrhages or fractured bones.



PIIMS Laboratory Results Viewer



Result Details Page

Submission No: [REDACTED]

Lab No. - Test: [REDACTED]

Animal/Batch Id: EMU BAY
PENGUIN LITTLE
EMU BAY

Owner:

Submitter:

PIC:

Submitter Id: [REDACTED]

Species: Bird - wild

Clinic Phone:

Age:

Submitted: 27/06/2025

Test: FLU - INFLUENZA TYPE A RNA PCR PACKAGE Reported: 02/07/2025 14:08

MOLECULAR DIAGNOSTICS

INFLUENZA A RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)

Specimen type: Pooled trachea & cloaca swab

SPECIMEN ID	Type A	H5	H7
POOL	Not detected		

Validated by [REDACTED] Laboratory Scientist.

This request has other tests in progress at the time of reporting

Test: FLU - INFLUENZA TYPE A RNA PCR PACKAGE Reported: 02/07/2025 14:08

Validated by [REDACTED] Laboratory Scientist.

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INFLUENZA A RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)

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SPECIMEN ID	Type A	H5	H7
POOL	Not detected		

Validated by [REDACTED], Laboratory Scientist.

This request has other tests in progress at the time of reporting

PIIMS Laboratory Results Viewer



Result Details Page

Submission No: [REDACTED]

Lab No. - Test: [REDACTED]

Animal/Batch Id: EMU BAY
PENGUIN LITTLE
EMU BAY

Submitter:

Owner:

PIC:

Submitter Id: [REDACTED]

Species: Bird - wild

Clinic Phone:

Age:

Submitted: 27/06/2025

Test: NDV - NEWCASTLE DISEASE VIRUS (NDV) PCR - NOT AAHL Reported: 02/07/2025 16:43

MOLECULAR DIAGNOSTICS

NEWCASTLE DISEASE VIRUS RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)

Specimen type: Pooled trachea & cloaca swab Number of specimens: 1

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

Validated by [REDACTED], Laboratory Scientist.

This request has other tests in progress at the time of reporting

Test: NDV - NEWCASTLE DISEASE VIRUS (NDV) PCR - NOT AAHL Reported: 02/07/2025 16:43

Validated by [REDACTED], Laboratory Scientist.

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Specimen type: Pooled trachea & cloaca swab Number of specimens: 1

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

Validated by [REDACTED], Laboratory Scientist.

This request has other tests in progress at the time of reporting

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Validated by [REDACTED], Laboratory Scientist.

PIIMS Laboratory Results Viewer



Result Details Page

Submission No:	[REDACTED]	Lab No. - Test:	[REDACTED]
Animal/Batch Id:	EMU BAY		
	PENGUIN LITTLE		
Owner:	EMU BAY	Submitter:	
PIC:		Submitter Id:	[REDACTED]
Species:	Bird - wild	Clinic Phone:	
Age:		Submitted:	27/06/2025
Test:	NEC - NECROPSY	Reported:	09/07/2025 12:38

HISTOPATHOLOGY FROM NECROPSY

REF: [REDACTED]
ADDITIONAL FINDINGS 9/7/2025

CLINICAL HISTORY

Please refer to the clinical history on the request form and the clinical notes sent with the request form. A brief summary of the clinical history;
The penguin was found at Emu Bay carpark at a known exit point from the ocean.

