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Scroby Sands Ornithological Monitoring

Assessing the impacts of the Scroby Sands Offshore Wind Farm upon Little Tern *Sternula albifrons*: Appendices to the summary of monitoring programme 2002-2006.

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Appendices to the Draft Final Report

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APPENDICES

APPENDIX I. Terms of reference for the project - Annexes 3a and 3b.

Annex 3a

Data requirements for Scroby Sands

Data type	Data required	Rationale	Notes
Little tern feeding behaviour - extend survey area to wider area to determine full extent of feeding area - thus allowing the importance of the windfarm to be assessed in the context of the wider area.	Spatial and temporal distribution of little terns	Understanding of the relative importance of feeding areas	Point-based counts, boat-based surveys
	Other including: other disturbance in feeding area	Factors which may be having an effect on tern distribution (other than the windfarm itself) - through disruption of food supply e.g. trawling.	Point-based counts, boat-based surveys and information from CEFAS
	Dive success rate	Availability of suitable prey species and effect of external influences	Point-based counts, boat-based surveys.
Breeding colony studies - These must be carried out at the meta-population level in order to determine the overall effects of the development on the population. A comparison of changes in the little tern colony at Great Yarmouth and those elsewhere in those elsewhere in the region would allow any additional causative factors, responsible for, or contributing to, a change in the little tern colony at Great Yarmouth to be disaggregated from those caused by the windfarm itself.	Breeding numbers	Nest location and dynamics of colony in relation to external effects	Annual RSPB data collection
	Productivity (egg and clutch size)	Determination of pre-laying food availability	Annual RSPB data collection
	Success	Determination of food availability throughout chick rearing phase - High and variable annual predation rates - difficult to disaggregate chages due to windfarm from other potential causative factors	Annual RSPB data collection
	Feed frequency, size and type (to calculate hourly energetic provisioning rate).	Availability and provisioning of suitable food supply	Additional survey effort
	Adult time at nest/time spent away from nest foraging		Additional survey effort
	Other including: effect of predation, density dependent factors.	Assessment of multiple causes for population change.	Annual RSPB data collection and additional survey effort

Annex 3a

Data type	Data required	Rationale	Notes
Prey studies	Location and abundance of prey species	Combined with bathymetry data and knowledge of little tern feeding ecology to determine whether a suitable prey resource is being utilised by little terns i.e. assessment of indirect loss of feeding habitat due to disturbance.	Seek advice from CEFAS and JNCC Marine monitoring Handbook.
	Effect of wind turbines on prey species	Assessment of potential effect of turbines on prey species	Seek advice from CEFAS. Possibility of extrapolation of evidence from laboratory testing.
Bird Strike Studies	Levels of bird mortality resulting from collision with turbine structure/vortex from rotor sweep.	Determination of impact (compensatory or additive motrality).	Seek advice from National Environmental Research Institute, Denmark.

Annex 3b

Scroby Sands Monitoring Requirements - Little Terns

Development Phase	Data requirements	Rationale	Season	Time requirement
Pre-construction	Baseline data collection: **Little tern feeding studies**	To allow comparison of data in later development stages. Data spanning several years will provide an improved understanding of the site specific and wider factors influencing little terns at Great Yarmouth North Denes SPA.	Throughout	Annual throughout pre-construction phase
	Baseline data collection: **Breeding colony studies**		Mating, Breeding	
	Baseline data collection: **Prey studies**		Throughout	

Annex 3b

Scroby Sands Monitoring Requirements - Little Terns

Development Phase	Data requirements	Rationale	Season	Time requirement
Construction	Monitor: **Little Tern feeding studies**.	Determination of effects of turbine construction upon Little Tern autecology (reference to baseline data).	Throughout	Annual throughout construction phase
	Monitor: **Breeding colony studies**		Mating, Breeding	
	Monitor: **Bird strike studies**		Throughout	Dependent upon outcome of current studies by NERI
	Monitor: **Prey Studies**		Throughout	Annual throughout construction phase

Annex 3b

Scroby Sands Monitoring Requirements - Little Terns

Development Phase	Data requirements	Rationale	Season	Time requirement
Operational	Monitor: **Little Tern feeding studies**.	Determination of *in situ* effects of turbines upon Little Tern autecology (reference to baseline data).	Throughout	Minimum of 3 years of data (reviewed thereafter and monitoring ceased if no adverse effect detected)
	Monitor: **Little Tern breeding studies**		Throughout	
	Monitor:**Bird Strike studies**		Throughout	Dependent upon outcome of current studies by NERI
	Monitor: **Prey Studies**			Minimum of 3 years of data (reviewed thereafter and monitoring ceased if no adverse effect detected)

