

Algal bloom wildlife post-mortem report



Government
of South Australia

Department for
Environment and Water

Species – Long-nosed fur seal

Date collected – 13 February 2026

Location – Beacon 19 Boat Ramp, Goolwa South

History relating to the animal

An adult male long-nosed fur seal (*Arctocephalus forsteri*) was found dead and collected near the Beacon 19 Boat Ramp at Goolwa South on 13 February 2026.

Clinical examination

The seal was found dead 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 39kg. The animal was 1.37m in length, with a body circumference of 740mm caudal (towards the rear) of the pectoral (chest) flippers. There was minimal blubber (fat under the skin). There were moderate post-mortem autolytic change (decomposition after death).

Within the stomach there was scant mucoid ingesta (mucus and food material) and moderate numbers of ascarids (gut parasites) 40-50mm long. There was scant ingesta in the intestinal tract, well-formed dry faeces in the rectum, and approximately 20mL of urine in the bladder.

Tissues were collected for histopathology (looking at tissues under the microscope for more detailed information) and testing for *Mycobacterium tuberculosis* (MTb) complex and *Mycobacterium avium* (*M. avium*) 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 lung revealed a mild, acute (recent), multifocal (multiple areas), oedema (accumulation of fluid between cells). Examination of the caecum and colon (sections of the large bowel) revealed enteric cestodiasis (intestinal tapeworms). Examination of the brain revealed mild, multifocal vacuolation (small fluid-filled cavities) of the white matter of the medulla and basal ganglia.

Bacteriology

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

Brevetoxins

No samples were above the limits of reporting.

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Other algal biotoxins

Domoic acid (an amnesic shellfish toxin) was detected in the spleen at 0.46mg/kg.

Summary

An adult male long-nosed fur seal was found dead and was 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. Parasites (worms) were found in the gut, which is a common finding in long-nosed fur seals. Testing for tuberculosis (*Mycobacterium tuberculosis* (MTb) complex and *Mycobacterium avium* (*M. avium*) 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. Vacuoles (small cavities) were seen in the brain; the clinical significance of these is unknown as they may be a normal post-mortem change. This, along with the animal being unable to be examined prior to death, means that any association between domoic acid exposure and animal's death remains speculative.

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

From [REDACTED]

Date Sat 14/02/2026 5:00 PM

To [REDACTED]

[REDACTED]

Tested on 13/02/26
Reported on 14/02/26 17:30
Referred on 13/02/26 **by:** [REDACTED]

[REDACTED]

Owner:

LONG NOSE FUR SEAL
BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:

Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

NECROPSY REPORT

CLINICAL HISTORY

First reported by MOP at 10am on 13/2/2026 as deceased at the Beacon 19 boat ramp at Goolwa South by the jetty. DEW team collected the animal at 12:15pm .

SAMPLES SUBMITTED

1 dead male adult Australian long nosed first seal, *Arctocephalus forsteri*

NECROPSY FINDINGS

The animal is in poor body condition and weighs 39 kg. There is minimal blubber. There are moderate post-mortem autolytic changes. The animal is approximately 1.37m long and the circumference around the body just caudal to the pectoral flippers is 740 mm.

Within the stomach there is scant mucoid ingesta and moderate numbers of ascarids 40-50mm long. There is scant ingesta in the intestinal tract,

well formed dry faeces in the rectum at approximately 20 mL of urine in the bladder.

GROSS SUMMARY

Chronic weight loss

SAMPLES COLLECTED & TESTING

Formalin fixed tissue will be processed for histopathology.

Analytical services will be contacted and a quote requested for biotoxin and brevetoxin testing on urine, faeces, stomach content, liver, kidney, spleen, heart, lung, brain. This quote will be emailed to you.

Brain and lung will be sent to ACDP for Mycobacterium sp. and Brucella sp. PCR testing.

Liver, kidney, spleen, heart, lung, brain and oropharyngeal swab in transport medium are stored.

COMMENTS

The cause for the chronic weight loss and death are not evident based on gross findings. Could decreased feed abundance associated with the

[REDACTED]

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BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:
Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

Samples tested as received

variable Karenia sp. algal bloom, have contributed to the weight loss ?

[REDACTED]

Specialist Veterinary Anatomic Pathologist
[REDACTED]

[REDACTED]

Specialist Veterinary Anatomic Pathologist
[REDACTED]

Validated by [REDACTED]

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

From [REDACTED]

Date Sat 21/02/2026 6:30 PM

To [REDACTED]

[REDACTED]

Tested on 13/02/26
Reported on 21/02/26 19:00
Referred on 13/02/26 **by:** [REDACTED]

[REDACTED]

Owner:

LONG NOSE FUR SEAL
BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:

Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

HISTOPATHOLOGY FROM NECROPSY

REF: [REDACTED]

CLINICAL HISTORY

First reported by MOP at 10am on 13/2/2026 as deceased at the Beacon 19 boat ramp at Goolwa South by the jetty. DEW team collected the animal at 12:15pm .

