



Vasse-Wonnerup Swan Count: November 2009

Prepared for the Western Australian Department of
Environment and Conservation and the Geographe
Catchment Council by Bennelongia Pty Ltd

03 December 2009 Report 2009/75



Department of
Environment and Conservation

Our environment, our future 



Government of **Western Australia**
Department of **Water**

Vasse-Wonnerup Swan Survey: November 2009

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Client – DEC

Report	Version	Prepared by	Checked by	Submitted to Client Method	Date
Draft report	Vers. 1	Grant Pearson		email	03.xii.08
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1.0 Introduction

Bennelongia Pty Ltd was contracted to perform a survey at the Vasse-Wonnerup wetland system to count numbers of Black Swans, broods and nesting effort over a period of two days being November 16th and 17th, 2009.

The project was initiated and supervised by Principal Research Scientist Jim Lane of the Western Australian Department of Environment and Conservation, administered by Senior Natural Resource Management Officer Jen Mitchell of the Western Australian Department of Water, and funded through the Western Australian State Natural Resources Management program.

Data on the following would be collected by sector/subsector:

- number of full-sized swans (i.e. adults, immatures and fully grown juveniles, all as one category because of the difficulty of distinguishing these three sub-categories at a distance);
- number of broods of partially-feathered cygnets;
- number of partially-feathered cygnets;
- number of broods of downy cygnets;
- number of downy cygnets;
- number of swans on nests, i.e. incubating;
- the behaviour of the full-sized swans, partially-feathered cygnets and downy cygnets, principally whether they are feeding, loafing, roosting, etc.;
- identity of food items, to the limited extent that this might be possible while counting swans;
- date and time of survey of each sector/subsector;
- weather conditions, to the extent that they are likely to affect bird distribution or numbers.

Vasse estuary sectors/subsectors to be surveyed:
f(N1), f(W), f(S), 'd', 'e', 'b' and 'a' of Lane *et al.* (2007).

Wonnerup estuary sectors/subsectors to be surveyed:
j(E), j(C), j(W) and 'i'.

2.0 Methods

Counts were made on foot using Leica™ 10x25 binoculars and a Nikon™ spotting scope with a 25-75x zoom lens.

Surveys were undertaken between early morning and late afternoon on November 16 with follow-up inspections of swan nesting areas on Vasse Estuary on November 17.

Data were recorded on a handheld voice recorder and transcribed into a notebook and later into tabular form.

Notes on various environmental conditions were made in a notebook or in the voice recorder.

Swan activities were recorded as one or a combination of either (S) swimming, (L) Loafing, (I) incubating, (R) Roosting, (P) Preening or (F) Foraging.

S	Swimming	Swimming as a group in the same general direction and distinguished from loafing
L	Loafing	Immobile on open water body, shallow margins or standing on a bank or island
I	Incubating	Birds apparently sitting on eggs.
R	Roosting	Swans recorded on land with heads under wings or sitting and clearly roosting
P	Preening	An extension of loafing where the activity of preening was visible and thus recorded
F	Foraging	Upending for food, or eating or pecking at food items on the water surface

Weather conditions on 16 November were clear and still in the early morning with a strong westerly breeze developing in the afternoon. The weather forecast for 17 November was for rain and strong winds. In consideration of this forecast and the client's request to change the survey date in the event of inclement weather, it was decided to survey Wonnerup Estuary immediately after, i.e. on the same day as, the survey of Vasse Estuary. Under normal circumstances these two large waterbodies would be surveyed over two days.

3.0 Results

See the accompanying Table for the survey results, arranged by survey sector. Additional comments and summary data are provided below.

3.1 Vasse Estuary

Sector f(N1)

Survey began at 0640 hrs at Ballarat Road from a vantage point on the southern side of the Vasse estuary exit channel. Swans were present in small groups feeding and loafing in the channel and roosting on a bank.

