

# Algal bloom wildlife post-mortem report



## **Species – Pied cormorants**

## **Date collected – 3 October 2025**

## **Location – Rocky Point, Brown Beach, Kangaroo Island**

### History relating to the animal

Two dead and two sick pied cormorants (*Phalacrocorax varius*) were found at Rocky Point, Brown Beach, Kangaroo Island on 3 October 2025.

### Clinical examination

The two sick cormorants were displaying neurological signs. One bird was circling on the ground and unable to fly. The second bird was able to walk forward but was very ataxic (wobbly). The two dead birds could not be examined prior to death. The two dead birds were frozen prior to being submitted to the laboratory.

### Necropsy

The necropsy (looking at the whole body) of both birds (one adult female and one adult male) revealed that they were in poor body condition, weighing 1.4kg. There was moderate freeze artefact (changes to the tissues from being frozen) and moderate post-mortem autolytic changes (decomposition after death). There was marked bilateral (both left and right) atrophy (wasting) of the pectoral muscles (large muscles of the chest). There were abundant ascarids (roundworms) within the proventriculus (upper part of a bird's stomach – where food is digested) and ventriculus (muscular part of a bird's stomach – for grinding food material), with a small amount of mucus. In the female bird, there was oedema (accumulation of fluid between cells) within both lungs, and 3mL of translucent (clear) fluid within the coelomic cavity (space containing digestive tract and other organs).

Tissues were collected from both birds for testing for avian influenza and Newcastle disease, and from the female bird for testing for brevetoxins and other algal biotoxins (a possibility due to the algal bloom). Tissues were not collected for histopathology (looking at tissues under the microscope for more detailed information) as freezing changes the appearance of the tissue, making assessment under the microscope inaccurate.

### Virology

Testing results for avian influenza and Newcastle disease were negative.

### Brevetoxins

Brevetoxin 3 was found in the liver (0.03mg/kg), kidney (0.02mg/kg), heart (0.02mg/kg) and brain (0.03mg/kg).

### Other algal biotoxins

# Algal bloom wildlife post-mortem report



No samples were above the limits of reporting.

## Summary

Two sick and two dead pied cormorants (*Phalacrocorax varius*) were found. The sick birds were showing neurological signs (circling, wobbliness, unable to fly). The two dead birds were submitted for laboratory examination, which found that both birds were underweight, which would have contributed to morbidity (illness), but the cause of weight loss couldn't be determined. Decreased feed abundance could be a contributing factor. Parasites (roundworms) were found in the gut of both birds, which is a common finding in marine birds.

Testing for avian influenza and Newcastle disease was negative in both birds. Brevetoxin was found in the liver, kidney, heart and brain of one bird (the other bird was not tested for toxins). Pulmonary oedema (fluid in the lungs) contributed to morbidity (illness) for this bird. Brevetoxins have been recorded to cause vascular damage including pulmonary oedema. They are also known to cause neurological signs in avian species, consistent with the signs seen in the two sick birds.

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**PATH RESULTS: CORMORANT, (Wi)** [REDACTED]

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**From** [REDACTED]  
**Date** Wed 08/10/2025 9:00 PM  
**To** [REDACTED]

[REDACTED]

**Tested on** 08/10/25  
**Reported on** 08/10/25 21:30  
**Referred on** 03/10/25 **by:**

[REDACTED]

[REDACTED]

**Owner:**  
CORMORANT  
ROCKY POINT BROWN BEACH  
KINGSCOTE 5223

**Animal/s:**  
Wild Birds  
  
**DOB:** N/A

**Collected:** 03/10/25 17:00    **Subm.No:** [REDACTED]    **Lab No.:** [REDACTED]

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**Samples tested as received**

NECROPSY REPORT

CLINICAL HISTORY

Please refer to the clinical history on the request form A brief summary of the clinical history;  
2 dead cormorants and to call cormorants with neurological signs were found at Rocky Point, Brown Beach, Kangaroo Island. The 2 dead comments were submitted for testing. The animals were frozen over the long weekend due to the lack of career services.

SAMPLES SUBMITTED

Two dead adult Pied cormorants, *Phalacrocorax varius* are received.

NECROPSY FINDINGS

The birds are allocated numbers 1 and 2 at the laboratory. There are moderate freeze artefact and moderate post mortem autolytic changes in the birds. In both birds there is marked atrophy of the pectoral muscles. The proventriculus / gizzard contains scant mucous and abundant degenerate ascarids (20-30mm long; possibly *Contracaecum* sp. or *Anisakis* sp.)

