Algal bloom wildlife post-mortem report

Government of South Australia
Department for Environment and Water

Species – Long-nosed fur seal

Date collected – 22 November 2025

Location – Penneshaw wharf, Kangaroo Island

History relating to the animal

A juvenile male long-nosed fur seal (LNFS) (*Arctocephalus forsteri*) was found dead at Penneshaw wharf, Kangaroo Island on 22 November 2025.

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 was in poor body condition, weighing 9.2kg and measuring 84cm in length. There was with minimal subcutaneous (under the skin) fat (less than 5mm) over the dorsum (back) and ventrum (belly).

There was 150mL mucoid (slimy, like mucus), translucent (clear) fluid and some small (5cm length) slender fish in the stomach. There was scant faeces within the rectum, and the urinary bladder was empty.

Tissues were collected for histopathology (looking at tissues under the microscope for more detailed information) and testing for *Mycobacterium tuberculosis* (*MTb*) complex organisms, *Brucella* species bacteria, and 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 the brain revealed moderate, focally extensive (covering a large but defined area), acute (recent) meningeal haemorrhage (bleeding in the brain). There was mild to moderate autolysis (decomposition of tissues after death) of the remaining tissues. There were no significant findings in any of the other tissues examined.

Bacteriology

Polymerase chain reaction (PCR) testing for *MTb* complex organisms and *Brucella* species bacteria was negative.

Brevetoxins

No samples were above the limits of reporting.

Other algal biotoxins

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No samples were above the limits of reporting.

Summary

A juvenile male long-nosed fur seal (*Arctocephalus forsteri*) was found dead. Laboratory examination revealed the seal was underweight and had bleeding in the brain, which likely occurred just before or close to the time of death. It was not possible to determine if this contributed to the death of the animal, nor the cause of the weight loss in this animal.

Testing for brucellosis (*Brucella* species bacteria) and tuberculosis (*Mycobacterium tuberculosis* complex organisms) was negative. Brevetoxins and other algal biotoxins were also not detected.

Outlook

PATH RESULTS: LONG-NOSE FUR SEAL, (Ma) [redacted]

From [redacted]
Date Fri 28/11/2025 8:00 AM
To [redacted]

[redacted]

[redacted]

Tested on 26/11/25
Reported on 28/11/25 08:30
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

NECROPSY REPORT
ADDITIONAL FINDINGS 28/11/2025

CLINICAL HISTORY
This is a summary of the clinical history from the request form:
A dead juvenile long-nosed fur seal was collected by Dept Environment and Water SA from Penneshaw wharf on 22 November 2025

SAMPLES SUBMITTED
One dead juvenile male Australian long nosed fur seal (Arctocephalus forsteri).

NECROPSY FINDINGS
The animal is in poor body condition and weighs 9.2kg. The subcutaneous fat over the ventral and dorsal midlines is < 5mm. There is minimal abdominal fat. The animal is 840mm long and the circumference around the body caudal to the pectoral fins is 560mm.

The stomach contains 150ml of mucoid translucent fluid and scant slender 50mm long fish.

There is no urine in the bladder and only scant faeces in the rectum.

GROSS SUMMARY
Chronic weight loss

SAMPLES COLLECTED & TESTING
We will contact Analytical Services Tasmania for a quote for testing fresh liver, spleen, heart, lung, kidney, brain, faeces and stomach for biotoxin and brevetoxins. We will forward that quote to you.

Fresh brain and lung will be sent to ACDP for Brucella sp. and Mycobacterium sp. PCR testing, prior to shipment of samples to ACDP, as approved by [redacted]

Formalin fixed tissues are processed for histopathology.

Fresh lung, brain, heart, lung, kidney, spleen, oropharyngeal swab in VTM and anal and nasal swabs in VTM (these two swabs were collected on 22/11/2025 by Dept E & W SA staff) are stored.

[redacted]

Tested on 26/11/25
Reported on 28/11/25 08:30
Referred on 22/11/25 **by:**

[redacted]

[redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

COMMENTS
Chronic weight loss contributed to morbidity for this animal. Could decreased feed abundance related to the Karenia sp. algal bloom and fish kills, be a contributing factor ?

28/11/2025
NECROPSY FINDINGS
Focally extensively over the leptomeninges of the left occipital cortex there is red (possible haemorrhage or congestion). There is no haemorrhage within the thick overlying duramater and the overlying skin above the cranium appears normal.

COMMENTS
Histopathology will clarify if the changes in the meninges are due to freeze - thaw artifact or are true antemortem changes e.g. haemorrhage or congestion.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

Outlook

PATH RESULTS: LONG-NOSE FUR SEAL, (Ma) [redacted]

From [redacted]
Date Wed 03/12/2025 6:00 PM
To [redacted]

[redacted]

[redacted]

Tested on 26/11/25
Reported on 03/12/25 18:30
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

HISTOPATHOLOGY FROM NECROPSY

REF: [redacted]
CLINICAL HISTORY
This is a summary of the clinical history from the request form:
A dead juvenile long-nosed fur seal was collected by Dept Environment and Water SA from Penneshaw wharf on 22 November 2025

One dead juvenile male Australian long nosed fur seal (Arctocephalus forsteri).

MACROSCOPY
Cassettes contain the following tissues
A-E, liver, spleen, heart, lung, kidney, stomach, duodenum, jejunum, skeletal muscle
F: spinal cord
G: cerebellum
H: occipital cortex
I-J hippocampus
K parietal cortex

L-M basal ganglia and frontal cortex; Ae GK
N: midbrain
O-P parietal and occipital cortex

MICROSCOPY
Brain: Focally extensively the leptomeninges over the left occipital cortices are expanded by haemorrhage. (Moderate, focally extensive acute meningeal haemorrhage)

The lungs and heart appear normal.