Feeding behaviour at this location comprised "upending" with necks downstretched to graze on submerged aquatic plants (presumed) occurring on the bed of the water body.

No swans were recorded downstream of the Vasse estuary floodgates when counts were also made along the northern side of the channel from the bridge at Layman Road to the western extent of sector f(N1) opposite a small urban park on Estuary View Drive.

Sector f(S)

Swans in this sector were present in moderate numbers with broods of various aged cygnets. Some adults were grazing (upending) but most were swimming towards the south-east having been disturbed by my presence or as part of their normal early morning activity and movement to larger feeding areas in the wider estuary.

Counts using telescope and binoculars were made around the margins near Layman Road and from Observation Point 1 where counts were made of swans in the eastern parts of f(S) and swans congregated at the eastern end of the estuary near Malbup Creek in Sector (e).

Sector (d)

This sector was surveyed during a walk from Walk Point 1 on the western side of the sector east to Observation Point 2. Swans were observed in this sector in open pools with broods of downy cygnets and partially-feathered cygnets. Adults were swimming in the open water and feeding around the edges of the sedgeland and samphire on submerged aquatic plants. Broods were swimming and following along behind swimming adults. One brood of downy cygnets was observed pecking at the surface of the water, probably picking up floating seeds or small insects.



Figure 3.1 Vasse Estuary (image provided by DEC)

Sector (e)

Sector (e) was counted in two stages from Observation Point 1 and from a walk that began from Observation Point 2. Telescope observations could be made across the waterbody from the western to the eastern side. Weather conditions had deteriorated to overcast with a strengthening westerly wind (10-15 kph at 0900 hrs).

Swans were recorded breeding in a small group at the western end of this sector (indicated on the map above at location 'c').

As the wind strengthened, swans were inclined to swim into the breeze towards the west. Consequently it became necessary to keep counting ahead of the moving groups of swans and records of feeding behaviour became more difficult and thus, less frequent.

At the western end of this sector, towards the southern side, is an island of sedge and grass. A number of swans were loafing on and around this island. Some birds were recorded on nests in the vicinity.

Few adult swans were observed feeding around the island or foraging around the edges of the sedges and samphire. Most swans were loafing (including preening) in this part of sector (e).

One brood of downy cygnets recorded on the east side of sector (e) was observed pecking at the surface at floating seeds or insects.

Sector (b)

There was a higher level of feeding activity recorded at Sector (b). Adult swans were recorded feeding along the fringes of the estuary margins. Activities included feeding on the bottom with necks extended (upending) and grazing along the edges of vegetation. Partially-feathered cygnets were also recorded feeding along the edges of the vegetation and downy cygnets were recorded pecking at the water surface along the edges.

A number of swans were observed sitting on nests at nest sites 'a' and 'b' on the southern side of this sector. Due to the distance from the observation points on the northern side and the uneven and obscured nature of the nesting sites it was necessary to inspect them on the following day to be confident of numbers (20 presumed incubating swans).

Sector (a)

The estuary narrows at this sector. Adult swan numbers were high, as were numbers of broods of partially-feathered cygnets and downy cygnets. A nest found at the western end near Ford Road was not occupied at the time of the survey.

Adult swans were recorded feeding (upending) in the open water and along the edges of the vegetation. Swans were also recorded roosting on the edge of the vegetation and loafing on the open water body.

The Vasse Estuary survey was concluded at 12:30 hrs at Ford Road.