May have been hit by car or a dog attack

There were no external signs of trauma

MACROSCOPY

Cassettes A-E contain liver, spleen, heart, lung, kidney, proventriculus, duodenum, pancreas, jejunum, ileum, caecum, multiple sections of brain; Ae GK

MICROSCOPY

Kidney: Multifocally the cortical interstitium is effaced and replaced by moderate numbers of lymphocytes, plasma cells, heterophils and macrophages admixed with karyorrhectic debris (lytic necrosis). (Mild, to moderate, multifocal, subacute pyogranulomatous necrotizing, interstitial nephritis)

Liver: Multifocally and randomly the hepatocytes around portal areas, centrilobular areas and midzonal areas are effaced and replaced by moderate numbers of lymphocytes, plasma cells, heterophils and macrophages admixed with karyorrhectic debris (lytic necrosis). (Mild, to moderate, multifocal, subacute pyogranulomatous necrotizing hepatitis)

Lung: There is diffuse hyperaemia / congestion of the capillaries within the interstitium of the air capillaries and there is mild multifocal haemorrhage within the lumen of air capillaries . (Pulmonary haemorrhage, acute, mild and pulmonary hyperaemia / congestion)

Those organs not described appear normal.

DIAGNOSIS

Acute haemorrhage within coelomic cavity with pulmonary haemorrhage
Ruptured proventriculus

Kidney: Mild, to moderate, multifocal, subacute pyogranulomatous necrotizing, interstitial nephritis

Liver: Mild, to moderate, multifocal, subacute pyogranulomatous necrotizing hepatitis

COMMENTS

Acute rupture of the proventriculus and acute internal haemorrhage was the cause of death.

There is intercurrent nephritis and hepatitis. Special stains will be done to look for microorganisms. However, microbiological culture is a more sensitive method for detection of microorganisms. Please contact the laboratory within the next 5 working days if microbiological culture of liver is required to assess for intercurrent bacterial infection.

MICROSCOPY 9/7/2025

Liver: Microorganisms are not seen on Gram, PAS (no fungal hyphae or yeast are seen) , Wade fite or Ziehl Neelsen stains (no acid fast bacteria are seen).

COMMENTS

Please disregard my comments recommending liver culture. The ruptured proventriculus will confound any liver culture.

Specialist Veterinary Anatomic Pathologist

Validated by .

All tests on this request have now been completed

Test: NEC - NECROPSY

Reported: 09/07/2025 12:38

Validated by .

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ADDITIONAL FINDINGS 9/7/2025

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Test: **NEC - NECROPSY**

Reported: **09/07/2025 12:38**

Validated by .

Test: **NEC - NECROPSY**

Reported: **08/07/2025 09:25**

HISTOPATHOLOGY FROM NECROPSY

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Reported: 08/07/2025 09:25

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Specialist Veterinary Anatomic Pathologist

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Reported: 08/07/2025 09:25

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PIIMS Laboratory Results Viewer



Result Details Page

Submission No: [REDACTED]

Lab No. - Test: [REDACTED]

Animal/Batch Id: EMU BAY
PENGUIN LITTLE
EMU BAY

Owner:

Submitter:

PIC:

Submitter Id: [REDACTED]

Species: Bird - wild

Clinic Phone:

Age:

Submitted: 27/06/2025

Test: SUP - VET SUPPLEMENTARY

Reported: 09/07/2025 12:38

SUMMARY DIAGNOSIS

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SUMMARY COMMENTS

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[REDACTED]
Specialist Veterinary Anatomic Pathologist
[REDACTED]

Validated by [REDACTED].

All tests on this request have now been completed

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[REDACTED]

Specialist Veterinary Anatomic Pathologist

[REDACTED]

Validated by [REDACTED].

All tests on this request have now been completed

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of liver is required to assess for intercurrent bacterial infection.

[REDACTED]

Specialist Veterinary Anatomic Pathologist

[REDACTED]

Validated by [REDACTED].

All tests on this request have now been completed

Test: SUP - VET SUPPLEMENTARY Reported: 08/07/2025 09:25

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[REDACTED]

Specialist Veterinary Anatomic Pathologist

[REDACTED]

Validated by [REDACTED].

All tests on this request have now been completed

Test: SUP - VET SUPPLEMENTARY

Reported: 08/07/2025 09:25

Validated by [REDACTED].

Specialist Veterinary Anatomic Pathologist

[Redacted]

Validated by [Redacted].