There are mild to moderate post mortem autolytic changes in all other organs. There are no other findings in those organs.

DIAGNOSIS
Chronic weight loss
Brain: Moderate focally extensive acute meningeal haemorrhage

COMMENTS
There is acute meningeal haemorrhage which likely occurred just before or close to the time of death. Based on laboratory findings it is not possible to determine if it contributed to the death of the animal.

[redacted]

[redacted]

Tested on 26/11/25
Reported on 03/12/25 18:30
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

There are no histopathological findings to explain the cause of chronic weight loss.

[redacted]

Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

Outlook

PATH RESULTS: LONG-NOSE FUR SEAL, (Ma) [redacted]

From [redacted]
Date Wed 28/01/2026 11:30 AM
To [redacted]

[redacted]

[redacted]

Tested on 26/11/25
Reported on 28/01/26 12:00
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

REFERRED TEST

Disease/Test : Mycobacterium Isolation
Specimen Type: Brain & Lung Tissue

RESULT : Brain - Mycobacterium sp. was not isolated
Lung - Mycobacterium sp. was not isolated

Comment : NATA/RCPA accreditation does not cover the performance of this service
Cultures were incubated for 8 weeks.

This test was performed by: Australian Centre for Disease Preparedness (CSIRO)
NATA accreditation number: 13546

Outlook

PATH RESULTS: LONG-NOSE FUR SEAL, (Ma) [redacted]

From [redacted]
Date Tue 20/01/2026 3:00 PM
To [redacted]

[redacted]

[redacted]

Tested on 26/11/25
Reported on 20/01/26 15:30
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

REFERRED TEST

Disease/Test : Brucella species Isolation

RESULT : Brain - Brucella spp. was not isolated
Lung - Brucella spp. was not isolated

This test was performed by: Australian Centre for Disease Preparedness (CSIRO)
NATA accreditation number: 13546

Outlook

PATH RESULTS: LONG-NOSE FUR SEAL, (Ma) [redacted]

From [redacted]
Date Thu 04/12/2025 8:30 AM
To [redacted]

[redacted]

[redacted]

Tested on 26/11/25
Reported on 04/12/25 09:00
Referred on 22/11/25 **by:** [redacted]

Owner:
LONG-NOSE FUR SEAL
GOOLWA BEACH
GOOLWA BEACH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 22/11/25 00:25 **Subm.No:** [redacted] **Lab No.:** [redacted]

Samples tested as received

SUMMARY DIAGNOSIS
Chronic weight loss
Brain: Moderate focally extensive acute meningeal haemorrhage

SUMMARY COMMENTS
There is acute meningeal haemorrhage which likely occurred just before or close to the time of death. Based on laboratory findings it is not possible to determine if it contributed to the death of the animal.

Could decreased feed abundance associated with the Karenia sp. algal blooms be a contributing factor to this animal's weight loss ?

We are in the process of requesting a quote from AST Hobart for brevetoxin and biotoxin testing.

[redacted]
Specialist Veterinary Anatomic Pathologist

[redacted]

Validated by [redacted]

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: 24/02/2026
Status: Final

CERTIFICATE OF ANALYSIS

Customer: [redacted]
Address:
Contact:

Submission Description: Biotoxin and Brevotoxins - Long nose fur seal
Sample Received Date: 16/12/2025
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*
[redacted]	**Section Head - Organic Chemistry**

Test Information:

Method ID	*Test Description*	*Date Commenced:*
3411	Lipophilic Toxins in Shellfish by LC-MS/MS	16-02-2026
3411A	Brevetoxins in Shellfish by LC-MS/MS	19-02-2026
3416	PST in Biota by LC-MS/MS (Boundy Method)	16-02-2026

Chemistry Test Results (Biota - Food)

Method ID	Analyte	Units	Sample Description	Faeces	Stomach Contents	Liver	Spleen	Kidney	Lung	Brain	Heart
			Sampled Date/ Time	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00
				394362	394363	394364	394365	394366	394367	394368	394369
3411	AZA1	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB		*IS*	<0.05*	<0.05*	<0.05*	<0.05*	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GYM	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 1	mg/kg WMB		*IS*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*
	Brevetoxin 2	mg/kg WMB		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	Brevetoxin 3	mg/kg WMB		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
3416	C1	STX.2HCl eq. mg/kg		*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX1	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg		*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*

IS- Insufficient Sample

* NATA accreditation does not cover this result

Chemistry Test Results (Biota - Food)

		Sample Description	Faeces	Stomach Contents	Liver	Spleen	Kidney	Lung	Brain	Heart
		Sampled Date/ Time	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00	26/11/25 0:00
Method ID	Analyte	Units	394362	394363	394364	394365	394366	394367	394368	394369
3416	dcNEO	STX.2HCl eq. mg/kg	*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcSTX	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	doSTX	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX1	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX2	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX3	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX4	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX5	STX.2HCl eq. mg/kg	*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	GTX6	STX.2HCl eq. mg/kg	*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	NEO	STX.2HCl eq. mg/kg	*IS*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	STX	STX.2HCl eq. mg/kg	*IS*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Total PST	STX.2HCl eq. mg/kg	*IS*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*

IS- Insufficient Sample

* NATA accreditation does not cover this result