Summary of Vasse Estuary count data

Survey Sector	No. of Full-sized Swans	Broods of All Ages	No. of Cygnets of All Ages	Broods of Partially-Feathered Cygnets	No. of Partially-Feathered Cygnets	Broods of Downy Cygnets	No. of Downy Cygnets	No. of Swans Presumed Incubating
f(W)	15	1	3	1			3	
f(N1)	21							
f(S)	236	12	30	10	24	2	6	1
d	16	6	25	2	10	4	15	
e	485	30	101	15	40	15	61	22
b	1271	16	78	9	26	11	52	20
a	790	16	48	13	36	3	12	
Totals	2834	85	285	48	136	35	149	43

3.2 Wonnerup Estuary

Sector (i)

This sector was counted from its northern bank by foot traverse on the afternoon of November 16. Moderate numbers of adult swans were recorded, mainly loafing and swimming along the channel to open water in the wider estuary. Eleven broods comprising partially-feathered cygnets and downy cygnets were recorded in the sector. One brood of downy cygnets was recorded foraging along the edge of the water body and one brood of downy cygnets was recorded pecking at the water surface.



Figure 3.2 Wonnerup Estuary (image provided by DEC)

Sector j(W)

Moderate to high numbers of adult swans were recorded in this sector with a relatively high number of broods. The sector was counted from the western shore using telescope and binoculars. Most of the adult activity involved loafing in the open water body and some foraging (upending) on submerged aquatic vegetation in the open water body. Low numbers of adult swans also foraged around the edges of vegetated banks and shallows on the eastern side. Food items were not identified here. Adult swans were recorded preening while loafing on a low vegetated island on the eastern side. One swan was recorded as incubating (i.e. it was observed sitting on a nest) on the eastern side.

Broods of partially-feathered cygnets and downy cygnets were recorded foraging the edges of the vegetation and in the shallow margins on the eastern side. Broods of partially-feathered cygnets and downy cygnets were also recorded loafing or swimming in the open water.

Sector j(C)

Adult swans were recorded in higher numbers in this sector. Most were loafing in the open water body with a small number foraging around the edges and shallow vegetated margins on the western and eastern sides. No nesting was recorded in this sector.

Sector j(E)

Adult swans were recorded with broods of (mostly) partially-feathered cygnets foraging in shallow margins and flooded vegetation on the west side and along the eastern side. Adult swans in this sector were also recorded in the open water body either loafing, preening or foraging. No nesting was recorded in this sector.

Partially-feathered cygnets significantly outnumbered the downy cygnets in this sector.

The Wonnerup estuary survey finished at 16:45 hours.

Summary of Wonnerup Estuary count data

Survey Sector	No. of Full-sized Swans	Broods of All Ages	No. of Cygnets of All Ages	Broods of Partially-Feathered Cygnets	No. of Partially-Feathered Cygnets	Broods of Downy Cygnets	No. of Downy Cygnets	No. of Swans Presumed Incubating
i	141	11	41	6	21	5	20	0
j(W)	229	20	74	8	32	12	42	1
j(C)	311	14	52	10	38	4	14	0
j(E)	593	25	88	22	76	3	12	0
Totals	1274	70	255	46	167	24	88	1

Vasse-Wonnerup summary

Survey Sector	No. of Full-sized Swans	Broods of All Ages	No. of Cygnets of All Ages	Broods of Partially-Feathered Cygnets	No. of Partially-Feathered Cygnets	Broods of Downy Cygnets	No. of Downy Cygnets	No. of Swans Presumed Incubating
Vasse	2834	85	285	48	136	35	149	43
Wonnerup	1274	70	255	46	167	24	88	1
Totals	4108	155	540	94	303	59	237	44

4.0 References

Lane, J.A.K., Clarke, A.G., Pearson, G.B. & Winchcombe, Y.C. (2007). *Waterbirds of the Vasse-Wonnerup wetlands in 1998-2000, including Ramsar status and comparisons with earlier data*. Report of WA Department of Environment and Conservation, Busselton. 51pp.

