Algal bloom wildlife post-mortem report

Government of South Australia
Department for Environment and Water

Species – Little penguin

Date collected –7 July 2025

Location – Goolwa Beach

History relating to the animal

One adult female little penguin (*Eudyptula minor)* was found dead on Goolwa Beach on 7 July 2025.

Clinical examination

The animal was already dead and so could not be examined prior to death. There was no sign of external trauma to the body.

Necropsy

The necropsy (looking at the whole body) revealed that the little penguin was in good body condition and weighed 900g. There was mild post-mortem autolytic change (decomposing after death). There were multiple tears within the pectoral muscles (muscles of the chest that move the wings/flippers) accompanied by haemorrhage (bleeding) within the muscle. There were multiple tears with clotted blood in the left lobe of the liver and in the left kidney. The stomach contained a small amount of brown ingesta and small numbers of ascarid worms (parasites).

Tissues were collected for histopathology (looking at tissues under the microscope for more detailed information) and testing for brevetoxins and other algal biotoxins (a possibility due to the algal bloom).

Histopathology

Samples from every major body system were examined under the microscope. Examination of tissues revealed bleeding and congestion throughout the lungs, likely due to agonal changes (at the time of death). There was mild necrotising hepatitis (liver inflammation and areas of cell death) within the liver.

Microbiology

Samples were collected for bacterial culture following the histopathology findings in the liver, which suggested a possible bacterial infection. There was no bacterial growth after 48 hours of incubation.

Looking under a microscope, no microorganisms such as bacteria were seen using special stains (gram stain, PAS, Wade Fite or Ziehl Neelsen).

Brevetoxins

No samples were above the limits of reporting.

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Other algal biotoxins

No samples were above the limits of reporting.

Summary

One adult female little penguin was found dead. Laboratory examination suggested that blunt force trauma with internal bleeding was the cause of death in this little penguin, possibly due to predation by dogs or foxes, despite there being no external wounds over the skin/feathers. The bird also had a mild liver infection that would have contributed to illness, but would not have caused death. Brevetoxins and other algal biotoxins were not detected.

Outlook

PATH RESULTS: PENGUIN LITTLE, (Wi) [redacted]

From [redacted]
Date Wed 13/08/2025 5:00 PM
To [redacted]

[redacted]

[redacted]

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

Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

HISTOPATHOLOGY FROM NECROPSY

REF: [redacted]
ADDITIONAL FINDINGS 18/7/2025
CLINICAL HISTORY
Female penguin found dead at Goolwa

MACROSCOPY
A-C contain spleen, heart, lung, air sacs, brain, proventriculus/ventriculus, duodenum, pancreas, jejunum, ileum, caecum; The kidney is too autolyzed for histopathology; Ae GK

MICROSCOPY
Liver: Multifocally and randomly, and surrounding periportal areas and extending to mid zonal areas, hepatic cords are effaced and replaced by low numbers of lymphocytes, macrophages, plasma cells, heterophils admixed with karyorrhectic debris. (Mild to moderate, multifocal, subacute to chronic, necrotizing, lymphocytic, plasmacytic, histiocytic, heterophils, hepatitis)

Lung: Diffusely the interstitium surrounding a capillaries is expanded by hyperaemia/congestion. Within the lumens of air capillaries and, infundibula/atria are low numbers of erythrocytes (haemorrhage). (Pulmonary hyperaemia/congestion, pulmonary haemorrhage, acute, probably agonal)

There is mild autolysis of the brain, elementary sections.

Those tissues not described are unremarkable.

DIAGNOSIS
Liver: Mild to moderate, multifocal, subacute to chronic, necrotizing, lymphocytic, plasmacytic, histiocytic, heterophils, hepatitis

Lung: Pulmonary hyperaemia/congestion, pulmonary haemorrhage, acute, probably agonal

COMMENTS
The subacute to chronic hepatitis contributed to morbidity for the bird. Special stains will be done to examine for microorganisms. However, because bacterial culture is more sensitive than special stains

[redacted]

[redacted]

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Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

bacterial culture is recommended. Please contact the laboratory within the next 5 working days if microbiological culture is required.

The vascular changes in the lungs are likely agonal processes at the time of death.

18/7/2025
MICROSCOPY
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 note that microbiological culture is more sensitive than the special stains. For this reason an infectious microbial cause cannot be excluded.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

SUMMARY DIAGNOSIS
Liver: Mild subacute to chronic, necrotizing, hepatitis

SUMAMRY COMMENTS
The subacute to chronic hepatitis contributed to morbidity for the bird.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

[redacted]

[redacted]

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

Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

CASE MANAGEMENT DETAILS

Case Managed by:
Case Management Requested by: [redacted]
Case Management Requested on: 09/07/25

Case Details: Found dead at Goolwa

[redacted]

[redacted]

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

Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

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;
Female little penguin found dead at Goolwa

SAMPLES SUBMITTED
One dead adult female little penguin, Eudyptula minor

NECROPSY FINDINGS
The bird is in good body condition, the pectoral muscles are convex and there are mild post mortem autolytic changes. The bird weighs 900g.

There are multiple tears in the pectoral muscle admixed with clotted blood (haemorrhage). There are multiple tears covered with clotted blood in the left lobe of the liver and left kidney.