SAMPLE SUBMITTED

1 dead male adult Australian long nosed first seal, *Arctocephalus forsteri*

MACROSCOPY

Cassettes contain the following tissues:A: Heart, spleen, liver
B: Kidney, lung, skeletal muscle
C-D: Stomach, pancreas, adrenal gland, duodenum, jejunum, ileum, caecum, colon and cestode
Brain

E-F: Thalamus and hippocampus
G: Parietal cortex
H: Basal ganglia
I: Frontal cortex
J: Occipital cortex
K: Cerebellum
L: Medulla
M: Midbrain; Ae GK

MICROSCOPY

Lung: Focally alveolar spaces are expanded by oedema.

Caecum and colon: Within the glands there are multiple cross sections of scolices and sections of cestodes. The cyst nodes are approximately 50-80 micron across, with smooth integument, spongy parenchyma containing basophilic calcareous corpuscles and no alimentary tract. (Enteric cestodiasis)

Brain: There is very mild multifocal vacuolation of the white matter in the medulla and basal ganglia.

Those tissues not described appear normal.

[REDACTED]

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Reported on 21/02/26 19:00
Referred on 13/02/26 by: [REDACTED]

[REDACTED]

Owner:

LONG NOSE FUR SEAL
BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:

Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

DIAGNOSIS

Lung: Mild acute multifocal oedema

Caecum and colon: enteric cestodiasis

COMMENTS

The cause of death is not determined based on gross and histopathological findings.

There is mild pulmonary oedema. This was likely an agonal process.

Enteric cestodiasis (possibly *Tetraphyllidium* sp.) is a normal finding in Australian long nosed fur seals.

The clinical significance of the mild vacuolation of white matter in the brain will be interpreted cautiously because this may be a post-mortem artefact.

[REDACTED]

Specialist Veterinary Anatomic Pathologist

[REDACTED]

Validated by [REDACTED]

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

From [REDACTED]

Date Tue 24/02/2026 1:30 PM

To [REDACTED]

[REDACTED]

Tested on 13/02/26
Reported on 24/02/26 14:00
Referred on 13/02/26 **by:** [REDACTED]

[REDACTED]

Owner:

LONG NOSE FUR SEAL
BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:

Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

REFERRED TEST

Disease/Test : Brucella sp. PCR

Specimen Type: Brain & Lung

RESULT : Both 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: Brain & Lung

RESULT : Both samples Negative

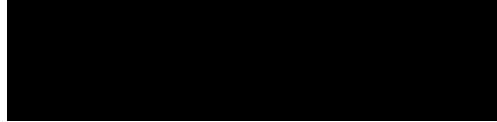
Comment : NATA/RCPA accreditation does not cover the performance of
this service

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

Validated by [REDACTED] Laboratory Scientist.



Tested on 13/02/26
Reported on 24/02/26 14:00
Referred on 13/02/26 by:



Owner:

LONG NOSE FUR SEAL
BEACON 19 BOAT RAMP
GOOLWA SOUTH 5214

Animal/s:

Marine Mammal

DOB: N/A

Collected: 13/02/26 14:15

Subm.No:



Lab No.:



Samples tested as received

REFERRED TEST

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

RESULT : Both 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  Laboratory Scientist.

REFERRED TEST

Disease/Test : Pan-Mycobacterium Taqman Assay
Specimen Type: Brain & Lung

RESULT : Both 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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CERTIFICATE OF ANALYSIS

Customer:
Address:
Contact:

Submission Description: Long-nosed Fur Seal
Sample Received Date: 11/03/2026
Contract Number:
Client Order Number:

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	29-04-2026
3411A	Brevetoxins in Shellfish by LC-MS/MS	24-04-2026
3416	PST in Biota by LC-MS/MS (Boundy Method)	29-04-2026

Chemistry Test Results (Biota - Food)			LUNG	HEART	KIDNEY	SPLEEN	FAECES	URINE
Sample Description								
Sampled Date/ Time			13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00
Method ID	Analyte	Units	440124	440125	440126	440127	440128	440129
3411	AZA1	mg/kg WMB	<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
	AZA3	mg/kg WMB	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Domoic Acid	mg/kg WMB	<0.05	<0.05	<0.05	0.46	<0.05	<0.05
	DTX1 Free	mg/kg WMB	<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
	DTX2 Free	mg/kg WMB	<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
	GYM	mg/kg WMB	<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
	OA Free	mg/kg WMB	<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
	PnTx-G	mg/kg WMB	<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
	SPX1	mg/kg WMB	<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
	YTX	mg/kg WMB	<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*
	Brevetoxin 2	mg/kg WMB	<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*
3416	C1	STX.2HCl eq. mg/kg	<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
	C3	STX.2HCl eq. mg/kg	<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
	dcGTX1	STX.2HCl eq. mg/kg	<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
	dcGTX3	STX.2HCl eq. mg/kg	<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	LUNG	HEART	KIDNEY	SPLEEN	FAECES	URINE
		Sampled Date/ Time	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00	13/02/26 0:00
Method ID	Analyte	Units	440124	440125	440126	440127	440128	440129
3416	dcGTX4	STX.2HCl eq. mg/kg	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	dcNEO	STX.2HCl eq. mg/kg	<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
	doSTX	STX.2HCl eq. mg/kg	<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
	GTX2	STX.2HCl eq. mg/kg	<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
	GTX4	STX.2HCl eq. mg/kg	<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
	GTX6	STX.2HCl eq. mg/kg	<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
	STX	STX.2HCl eq. mg/kg	<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

* NATA accreditation does not cover this result