VASSE ESTUARY: 16-17 NOV 2009

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS	
16-Nov	8:20	f(W)	4	S,F	Open Water												
16-Nov	9:05	f(W)	11	S,F	Open Water	1	1			3				LS	Open Water		
Sector Totals:			15			1	1			3			0				

16-Nov	6:40	f(N1)	16	F,L	Open Water												
16-Nov		f(N1)	5	R	Edge												
Sector Totals:			21														

16-Nov	7:00	f(S)	1	L	Edge				1								
16-Nov		f(S)	1	L	Edge												
16-Nov		f(S)	23	L	Edge												
16-Nov		f(S)	56	S	Open Water												
16-Nov		f(S)	79	L	Open Water												
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water	1	1			2							
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	7	F	Open Water												
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	6	L	Open Water	1		1					1				
16-Nov		f(S)	2	S	Open Water	1	1			5							
16-Nov		f(S)	2	S	Open Water												
16-Nov		f(S)	1	S	Open Water												
16-Nov		f(S)	2	S	Open Water	1	1			5							
16-Nov		f(S)	4	L	Open Water	1	1			3							
16-Nov		f(S)	7	L	Open Water	1	1			3							
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water	1		1					5				
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	2	L	Open Water	1	1			1							
16-Nov		f(S)	2	s	Open Water												
16-Nov		f(S)	2	L	Open Water	1	1			1							
16-Nov		f(S)	2	L	Open Water												
16-Nov		f(S)	5	L	Open Water	1	1			2							
16-Nov		f(S)	2	L	Open Water	1	1			1							

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov		f(S)	2	L	Open Water	1	1			1						
16-Nov		f(S)	4	L	Open Water											
16-Nov		f(S)	4	L	Open Water											
Sector Totals:			236			12	10	2	1	24			6			

16-Nov	8:51	d	2	S	Open Water	2	1	1		5	S		3	S,F	Edge	
		d	2	L	Edge	1		1					2	S	Edge	
		d	2	S	Edge	1		1					6	S	Edge	
		d	2	S	Edge											
		d	2	F	Open Water	1		1					4	S	Open Water	
		d	2	S	Open Water											
		d	2	F	Edge											
		d	2	S	Open Water	1	1			5	S	OW				
Sector Totals:			16			6	2	4		10			15			

16-Nov	7:13	e	41	F	Edge	2	2			4	L	Edge				
16-Nov	7:40	e	1	S	Open Water	1	1			3	P					
16-Nov		e	6	S	Open Water	2	1	1		4	S	Open Water	2	S	Open Water	
16-Nov		e	2	S	Open Water	1		1					5	S		
16-Nov		e	16	F	Open Water											
16-Nov		e	17	F	Open Water											
16-Nov		e	7	F	Open Water	1	1			2	P					
16-Nov		e	2	S	Open Water											
16-Nov		e	16	S	Open Water											
16-Nov		e	2	S	Open Water	1	1			2	P					
16-Nov		e	14	P	Edge	1	1			4	P					
16-Nov		e	12	S,F,L	Open Water	1	1			4	F	Shallows				
16-Nov		e	102	F,L	Shallows							Shallows				
16-Nov		e	7	f	Shallows	1	1			2	f	Shallows				
16-Nov		e	1	f	Shallows							Shallows				
16-Nov		e	67	f,p	Shallows	1	1			3	f	Shallows				
16-Nov		e	2	s	Shallows											
16-Nov		e	2	s	Open Water	1		1				Shallows	3	s	Shallows	
16-Nov		e	2	s	Shallows	1	1			4	f	Shallows				
16-Nov	7:49	e	2	s	Shallows	1		1					1	S	Open Water	
16-Nov	9:00	e	2	S	Open Water											
16-Nov		e	49	S,L	Open Water	1	1			1	L	Shallows			Shallows	O'cast, 10kph Westerly breeze.
16-Nov		e	2	L	Shallows	1	1			4	l	Shallows			Shallows	

