

Algal bloom wildlife post-mortem report



Government
of South Australia

Department for
Environment and Water

Species – Long-nosed fur seal

Date collected – 21 November 2025

Location – Normanville Beach

History relating to the animal

A female long-nose fur seal (*Arctocephalus forsteri*) pup was found dead and collected from Normanville Beach on 21 November 2025.

Clinical examination

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

Necropsy

The necropsy (looking at the whole body) revealed that the animal was in poor body condition and weighed 5kg. The animal was 1m long and the circumference around the body caudal (towards the rear) to the pectoral (chest) flippers was 340mm. There was minimal fat under the skin, and no fat (visible to the naked eye) in the mesentery (tissue surrounding the internal organs), around the heart and around the kidneys. The skeletal muscle (the muscle type that is attached to bones and enables voluntary movements, like swimming) over the epaxial (back) muscles and limbs was atrophic (wasted) and the ribs were prominent.

There were marked post-mortem autolytic change (decomposition after death), the skin had sloughed (separated from the underlying tissue) from the nose, and the maxilla (upper jaw) was bleached white. There was no feed in the stomach. There was scant pasty brown ingesta (food material) in the intestines and scant faeces in the rectum. The 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. There was moderate autolysis (decomposition after death) of the liver, kidney, heart, and alimentary (gut) sections. There was very mild autolysis of the rest of the tissues. There were no remarkable findings (no disease processes) in the organs examined.

Bacteriology

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

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Brevetoxins

No samples were above the limits of reporting.

Other algal biotoxins

Domoic acid (an amnesic shellfish toxin) was detected in the spleen at 0.38mg/kg.

Summary

A female long-nosed fur seal pup was found dead. The animal was severely underweight. Laboratory examination could not determine the cause of severe weight loss or death. It is suspected that poor nutrition contributed to the animal's weakened condition, possibly due to reduced food availability in the environment, although this could not be confirmed. Testing for tuberculosis (*Mycobacterium tuberculosis* complex organisms) and brucellosis (*Brucella* species bacteria) was negative.

Domoic acid (an amnesic shellfish toxin) was detected in the spleen of this animal. Brevetoxins and other algal biotoxins were not detected. Domoic acid is a potent neurotoxin produced by some marine algal species, which can accumulate in shellfish and can cause amnesic shellfish poisoning (ASP) in humans. Domoic acid has been associated with neurological signs, reproductive failure, and degenerative cardiomyopathy (weakening of the heart muscle) in California sea lions in conjunction with harmful algal bloom events overseas. The presence of this toxin in the animal's tissues may have contributed to its illness and death. However, as the animal was not examined prior to death and there were no supporting findings on necropsy in this case, any association between domoic acid exposure and animal's death remains speculative.

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

From [REDACTED]

Date Fri 21/11/2025 6:00 PM

To [REDACTED]

[REDACTED]

Tested on 21/11/25
Reported on 21/11/25 18:30
Referred on 21/11/25 **by:** [REDACTED]

[REDACTED]

Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

NECROPSY REPORT

CLINICAL HISTORY

This is a transcription of the clinical history from the request form
Dead long nosed fur seal pup collected by DEW from Normanville Beach on
21 November 2025

SAMPLES SUBMITTED

One dead female Long nosed fur seal pup, *Arctocephalus forsteri*

NECROPSY FINDINGS

The animal is in poor body condition, weighs 5kg and there is minimal subcutaneous adipose tissue. Mesenteric, pericardial and peri-renal adipose tissue is not evident grossly. The skeletal muscle over the epaxial muscles and limbs is atrophic and the ribs are prominent.

The pup is 1m long and the circumference around the body caudal to the pectoral flippers is 340mm.

There are marked post mortem autolytic changes, the skin has sloughed from the nose and the maxilla is bleached white.

There is no feed in the stomach. There is scant pasty brown ingesta in the intestines and scant faeces in the rectum. The bladder is empty.

GROSS SUMMARY

Chronic weight loss

SAMPLES COLLECTED & TESTING

Formalin fixed tissues will be processed for histopathology.

Brain and lung will be sent for Brucella sp. and Mycobacterium sp. testing at ACDP as approved by the South Australian CVO.

