

Algal bloom wildlife post-mortem report



Government
of South Australia

Department for
Environment and Water

Species – Australian sea lion

Date collected – 29 January 2026

Location – Grange Beach, Adelaide

History relating to the animal

A female Australian sea lion (*Neophoca cinerea*) was seen looking sick at Grange Beach on 29 January 2026. Staff from the Department for Environment and Water (DEW) attended the site, found the animal to be very thin and in poor condition, and euthanised it.

Clinical examination

A clinical examination conducted by DEW staff prior to euthanasia found that the sea lion was very thin and in poor body condition.

Necropsy

The necropsy (looking at the whole body) showed that the sea lion was thin with very little body fat. The sea lion weighed approximately 80-100 kg and was approximately 180 cm in length. There were very little post-mortem autolytic (decomposing after death) changes present. There were no obvious external injuries, except for a small hairless patch (approximately 10 cm) near the tail that did not show any signs of inflammation. The skin over the head was normal and the eyes appeared sunken. The lungs appeared collapsed, which can happen when the animal is not breathing properly before death.

Within the abdominal cavity, there was very little fat, and the liver was small and thin, consistent with cachexia (severe weight loss). The stomach contained two large stones (normal for sea lions), some roundworms (gut parasites), a small amount of partially digested food material, and a few bird feathers. The intestines contained dark green food materials, and the rest of the gut appeared normal. The bladder contained a small amount of clear urine, and there was a small fluid-filled cyst (1.5 cm in diameter) on its wall. The uterus (reproductive organ) was small and the ovary (reproductive organ) not clearly visible. All other major organs appeared normal.

Tissues were collected for histopathology (looking at tissues under the microscope for more detailed information) and testing for *Mycobacterium tuberculosis* (MTb) and *Mycobacterium avium* (*M. avium*) complex organisms, 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. In the brain, there were small, scattered spaces in the white matter (nerve tissue), but these were minor. In lungs, there was a small amount of extra blood in some areas. The spleen appeared slightly reduced in size, which can happen when it contracts. The liver was a bit smaller than normal and showed

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mild changes, including small amounts of stored fat and a brownish pigment within the cells, which can be seen in animals that have been unwell or losing weight. In the small intestine, several parasites (tapeworms) were present, along with their eggs, but these were not considered severe.

A key finding across the tissues was the near absence of body fat, confirming that the animal was severely underweight. Apart from this and the mild brain changes, all other organs appeared normal under the microscope. Overall, the microscopic findings showed only minor changes and did not clearly explain the cause of the animal's severe weight loss.

Bacteriology

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

Brevetoxins

No samples were above the limits of reporting.

Other algal biotoxins

No samples were above the limits of reporting.

Summary

A female Australian sea lion was found severely underweight and was euthanised. Laboratory examination could not determine the cause of the severe weight loss. Testing for tuberculosis (*Mycobacterium tuberculosis* complex organisms) was negative. Brevetoxins and other algal biotoxins were also not detected.

PATH RESULTS: SEALION, AUSTRALIAN (Ma) [REDACTED]

From [REDACTED]

Date Fri 30/01/2026 1:00 PM

To [REDACTED]

[REDACTED]

Tested on 30/01/26
Reported on 30/01/26 13:30
Referred on 29/01/26 **by:** [REDACTED]

[REDACTED]

Owner:
SEALION
GRANGE BEACH
GRANGE 5022

Animal/s:
Marine Mammal
AUSTRALIAN
DOB: N/A

Collected: 29/01/26 10:51

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

[REDACTED]

CLINICAL HISTORY

ASL observed at Grange Beach looking sick on 29.1.26 at 1051am by MOP. DEW Marine Team went to observe it and it was looking emaciated. DEW Marine euthanised it at approximately 1230pm. DEW Marine team delivering directly as fresh carcass.

SAMPLES SUBMITTED

One dead Australian Sea Lion; female; approximately 180cm length; approximately 80-100kg.

NECROPSY FINDINGS

The carcass is fresh with minimal post-mortem autolytic changes. The animal is thin with minimal fat coverage.

There are no external signs of trauma. There is a linear, alopecic,

approximately 10cm lesion on the RIGHT lateral skin adjacent to the tail. No inflammation is associated with this lesion.

There is moderate haemoptysis (blood leaking from mouth) and epitaxis (blood leaking from nose). The eyes are sunken. The overlying skin over the cranium (head) is normal.

The underlying subcutaneous tissue especially over the LEFT frontal bone and LEFT zygomatic process of the frontal bone are markedly oedematous with a prominent haematoma.

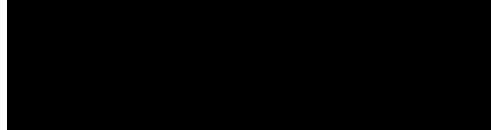
The left frontal bone, zygomatic process of the frontal bone and the underlying basisphenoid bone are fractured into multiple irregular-sized fragments (likely complex fracture). The basisphenoid fracture communicates with the underlying oral cavity. The rostral cranium contains large amounts of clotted blood (most consistent with haematoma). The meninges are diffusely red.