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov		b	1	S	Open Water	1		1					3	S	Open Water	
16-Nov		b	2	S	Open Water	1		1					4	S	Open Water	
16-Nov		b	2	F	Open Water	1		1					8	F	Open Water	
16-Nov		b	6	F	Open Water											
16-Nov		b	2	F	Open Water	1		1					6	F	Open Water	
16-Nov		b	2	F	Open Water	1		1					4	F	Open Water	
16-Nov		b	58	F	Open Water											
16-Nov		b	24	F	Open Water	1	1			2	S	Open Water				
16-Nov		b	2	F	Open Water											
16-Nov		b	2	F	Open Water	1	1			3	S	Open Water				
16-Nov		b	34	F	Open Water	1		1					1	F	Edge	
16-Nov		b	2	F	Open Water	1	1			6	F	Edge				
16-Nov		b	36	F	Shallows											
16-Nov		b	2	F	Shallows	3		3					15	F	Edge	
16-Nov		b	447	F	Open Water,Shallows											
16-Nov		b	2	F	Open Water	1	1			2	F	Open Water				
16-Nov		b	4	F	Shallows	1		1					5	F	Shallows	
16-Nov		b	16	F	Edge	1		1					6	F	Edge	
16-Nov		b	4	F	Edge											
16-Nov		b	179	F	Open Water	1	1			1	F	Open Water				
Sector Totals:			1271			20	9	11	20*	26			52			

16-Nov		a	44	L	Edge											
16-Nov		a	38	L	Open Water											
16-Nov		a	55	F	Edge											
16-Nov		a	63	F	Open Water	2	2			3	S	Open Water				
16-Nov		a	2	L	Edge											
16-Nov		a	22	S	Open Water	2	2			6	S	Open Water				
16-Nov		a	14	F	Open Water	1	1			4	F	Open Water				
16-Nov		a	12	L	Edge											
16-Nov		a	42	F	Edge	1	1			2	F	Edge				
16-Nov		a	86	L	Edge											
16-Nov		a	16	F	Edge	1	1			4	F	Edge				
16-Nov		a	2	F	Edge	1		1					4	F	Edge	
16-Nov		a	44	L	Open Water											
16-Nov		a	13	F	Open Water											
16-Nov		a	3	F	Open Water											
16-Nov		a	87	F	Edge											
16-Nov		a	10	L	Edge											
16-Nov		a	16	S	Open Water	2		2					8	S	Open Water	

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov		a	6	R	Edge											
16-Nov		a	34	S	Open Water											
16-Nov		a	8	F	Edge											
16-Nov		a	31	L	Open Water											
16-Nov		a	2	S	Open Water	1	1			2	S					
16-Nov		a	44	L	Open Water											
16-Nov		a	2	S	Open Water	1	1			4	S	Open Water				
16-Nov		a	13	S	Open Water											
16-Nov		a	80	F	Shallows	3	3			8	F	Shallows				
16-Nov		a	1	L	Edge	1	1			3	L	Edge				
Sector Totals:			790			16	13	3		36			12			

VASSE TOTALS:	2834	85	50	35	43*	139	146
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* The 20 incubating swans of Vasse sector (b) were first observed on 16Nov2009 but not counted until 17Nov2009.

DATE	TIME (24hr)	SECTOR	HABITAT	No. incubating
17-Nov	9:05	b	SOUTH WESTERN BAY	0
17-Nov	9:20	b	EAST OF MILL (site b)	7
17-Nov	10:30	b	WEST OF MILL (site a)	13
Total				20

Key

S	Swimming	Usually swimming as a group in the same general direction and distinguished from loafing
L	Loafing	Usually immobile on open water body, around the shallow margins or standing on a bank or island
I	Incubating	Incubating usually implies birds sitting on eggs. If cygnets are visible in the nest then the record would be entered as a brood and not entered as incubating
R	Roosting	Swans recorded on land with heads under wings or sitting and clearly roosting
P	Preening	An extension of loafing where the activity of preening was visible and thus recorded
F	Foraging	Foraging (feeding) includes records of upending, or records of birds visibly swallowing vegetation or pecking at food items on the water surface