A quote will be raised from Analytical Services Tasmania for brevetoxin and biotoxin testing on fresh liver, spleen, heart, lung, kidney, brain, faeces, and this will be email to [REDACTED]

Fresh liver, spleen, heart, lung, kidney, brain and oropharyngeal swab (in VTM) are stored.

COMMENTS

[REDACTED]

Tested on 21/11/25
Reported on 21/11/25 18:30
Referred on 21/11/25 **by:** [REDACTED]

[REDACTED]

Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

Samples tested as received

Chronic weight loss contributed to morbidity for this pup. Could decreased feed abundance be a contributing factor for the animal's death ?

Histopathology is pending to assess for intercurrent diseases.

[REDACTED]

Specialist Veterinary Anatomic Pathologist
[REDACTED]

Validated by [REDACTED]

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Tested on 21/11/25
Reported on 27/11/25 17:00
Referred on 21/11/25 by:

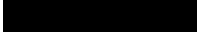


Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:**  **Lab No.:** 

Samples tested as received

HISTOPATHOLOGY FROM NECROPSY

REF: 

CLINICAL HISTORY

This is a transcription of the clinical history from the request form
Dead long nosed fur seal pup collected by DEW from Normanville Beach on
21 November 2025

One dead female Long nosed fur seal pup, *Arctocephalus forsteri*

MACROSCOPY

Cassettes contain the following tissues

A: liver, kidney, spleen
B: stomach, duodenum, pancreas
C: ileum, caecum, colon, jejunum
D: heart
E: stomach
F: lung
G: thalamus
H: hippocampus
I: parietal cortex
J: occipital cortex
K-L: basal ganglia and frontal cortex
M: cerebellum; Ae GK

MICROSCOPY

There is moderate autolysis of the liver, kidney, heart, alimentary
sections. There is very mild autolysis of the rest of the tissues.

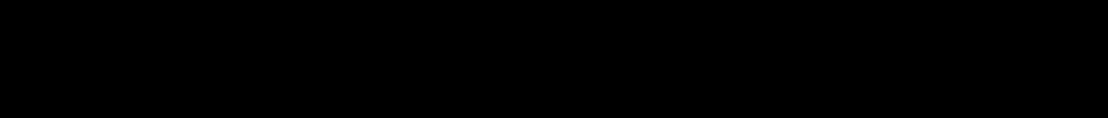
There are no remarkable findings in the organs examined.

DIAGNOSIS

No diagnosis concluded

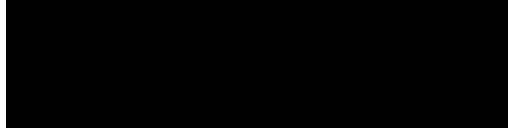
COMMENTS

There are no findings to explain the cause of chronic weight loss and death for this animal.





Tested on 21/11/25
Reported on 27/11/25 17:00
Referred on 21/11/25 by:



Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:**  **Lab No.:** 

Samples tested as received

Specialist Veterinary Anatomic Pathologist



Validated by 

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

From [REDACTED]

Date Tue 20/01/2026 3:00 PM

To [REDACTED]

[REDACTED]

Tested on 21/11/25
Reported on 20/01/26 15:30
Referred on 21/11/25 **by:** [REDACTED]

[REDACTED]

Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

All Tests Complete

REFERRED TEST

Disease/Test : Brucella species Isolation

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

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

REFERRED TEST

Disease/Test : Mycobacterium Isolation

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

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

From [REDACTED]

Date Tue 02/12/2025 5:00 PM

To [REDACTED]

[REDACTED]

Tested on 21/11/25
Reported on 02/12/25 17:30
Referred on 21/11/25 **by:** [REDACTED]

[REDACTED]

Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

Samples tested as received

REFERRED TEST

Disease/Test : Brucella sp. PCR
Specimen Type: Lung x2, Brain x2

RESULT : All 4 samples Negative

Comment : NATA/RCPA accreditation does not cover the performance of this service

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

Validated by [REDACTED] Laboratory Scientist.

REFERRED TEST

Disease/Test : Pan-Mycobacterium Taqman Assay

Specimen Type: Lung x2, Brain x2

RESULT : All 4 samples Negative

Comment : NATA/RCPA accreditation does not cover the performance of
this service

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

Validated by [REDACTED] Laboratory Scientist.