This request has other tests in progress at the time of reporting

Test:	GP - GROSS PATHOLOGY	Reported:	27/06/2025 14:34
Validated by [Redacted].			

PIIMS Laboratory Results Viewer



Result Details Page

Submission No: [REDACTED]

Lab No. - Test: [REDACTED]

Animal/Batch Id: EMU BAY
PENGUIN LITTLE
EMU BAY

Submitter:

Owner:

PIC:

Submitter Id: [REDACTED]

Species: Bird - wild

Clinic Phone:

Age:

Submitted: 27/06/2025

Test: VSW - VET MICRO & CULTURE

Reported: 15/07/2025 11:41

MICROBIOLOGY

SPECIMEN: Liver
ANIMAL ID:NO ID

MICROSCOPY

No bacteria seen.
Moderate leucocytes. Scanty epithelial cells.

CULTURE

1. No growth after 48 hours incubation.

COMMENT: Anaerobes NOT isolated.

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

____ Final Report _____

15/07/25

Validated by [REDACTED], Laboratory Scientist.

All tests on this request have now been completed

Test: VSW - VET MICRO & CULTURE

Reported: 15/07/2025 11:41

____ Final Report _____

15/07/25

Validated by [REDACTED], Laboratory Scientist.

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Final Report_____

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Final Report_____

15/07/25

Validated by [REDACTED], Laboratory Scientist.

Test: VSW - VET MICRO & CULTURE

Reported: 14/07/2025 12:53

MICROBIOLOGY

SPECIMEN: Liver
ANIMAL ID:NO ID

MICROSCOPY

No bacteria seen.
Moderate leucocytes. Scanty epithelial cells.

CULTURE

1. No growth after 48 hours incubation.

COMMENT: Anaerobes NOT isolated.
Listeria species not isolated.

Culture is continuing.

INTERIM REPORT

14/07/25

Validated by [REDACTED], Laboratory Scientist.

All tests on this request have now been completed

Test: VSW - VET MICRO & CULTURE

Reported: 14/07/2025 12:53

INTERIM REPORT

14/07/25

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Reported: 14/07/2025 12:53

INTERIM REPORT

14/07/25

Validated by [REDACTED], Laboratory Scientist.

CERTIFICATE OF ANALYSIS

Customer:

Address:

Submission Description:

Sample Received Date:

Contract Number:

Client Order Number:

Program/Quote Reference:

Biotoxin and brevetoxin testing in penguins

16/07/2025

- 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

Chemist

Test Information:

Method ID

Test Description

Date Commenced:

3411	Lipophilic Toxins in Shellfish by LC-MS/MS
3411A	Brevetoxins in Biota by LC-MS/MS
3416	PST in Biota by LC-MS/MS (Boundy Method)

22-07-2025
22-07-2025
22-07-2025

Chemistry Test Results (Biota - Food)

		Sample Description			
		Sampled Date/ Time	kidney	Lung	Brain
			27/06/25 0:00	27/06/25 0:00	27/06/25 0:00
Method ID	Analyte	Units	324436	324437	324438
3411	AZA1	mg/kg WMB	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*
	GYM	mg/kg WMB	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 2	mg/kg WMB	<0.01*	<0.01*	<0.01*
	Brevetoxin 3	mg/kg WMB	<0.01*	<0.01*	<0.01*
3416	C1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	dcGTX1	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	dcNEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*

* NATA accreditation does not cover this result

Chemistry Test Results (Biota - Food)

		Sample Description			
		Sampled Date/ Time	kidney	Lung	Brain
			27/06/25 0:00	27/06/25 0:00	27/06/25 0:00
Method ID	Analyte	Units	324436	324437	324438
3416	dcSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	doSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	GTX1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	GTX2	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	GTX3	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	GTX4	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	GTX5	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	GTX6	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	NEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*
	STX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*
	Total PST	STX.2HCl eq. mg/kg	<0.10*	<0.10*	<0.10*

* NATA accreditation does not cover this result