Open Water	Includes the open water of major water bodies and open pools contained in samphire marsh or sedgeland
Edge	Refers to activities around the fringes of samphire marsh, sedgelands, flooded vegetation, pools or the edges of main water body
Shallows	Refers to shallow water margins of open water bodies where adult swans and swan cygnets can forage without having to upend
Island	Refers to small vegetated islands that occur within the open water body or close to the edges of open water body

WONNERUP ESTUARY: 16 NOV 2009

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov	14:05	i	2	S	Open Water	6	6			21	S	Open Water				Adults and broods swimming in channel
16-Nov		i	2	S	Open Water											Swimming in channel
16-Nov		i	2	S	Open Water	1		1					2	S	Open Water	Swimming in channel
16-Nov		i	41	S	Open Water	3		3					13	S	Open Water	Swimming in channel
16-Nov		i	34	S	Open Water											Swimming in channel
16-Nov		i	2	S	Open Water	1		1					5	S	Open Water	Swimming in channel
16-Nov		i	30	L	Open Water											Loafing in the open channel
16-Nov		i	28	L	Open Water											Loafing in the open channel
Sector Totals:			141			11	6	5	0	21			20			

16-Nov	14:26	j(W)	7	L	Open Water											Adults and cygnets loafing in the open water body
16-Nov		j(W)	2	L	Open Water	1		1					4	L	Open Water	Adults and cygnets loafing in the open water body
16-Nov		j(W)	3	F	Shallows											Adult s foraging in the shallows on western side
16-Nov		j(W)	2	F	Shallows	1		1					5	L,F	Shallows	Cygnets loafing and pecking at water
16-Nov		j(W)	2	F	Shallows	1	1			2	F	Shallows				Cygnets pecking at water
16-Nov		j(W)	2	F	Shallows	1		1					4	S	Shallows	Cygnets swimming in shallows
16-Nov		j(W)	8	F	Open Water											
16-Nov		j(W)	2	F	Open Water	1	1			3	L	Open Water				
16-Nov		j(W)	2	L	Open Water	1		1					1	F	Open Water	
16-Nov		j(W)	9	L	Open Water											
16-Nov		j(W)	2	L	Open Water	1	1			2	S	Open Water				
16-Nov		j(W)	2	L	Open Water	1	1			3	S	Open Water				
16-Nov		j(W)	1	L	Open Water	1		1					4	F	Open Water	
16-Nov		j(W)	23	L	Open Water											
16-Nov		j(W)	2	L	Open Water	1		1					2	F	Shallows	
16-Nov		j(W)	6	L	Open Water											
16-Nov		j(W)	4	L	Open Water	1		1					1	F	Open Water	
16-Nov		j(W)	8	L	Open Water	3	2	1		12	L	Open Water	4	L	Shallows	
16-Nov		j(W)	2	F	Open Water											
16-Nov		j(W)	14	L	Open Water	1	1			5	F	Shallows				
16-Nov		j(W)	12	L	Open Water	1		1					5	S	Open Water	
16-Nov		j(W)	1	I	Edge				1							

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov		j(W)	18	L,P	Island											
16-Nov		j(W)	18	F	Open Water											
16-Nov		j(W)	16	L	Open Water	2		2					8	L	Open Water	
16-Nov		j(W)	20	L	Open Water	1	1			5	L	Open Water				
16-Nov		j(W)	13	F	Open Water											
16-Nov		j(W)	4	L	Open Water											
16-Nov		j(W)	24	F	Open Water	1		1					4	L	Open Water	
Sector Totals:			j(W)	229		20	8	12	1	32			42			

16-Nov	14:35	j(C)	91	S,L	Open Water	8	7	1		26	S	Open Water	6	S	Open Water	Adults swimming and loafing on open water
16-Nov		j(C)	10	F	edge											Feeding around sheltered edges of vegetated areas
16-Nov		j(C)	162	F, L	Shallows	5	3	2		12	L	Shallows	4	L	Shallows	
16-Nov		j(C)	48	F	Shallows	1		1					4	F	Shallows	Foraging and loafing in and around vegetation in shallows
Sector Totals:			j(C)	311		14	10	4	0	38			14			