Annex 3b

Scroby Sands Monitoring Requirements - Little Terns

Development Phase	Data requirements	Rationale	Season	Time requirement
Decommissioning (Given the similarity between this phase and the construction phase, monitoring throughout this phase will only be deemed necessary if findings are unclear/negative impact recognised from contruction phase monitoring work)	Monitor: **Little Tern feeding studies**.	Determination of effect of decommisioning turbines upon Little Tern autecology. Collection of supplementary information support findings.	Throughout	Annual throughout construction phase
	Monitor: **Little Tern breeding studies**		Mating, Breeding	
	Monitor:**Bird Strike studies**		Throughout	Dependent upon outcome of current studies by NERI
	Monitor: **Prey Studies**			Annual throughout construction phase

APPENDIX II. Details of environmental variables recorded during boat-based surveys at both Scroby and the Would from 2003-2006 inclusive. Survey numbers correspond with the dates presented in Table 3 and shaded cells indicate occasions when data was not collected.

Site 1.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time	12:00		17:50	11:05	11:10	10:50	10:20	14:57	16:10
	Tide		Ebb							
	Wind									
	Wave									
	Cloud									
	Depth	4.50	6.00	3.60	6.00	3.00	6.00	6.00	6.60	6.00
	Clarity	0.50	1.00	2.00	2.00	2.00	2.00	1.50	1.50	3.00
2004	Time	11:35	18:40	11:05	15:30	07:15	17:20	09:42	09:30	
	Tide	Flood		High						
	Wind	NW 2	SE 3	W 1	SSE 4	SW 1	SE 2	SE 1	W 2	
	Wave	2	1	1	4	1	2	1	2	
	Cloud		7	8	7		7	1	8	
	Depth		4.00	4.00	3.00	5.00	4.00	6.50	2.60	
	Clarity		0.30	1.20	1.00	1.00	2.50	2.00	2.00	
2005	Time	10:55	11:27	10:55	08:42	20:55	10:41	16:02	09:28	
	Tide	Low	Ebb	Flood	Ebb	High	Ebb	Low	High	
	Wind	SE 1	S 2	SE 5	W 3	SSW 3	NE 1	NW 3	W 3	
	Wave	1	3	-	2	3	1	3	2	
	Cloud	5	8	7	8	3	8	8	2	
	Depth	9.20	9.80	6.60	10.50	9.20	6.60	7.20	6.60	
	Clarity	0.40	0.50	060	0.80	1.20	2.00	2.00	3.00	
2006	Time	19:45	11:20	10:36	06:58	11:09	09:03	10:30		
	Tide	Flood	Flood	Flood	Flood	Flood	Flood	High		
	Wind	SE 3	SW 5	NW 2	NW 1	SE 3	E 1	-		
	Wave	3.5	4	3	1	2	1	1		
	Cloud	7	7	8	8	4	1	7		
	Depth	10.50	9.20	7.90	7.20	8.50	7.20	7.90	7.90	
	Clarity	0.50	0.40	1.20	2.00	2.00	0.75	2.00	1.20	

Site 2.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			17:00	11:40	11:40	11:25	11:00	14:25	14:12
	Tide		Ebb							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	4.50	3.60	3.60	4.80	4.80	5.40	4.50	3.60
	Clarity	0.75	1.50	0.75	1.50	2.00	2.00	1.20	1.50	2.00
2004	Time	13:25	18:15	11:45	15:01	07:50	16:50	10:25	12:13	
	Tide		High							
	Wind	NW 3	SE 4	W 2	SSE 4	SW 1	SE 1	SE 1	W 3	
	Wave	3	3	2	4	1	2	1	3	
	Cloud		3	8	7		5	2	8	
	Depth		4.90	3.80	6.40	4.20	3.40	4.00	5.00	
	Clarity	0.75	1.00	1.25	1.00	1.20	2.00	2.00	2.00	
2005	Time	13:05	10:52	10:32	08:18	21:17	10:20	15:37	09:07	
	Tide	Flood	Ebb	Flood	High	High	Ebb	Low	High	
	Wind	2	S 3	SE	W 3	SSW 1	NE 1	NW 3	W 3	
	Wave	2	3	-	2	3	1	3	2	
	Cloud		8	7	8	3	8	8	1	
	Depth	3.90	3.90	3.90	3.90	5.20	5.20	3.90	4.60	
	Clarity	0.50	0.70	0.70	0.60	1.60	1.60	1.50	3.00	
2006	Time	20:16	11:45	11:10	07:20	11:36	14:30	11:00		
	Tide	Flood	Flood	Flood	Flood	Flood	Ebb	High		
	Wind	SE 2	SW 5	NW 3	NW 1	SE 3	E 1	-		
	Wave	3.5	4	4	1	2	1	-		
	Cloud	7	8	8	8	4	1	7		
	Depth	5.20	5.90	5.20	4.60	4.60	4.60	7.20	7.20	
	Clarity	0.40	0.40	1.00	2.40	2.00	3.00	1.50	1.00	