Additional findings

1

The adult male weighs 1.4kg.

2

The adult female weighs 1.4kg. There is oedema in both lungs and approximately 3ml of translucent fluid in the coelomic cavity.

GROSS SUMMARY

Cormorant 1

Marked weight loss

Proventricular acariasis

Cormorant 2

Marked weight loss and pulmonary oedema

Proventricular acariasis

SAMPLES COLLECTED & TESTING

Cormorants 1 and 2

Cloacal and tracheal swabs in virus transport medium are taken. Please



**Tested on** 08/10/25  
**Reported on** 08/10/25 21:30  
**Referred on** 03/10/25 **by:**



**Owner:**  
CORMORANT  
ROCKY POINT BROWN BEACH  
KINGSCOTE 5223

**Animal/s:**  
Wild Birds  
  
**DOB:** N/A

**Collected:** 03/10/25 17:00 **Subm.No:**  **Lab No.:** 

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**Samples tested as received**

contact the laboratory and confirm how many samples you require testing and which samples you require to be pooled.

Liver (10g), spleen (500mg), heart (5g), lung (3g), kidney (1g), brain (3g) are stored in 70ml containers at -80 degrees C. Please contact the laboratory in the next 1-2 weeks if a quote for testing biotoxin and brevetoxin at Analytical Services Tasmania is required.

Liver, spleen, heart, lung, kidney, brain in 5ml containers are stored at -80 degrees C.

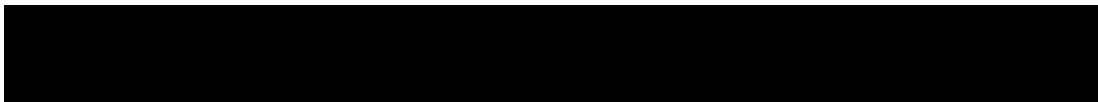
Formalin fixed tissues are stored.

**COMMENTS**

Chronic weight loss contributed to morbidity for both birds but the cause of chronic weight loss was not found on necropsy. Could decreased feed abundance be a contributing factor ?

Pulmonary oedema contributed to morbidity for cormorant 2. Brevetoxins have been recorded to cause vascular damage including pulmonary oedema.

Histopathology on all tissues from cormorant 2 is suggested to further clarify any other intercurrent microscopic changes in addition to the pulmonary oedema.



Specialist Veterinary Anatomic Pathologist



Validated by



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**PATH RESULTS: CORMORANT, (Wi)** [REDACTED]

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**From** [REDACTED]  
**Date** Tue 14/10/2025 11:00 AM  
**To** [REDACTED]

[REDACTED]

**Tested on** 08/10/25  
**Reported on** 14/10/25 11:30  
**Referred on** 03/10/25 **by:**

[REDACTED]

[REDACTED]

**Owner:**  
CORMORANT  
ROCKY POINT BROWN BEACH  
KINGSCOTE 5223

**Animal/s:**  
Wild Birds  
  
**DOB:** N/A

**Collected:** 03/10/25 17:00 **Subm.No:** [REDACTED] **Lab No.:** [REDACTED]

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**Samples tested as received**

**MOLECULAR DIAGNOSTICS**

**INFLUENZA A RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)**

Specimen type: Pooled cloacal & tracheal swabs in VTM

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SPECIMEN ID	Type A	H5	H7
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BIRD 1	Not detected		
BIRD 2	Not detected		

Validated by [REDACTED] Laboratory Scientist.



Validated by [REDACTED] Laboratory Scientist.

## CERTIFICATE OF ANALYSIS

Customer: [REDACTED]  
 Address: [REDACTED]

Submission Description: Cormorant #2  
 Sample Received Date: 24/10/2025  
 Contract Number: [REDACTED]  
 Client Order Number: [REDACTED]  
 Program/Quote Reference: [REDACTED] Cormorant #2

*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	04-11-2025
3411A	Brevetoxins in Shellfish by LC-MS/MS	07-11-2025
3416	PST in Biota by LC-MS/MS (Boundy Method)	04-11-2025