The lungs are light pink, collapsed, and do not float in formalin (suspect atelectasis; i.e. collapse of lung tissue).

There is scant amounts of mesentery in the abdominal cavity (minimal fat coverage). The liver is atrophied and thin. The stomach contains two large stones (normal finding), with moderate numbers of nematodes (roundworms) and scant amounts of opaque yellow digesta. Five small black-coloured bird feathers are also seen within the stomach.



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AUSTRALIAN
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Subm.No:



Lab No.:



Samples tested as received

The intestine contains dark green ingesta. The bile duct is patent. The rectum contains well-formed dark green faeces.

The urinary bladder contains approximately 5ml of clear and light yellow urine. There is a small cyst at the apex of the urinary bladder wall. The cyst is approximately 1.5cm diameter and contains clear fluid.

The uterus is small. The ovaries are inapparent.

Those organs not described appear grossly normal: thyroid, trachea, oesophagus, heart, diaphragm, adrenals, gall bladder, pancreas, large vessels, kidney, both glenohumeral joints.

GROSS DIAGNOSIS

Main finding: multiple cranium fractures (skull fractures) with intracranial haematoma and haemorrhage

SAMPLES COLLECTED & TESTING

Oropharyngeal swab in VTM - Hold at molecular lab

Fresh tissues in 50 mL pots (liver, kidney, spleen, heart, brain, lung) - Brucella, brevetoxin and biotoxin testing as per submission form

Fresh tissue (liver, spleen, heart, kidney, brain, lung, urine, faeces, intestinal content, stomach content) - stored in -80 for 6 months

Comments

There is no mention of the method of euthanasia and knowledge of the method of euthanasia would aid further interpretation of the cause of death. Note that there is no visible external lesions, [REDACTED]

Histopathology is pending.

[REDACTED]
Pathology Diagnostician.



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Lab No.:



Samples tested as received

Validated by  Veterinary Anatomic
PathologyDiagnostician.

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PATH RESULTS: SEALION AUSTRALIAN, (Ma) [REDACTED]

From [REDACTED]

Date Mon 16/02/2026 3:30 PM

To [REDACTED]

[REDACTED]

Tested on 30/01/26
Reported on 16/02/26 16:00
Referred on 29/01/26 **by:** [REDACTED]

[REDACTED]

Owner:

SEALION AUSTRALIAN
GRANGE BEACH
GRANGE 5022

Animal/s:

Marine Mammal

DOB: N/A

Collected: 29/01/26 10:51

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

HISTOPATHOLOGY FROM NECROPSY

REF: [REDACTED]

CLINICAL HISTORY

Refer to submission form for history

MACROSCOPY

Brain is severely damaged.

A = midbrain
B = cerebellum
C = midbrain
D = frontal cortex
E = parietal cortex
F = occipital cortex
G = hippocampus + thalamus
H = basal ganglia
I = lung
J = liver
K = kidney

L = pancreas plus duodenum?
N = heart (interventricular septal)
M = adrenals
O = oesophagus + GIT
P = GIT
Q = urinary bladder + unknown organ

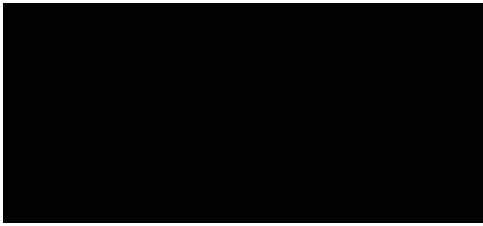
MICROSCOPY

Brain: Diffusely throughout the white matter are occasional vacuoles (mild white matter vacuolation).

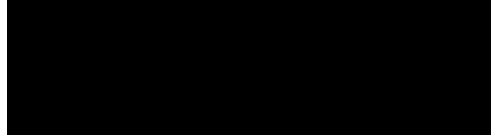
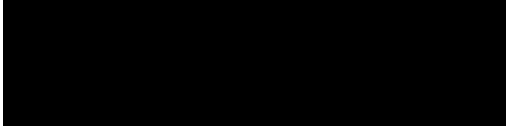
Lungs: There is mild patchy congestion.

Spleen: The red pulp is mildly reduced (consistent with contraction).

Liver: The periportal areas are located closer to each other than normal (hepatic atrophy). There is mild -moderate intracytoplasmic and extracytoplasmic accumulation of golden-brown pigment (suspect haemosiderin vs lipofuscin), especially prominent around the (extracytoplasmic) periportal regions. Multifocally the hepatocytes contain a single intracytoplasmic vacuole (mild hepatic lipidosis,



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Referred on 29/01/26 **by:**



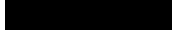
Owner:
SEALION AUSTRALIAN
GRANGE BEACH
GRANGE 5022

Animal/s:
Marine Mammal

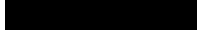
DOB: N/A

Collected: 29/01/26 10:51

Subm.No:



Lab No.:



Samples tested as received

randomly distributed).