16-Nov	16:23	j(E)	14	F	Edge											
16-Nov		j(E)	40	F	Edge											
16-Nov		j(E)	2	S	Open Water	1	1			2	S	Open Water				
16-Nov		j(E)	10	L	Open Water	3	3			5	L	Open Water				
16-Nov		j(E)	10	F	Shallows	1		1					2	F	Shallows	
16-Nov		j(E)	4	F	Shallows	2	2			9	F	Shallows				
16-Nov		j(E)	20	F	Shallows											
16-Nov		j(E)	22	F	Shallows	1	1			4	F	Shallows				
16-Nov		j(E)	22	F	Shallows	1	1			3	F	Shallows				
16-Nov		j(E)	10	S	Shallows	1	1			2	S	Shallows				
16-Nov		j(E)	156	F	Shallows	3	3			14	F	Shallows				
16-Nov		j(E)	12	F	Open Water	1	1			6	P	Open Water				
16-Nov		j(E)	20	F	Open Water	1		1					6	L	Open Water	
16-Nov		j(E)	16	F	Open Water	1		1					4	L	Edge	
16-Nov		j(E)	10	F	Open Water	1	1			2	F	Open Water				
16-Nov		j(E)	6	L	Open Water	1	1			3	L	Open Water				
16-Nov		j(E)	6	F	Open Water	1	1			2	P	Open Water				
16-Nov		j(E)	8	F	Shallows											
16-Nov		j(E)	18	L	Open Water	1	1			2	F	Open Water				
16-Nov		j(E)	74	L	Open Water	1	1			4	L	Open Water				

DATE	TIME (24hr)	SECTOR	No. OF FULL-SIZED SWANS	BEHAVIOUR OF FULL-SIZED SWANS	HABITAT OF FULL-SIZED SWANS	Broods of All Ages	Broods of Part-Feath'd Cygnets	Broods of Downy Cygnets	No. of Swans Incubating	No. of Part-Feath'd Cygnets	Behaviour of Part-Feath'd Cygnets	Habitat of Part-Feath'd Cygnets	No. of Downy Cygnets	Behaviour of Downy Cygnets	Habitat of Downy Cygnets	COMMENTS
16-Nov		j(E)	50	F	Open Water											
16-Nov		j(E)	36	L	Open Water	1	1			6	L	Open Water				
16-Nov		j(E)	10	F	Open Water	1	1			4	F	Open Water				
16-Nov		j(E)	14	L	Open Water	1	1			3	L	Open Water				
16-Nov		j(E)	3	P	Edge	1	1			5	P	Edge				
Sector Totals:			593			25	22	3		76			12			

WONNERUP TOTALS:			1274			70	46	24	1	167			88			
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Key

- S Swimming Usually swimming as a group in the same general direction and distinguished from loafing
- L Loafing Usually immobile on open water body, around the shallow margins or standing on a bank or island
- I Incubating Incubating usually implies birds sitting on eggs. If cygnets are visible in the nest then the record would be entered as a brood and not entered as incubating
- R Roosting Swans recorded on land with heads under wings or sitting and clearly roosting
- P Preening An extension of loafing where the activity of preening was visible and thus recorded
- F Foraging Foraging (feeding) includes records of upending, or records of birds visibly swallowing vegetation or pecking at food items on the water surface

- Open Water Includes the open water of major water bodies and open pools contained in samphire marsh or sedgeland:
- Edge Refers to activities around the fringes of samphire marsh, sedgelands, flooded vegetation, pools or the edges of main water bodies
- Shallows Refers to shallow water margins of open water bodies where adult swans and swan cygnets can forage without having to upend
- Island Refers to small vegetated islands that occur within the open water body or close to the edges of open water bodies