[REDACTED]

Tested on 21/11/25
Reported on 02/12/25 17:30
Referred on 21/11/25 **by:** [REDACTED]

[REDACTED]

Owner:
LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:
Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

Samples tested as received

REFERRED TEST

Disease/Test : Mycobacterium tuberculosis complex IS6110 - TaqMan Assay
Specimen Type: Lung x2, Brain x2

RESULT : All 4 samples Negative

Comment : NATA/RCPA accreditation does not cover the performance of this service

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

Validated by [REDACTED] Laboratory Scientist.

REFERRED TEST

Disease/Test : Mycobacterium avium complex Taqman Assay
Specimen Type: Lung x2, Brain x2

RESULT : All 4 samples Negative

Comment : NATA/RCPA accreditation does not cover the performance of this service

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

Validated by [REDACTED] Laboratory Scientist.

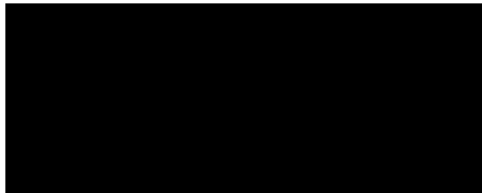
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PATH RESULTS: LONG NOSE FUR SEAL, (Ma) [REDACTED]

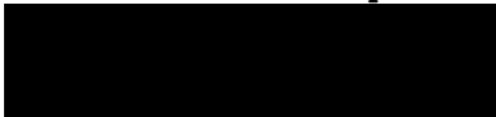
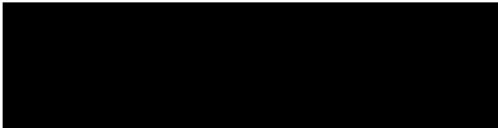
From [REDACTED]

Date Thu 27/11/2025 4:30 PM

To [REDACTED]



Tested on 21/11/25
Reported on 27/11/25 17:00
Referred on 21/11/25 **by:**



Owner:

LONG NOSE FUR SEAL

NORMANVILLE 5204

Animal/s:

Marine Mammal

DOB: N/A

Collected: 21/11/25 00:25 **Subm.No:** [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

SUMMARY DIAGNOSIS

No diagnosis concluded

COMMENTS

There are no findings to explain the cause of chronic weight loss and death for this animal. Analytic Services Tasmania is being contacted for the quote for biotoxin and brevetoxin testing.



Specialist Veterinary Anatomic Pathologist



Validated by [REDACTED]

CERTIFICATE OF ANALYSIS

Customer:

Address:

Contact:

Submission Description:

Sample Received Date:

Contract Number:

Client Order Number:

Program/Quote Reference:

Biotoxin and Brevotoxins - long nosed fur seal

16/12/2025

5119

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

Section Head - Organic
Chemistry

Test Information:

Method ID

Test Description

Date Commenced:

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

19-02-2026
19-02-2026
19-02-2026

Chemistry Test Results (Biota - Food)

Sample Description			Faeces	Liver	Spleen	Heart	Kidney	Brain	Lung
Sampled Date/ Time			21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00
Method ID	Analyte	Units	394536	394537	394538	394539	394540	394541	394542
3411	AZA1	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB	<0.05*	<0.05*	0.38*	<0.05*	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GYM	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 1	mg/kg WMB	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*
	Brevetoxin 2	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	Brevetoxin 3	mg/kg WMB	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
3416	C1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX1	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*

* NATA accreditation does not cover this result



Chemistry Test Results (Biota - Food)		Sample Description	Faeces	Liver	Spleen	Heart	Kidney	Brain	Lung
		Sampled Date/ Time	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00	21/11/25 0:00
Method ID	Analyte	Units	394536	394537	394538	394539	394540	394541	394542
3416	dcNEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	doSTX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX1	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX2	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX3	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX4	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	GTX5	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	GTX6	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	NEO	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	STX	STX.2HCl eq. mg/kg	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*	<0.01*
	Total PST	STX.2HCl eq. mg/kg	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*	<0.10*

* NATA accreditation does not cover this result