Small intestine: Embedded within the mucosa and also present within the lumen are multiple parasites. The organisms are segmented into proglottids, contain a hypereosinophilic tegument, lacks a distinct body cavity and is filled with spongy parenchyma with calcareous corpuscles. In one section, there is accumulation of eggs with prominent pale yellow shells (most consistent with cestode).

Note that no/minimal adipose tissue seen within sections examined.

The remaining organs were carefully examined and appear microscopically normal: aorta, pancreas, nerves and ganglia, skeletal muscle, heart, stomach, kidney, oesophagus, large intestine, small intestine, urinary bladder.

DIAGNOSIS

Mild, diffuse white matter vacuolation

Mild hepatic atrophy and mild, randomly distributed hepatic lipidosis

Minimal to no adipose tissue

Open diagnosis

COMMENTS

There is very mild/minimal changes within sections examined.

The only notable change is the diffuse lack of adipose tissue within sections examined, and the diffuse and mild white matter vacuolation. The brain lesions are not consistent with domoic acid toxicity in sealions (no ischaemic neuronal necrosis, inflammation or loss of laminar organisation seen). Note that the liver changes are surprisingly only very mild, and is likely secondary to the cachexia.

There is unfortunately no suggestion to the cause of cachexia.

This case has also been reviewed by [REDACTED]

Silvagni PA, Lowenstine LJ, Spraker T, Lipscomb TP, Gulland FM.

[REDACTED]

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Owner:
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Animal/s:
Marine Mammal

DOB: N/A

Collected: 29/01/26 10:51 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

Samples tested as received

Pathology of domoic acid toxicity in California sea lions (*Zalophus californianus*). Vet Pathol. 2005 Mar;42(2):184-91. doi: 10.1354/vp.42-2-184. PMID: 15753472.

[REDACTED]

Pathology Diagnostician

Validated by [REDACTED] Veterinary Anatomic
PathologyDiagnostician.

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PATH RESULTS: SEALION AUSTRALIAN, (Ma) [REDACTED]

From [REDACTED]

Date Tue 24/02/2026 3:30 PM

To [REDACTED]

[REDACTED]

Tested on 30/01/26
Reported on 24/02/26 16:00
Referred on 29/01/26 **by:** [REDACTED]

[REDACTED]

Owner:

SEALION AUSTRALIAN
GRANGE BEACH
GRANGE 5022

Animal/s:

Marine Mammal

DOB: N/A

Collected: 29/01/26 10:51

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

REFERRED TEST

Disease/Test : Mycobacterium avium complex Taqman Assay

Specimen Type: Lung

RESULT : 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

RESULT : 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 30/01/26
Reported on 24/02/26 16:00
Referred on 29/01/26 **by:** [REDACTED]

[REDACTED]

Owner:
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GRANGE 5022

Animal/s:
Marine Mammal

DOB: N/A

Collected: 29/01/26 10:51

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

REFERRED TEST

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

RESULT : 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.

PATH RESULTS: SEALION AUSTRALIAN, (Ma) [REDACTED]

From [REDACTED]

Date Thu 26/02/2026 5:00 PM

To [REDACTED]

[REDACTED]

Tested on 30/01/26
Reported on 26/02/26 17:30
Referred on 29/01/26 **by:** [REDACTED]

[REDACTED]

Owner:

SEALION AUSTRALIAN
GRANGE BEACH
GRANGE 5022

Animal/s:

Marine Mammal

DOB: N/A

Collected: 29/01/26 10:51

Subm.No: [REDACTED]

Lab No.: [REDACTED]

Samples tested as received

SUMMARY DIAGNOSIS

No diagnosis is concluded

SUMMARY COMMENTS

There are no laboratory findings to explain the cause of morbidity and illness for the sea lion.

Thank you for your email confirming the animal was culled [REDACTED].

You have been sent a quote for biotoxin and brevetoxin testing at AST and samples are sent to AST for testing.

[REDACTED]

Specialist Veterinary Anatomic Pathologist
[REDACTED]

Validated by [REDACTED]

CERTIFICATE OF ANALYSIS

Customer:		Submission Description:	Sea Lion
Address:		Sample Received Date:	11/03/2026
Contact:		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:

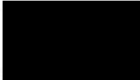
Name	Position
	Section Head - Organic Chemistry

Test Information:

Method ID	Test Description	Date Commenced:
3411	Lipophilic Toxins in Shellfish by LC-MS/MS	22-04-2026
3411A	Brevetoxins in Shellfish by LC-MS/MS	17-04-2026
3416	PST in Biota by LC-MS/MS (Boundy Method)	22-04-2026

Chemistry Test Results (Biota - Food)			SPLEEN	HEART	KIDNEY	LUNG	LIVER	BRAIN
Sample Description								
Sampled Date/ Time			30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00
Method ID	Analyte	Units	440102	440103	440104	440105	440106	440107
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	<0.05	<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
	dcGTX4	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)			SPLEEN	HEART	KIDNEY	LUNG	LIVER	BRAIN
Sample Description								
Sampled Date/ Time			30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00	30/01/26 0:00
Method ID	Analyte	Units	440102	440103	440104	440105	440106	440107
3416	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