The stomach contains scant brown ingesta and low numbers of ascarids 40-50mm long

GROSS SUMMARY
Muscle tearing and haemorrhage, acute
Hepatic and renal parenchyma tears and haemorrhage, acute
Gastric ascardiasis

SAMPLES COLLECTED & TESTING
Fixed tissues will be processed for histopathology to assess for

subacute or chronic disease processes.

Cloacal and tracheal swabs in VTM, liver, kidney, spleen, heart, lung, brain are stored.

COMMENTS
Blunt forced trauma with internal haemorrhages was the cause of death. Although there are no external wounds over the skin / feathers, differential diagnosis include predation by dogs / foxes or any another cause of blunt forced trauma. Unfortunately there is no bite wound which can be swabbed for DNA analysis of predators.

Gastric ascaridiasis is a normal finding.

[redacted]

[redacted]

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

Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

Histopathology is pending, as you requested.

Liver, kidney, lung and brain and stored. Please contact the laboratory within the next week if a quote for biotoxin and brevetoxin testing is required.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

Number of samples 5

Outlook

PATH RESULTS: PENGUIN LITTLE, (Wi) [redacted]

From [redacted]
Date Wed 13/08/2025 5:00 PM
To [redacted]

[redacted]

[redacted]

Tested on 18/07/25
Reported on 13/08/25 17:30
Referred on 07/07/25 **by:** [redacted]

Owner:
PENGUIN LITTLE

GOOLWA 5214

Animal/s:
Wild Birds

DOB: N/A

Collected: 07/07/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received All Tests Complete

MICROBIOLOGY

SPECIMEN: Liver
ANIMAL ID:NO ID

MICROSCOPY
No bacteria seen.
Leucocytes not detected. 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_____
21/07/25
Validated by [redacted] Laboratory Scientist.

Tasmanian Government

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: 6/02/2026
Status: Final

CERTIFICATE OF ANALYSIS

Customer: [redacted]
Address:
Contact:

Submission Description: Biotoxin and Brevotoxins
Sample Received Date: 11/12/2025
Contract Number:
Client Order Number: [redacted]
Program/Quote Reference: Biotoxin and Brevotoxins

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*	*Name*	*Position*
[redacted]	**Chemist**	[redacted]	**Section Head - Organic Chemistry**

Test Information:

Method ID	*Test Description*	*Date Commenced:*
3411	Lipophilic Toxins in Shellfish by LC-MS/MS	02-02-2026
3411A	Brevetoxins in Shellfish by LC-MS/MS	02-02-2026
3416	PST in Biota by LC-MS/MS (Boundy Method)	02-02-2026

Sample Comments

Sample Number: 391441

3411A Brevetoxins in Shellfish by LC-MS/MS
The LOR has been increased due to limited sample available for testing

Sample Number: 391442

3411A Brevetoxins in Shellfish by LC-MS/MS
The LOR has been increased due to limited sample available for testing

Sample Number: 391443

3411A Brevetoxins in Shellfish by LC-MS/MS
The LOR has been increased due to limited sample available for testing

IS- Insufficient Sample

* NATA accreditation does not cover this result

Chemistry Test Results (Biota - Food)

		Sample Description	Liver	Kidney	Lung	Spleen	Heart	Brain
		Sampled Date/ Time	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00
Method ID	Analyte	Units	391438	391439	391440	391441	391442	391443
	AZA1	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	AZA2	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	AZA3	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	Domoic Acid	mg/kg WMB	<0.05*	<0.05*	*IS*	*IS*	*IS*	*IS*
	DTX1 Free	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	DTX1 Total	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	DTX2 Free	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	DTX2 Total	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
3411	GYM	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	Homo-YTX	mg/kg WMB	<0.02*	<0.02*	*IS*	*IS*	*IS*	*IS*
	OA Free	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	OA Total	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	PnTx-G	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	PTX2	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	SPX1	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	Total DST	OA eq. mg/kg	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	YTX	mg/kg WMB	<0.01*	<0.01*	*IS*	*IS*	*IS*	*IS*
	Brevetoxin 1	mg/kg WMB	<0.10*	<0.10*	<0.10*	<0.20*	<0.50*	<0.50*
3411A	Brevetoxin 2	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.04*	<0.10*	<0.10*
	Brevetoxin 3	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.04*	<0.10*	<0.10*
	C1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	C2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	C3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	C4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
3416	dcGTX1	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	dcGTX2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	dcGTX3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	dcGTX4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*

IS- Insufficient Sample

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Chemistry Test Results (Biota - Food)

		Sample Description	Liver	Kidney	Lung	Spleen	Heart	Brain
		Sampled Date/ Time	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00	09/07/25 0:00
Method ID	Analyte	Units	391438	391439	391440	391441	391442	391443
3416	dcNEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	dcSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	doSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	GTX1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	GTX2	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	GTX3	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	GTX4	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	GTX5	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	GTX6	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	NEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	*IS*	*IS*	*IS*
	STX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	*IS*	*IS*	*IS*
	Total PST	STX.2HCl eq. mg/kg	<0.10*	<0.10*	<0.10*	*IS*	*IS*	*IS*

IS- Insufficient Sample

* NATA accreditation does not cover this result