Chemistry Test Results (Biota - Food)			Sample Description	#2 Liver	#2 Kidney	#2 Spleen	#2 Heart	#2 Lung	#2 Brain
Method ID	Analyte	Units	Sampled Date/ Time	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00
				<b>364930</b>	<b>364931</b>	<b>364932</b>	<b>364933</b>	<b>364934</b>	<b>364935</b>
	AZA1	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB		<0.05*	<0.05*	*IS*	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
3411	GYM	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 2	mg/kg WMB		<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	Brevetoxin 3	mg/kg WMB		0.03*	0.02*	<0.02*	0.02*	<0.02*	0.03*
	C1	STX.2HCl eq. mg/kg		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
3416	dcGTX1	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcNEO	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*

\*IS\*- Insufficient Sample

\* NATA accreditation does not cover this result

Chemistry Test Results (Biota - Food)			Sample Description	#2 Liver	#2 Kidney	#2 Spleen	#2 Heart	#2 Lung	#2 Brain
Method ID	Analyte	Units	Sampled Date/ Time	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00	08/10/25 0:00
				<b>364930</b>	<b>364931</b>	<b>364932</b>	<b>364933</b>	<b>364934</b>	<b>364935</b>
	AZA1	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	AZA2	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	AZA3	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Domoic Acid	mg/kg WMB		<0.05*	<0.05*	*IS*	<0.05*	<0.05*	<0.05*
	DTX1 Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX1 Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX2 Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	DTX2 Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
3411	GYM	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Homo-YTX	mg/kg WMB		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	OA Free	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	OA Total	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	PnTx-G	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	PTX2	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	SPX1	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	Total DST	OA eq. mg/kg		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	YTX	mg/kg WMB		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
3411A	Brevetoxin 2	mg/kg WMB		<0.02*	<0.02*	<0.02*	<0.02*	<0.02*	<0.02*
	Brevetoxin 3	mg/kg WMB		0.03*	0.02*	<0.02*	0.02*	<0.02*	0.03*
	C1	STX.2HCl eq. mg/kg		<0.01*	<0.01*	*IS*	<0.01*	<0.01*	<0.01*
	C2	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	C3	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	C4	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
3416	dcGTX1	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX2	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX3	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcGTX4	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*
	dcNEO	STX.2HCl eq. mg/kg		<0.02*	<0.02*	*IS*	<0.02*	<0.02*	<0.02*

\*IS\*- Insufficient Sample

\* NATA accreditation does not cover this result

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**PATH RESULTS: CORMORANT, (Wi)** [REDACTED]

---

**From** [REDACTED]

**Date** Sat 22/11/2025 6:00 PM

**To** [REDACTED]

[REDACTED]

**Tested on** 08/10/25  
**Reported on** 22/11/25 18:30  
**Referred on** 03/10/25 **by:**

[REDACTED]

[REDACTED]

**Owner:**

CORMORANT  
ROCKY POINT BROWN BEACH  
KINGSCOTE 5223

**Animal/s:**

Wild Birds

**DOB:** N/A

**Collected:** 03/10/25 17:00

**Subm.No:** [REDACTED]

**Lab No.:** [REDACTED]

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**Samples tested as received**

All Tests Complete

ADDITIONAL FINDINGS 22/11/2025

SUMMARY DIAGNOSIS

Cormorant 1  
Marked weight loss

Cormorant 2  
Marked weight loss and pulmonary oedema

SUMMARY COMMENTS

Chronic weight loss contributed to morbidity for both birds but the cause of chronic weight loss was not found on necropsy. Could decreased feed abundance be a contributing factor ?

Pulmonary oedema contributed to morbidity for cormorant 2. Brevetoxins have been recorded to cause vascular damage including pulmonary oedema (Coulson et al 1968). Brevetoxin 3 was detected in the lung (0.03mg/kg

WMB), kidney and heart (0.02mg/kg WMB for both organs) (Please refer to report [REDACTED] Cormorant #2 from AST Hobart).

AI and NDV which can also cause pulmonary oedema are negative on PCR testing.

Minor finding

Both birds had alimentary acaridiasis, which is a normal finding in cormorants.

References

Coulson, J.C.; Potts, G.R.; Deans, I.R.; Fraser, S.M. Exceptional mortality of shags and other sea birds caused by paralytic shellfish poison. Br. Birds 1968, 61, 381-406.

[REDACTED]  
Specialist Veterinary Anatomic Pathologist  
[REDACTED]

Validated by [REDACTED]

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