Site 3.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			16:20	12:15	12:10	11:50	11:35	13:40	13:41
	Tide		Slack							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	5.40	3.60	4.80	6.00	7.20	6.00	3.60	6.60
	Clarity	1.25	2.50	1.50	2.00	2.00	3.00	1.40	1.50	2.00
2004	Time	13:50	18:00	12:05	14:40	08:20	16:32	10:53	11:48	
	Tide	Ebb								
	Wind	NW 4	SE 4	W 2	SSE 3	SW 1	SW 2	SE 1	W 3	
	Wave	4	2	2	3	1	2	1	3	
	Cloud		6	8	7		6	2	8	
	Depth		5.70	7.00	5.60	5.20	6.10	7.00	5.40	
	Clarity		.75	1.50	1.25	1.75	2.50	2.00	2.25	
2005	Time	12:20	13:03	13:05	10:37	17:45	12:04	18:20	11:10	
	Tide	Flood	Low	High	Ebb	Flood	Low	Flood	Ebb	
	Wind	3	SE 4	VAR	W 2	SE 3	SSE 1	NW 3	W 3	
	Wave	2	4	-	3	2	1	3	3	
	Cloud		8	1	7	3	8	8	7	
	Depth	7.20	3.30	5.20	5.20	6.60	5.20	5.20	6.60	
	Clarity	0.80	0.50	0.50	0.70	2.50	2.50	2.00	3.00	
2006	Time	17:50	12:10	13:50	09:02	13:13	14:02	11:26		
	Tide	Low	Flood	Ebb	Flood	Flood	Ebb	Ebb		
	Wind	SE 3	SW 5	NW 2	NW 1	SE 4	E 1	-		
	Wave	3.5	4	4	1	4	1	-		
	Cloud	7	8	8	8	7	1	6		
	Depth	5.20	7.20	7.20	7.20	3.90	7.20	7.90	5.90	
	Clarity	0.60	0.70	2.00	1.50	2.00	3.00	2.50	1.50	

Site 4.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			15:45	12:50	12:45	12:10	12:05	13:20	13:22
	Tide		Slack							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	6.00	4.80	2.40	7.50	3.00	7.20	5.40	6.00
	Clarity	1.50	2.50	1.50	0.75	2.50	3.50	1.30	1.50	2.50
2004	Time	14:15	17:41	12:30	14:25	09:00	16:04	11:22	11:21	
	Tide	Ebb			Flood					
	Wind	NW 5	SE 4	W 2	SSE 3	SW 1	SW 2	SE 1	W 3	
	Wave	4	2	2	3	1	2	2	3	
	Cloud		6	8	7		7	2	8	
	Depth		9.20	7.60	5.00	5.20	3.00	12.00	3.90	
	Clarity	0.75	0.50	1.50	1.25	3.00	2.50	2.50	2.00	
2005	Time	12:16	12:33	12:34	10:06	17:24	11:44	18:08	10:45	
	Tide	Flood	Low	Flood	Ebb	Flood	Low	Flood	Ebb	
	Wind	SE 3	SE 4	VAR	W 3	SE 3	SSE 1	NW 3	W 3	
	Wave	2	4	-	3	2	1	3	3	
	Cloud		8	2	6	3	8	8	4	
	Depth	7.90	3.30	3.90	6.60	3.30	2.60	4.60	3.30	
	Clarity	0.70	0.60	0.50	0.60	3.00	1.50	2.00	3.00	
2006	Time	17:20	12:40	13:30		13:40	13:45	11:51		
	Tide	Ebb	High	Ebb		Flood	High	Ebb		
	Wind	3	SW 6	NW 2		SE 4	E 1	SE 1		
	Wave	3.5	5	4		4	1	1		
	Cloud	7	7	8		6	1	5		
	Depth	6.60	9.20	7.90		8.50	7.20	7.90	5.20	
	Clarity	0.70	1.20	2.50		2.50	2.00	2.00	1.50	

Site 5.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			14:50	13:30	13:05	12:30	12:35	13:05	12:55
	Tide	Slack	Flood							
	Wind									
	Wave									
	Cloud									
	Depth	15.00	15.00	15.00	15.00	15.00	15.00	14.40	15.00	15.00
	Clarity	1.50	2.50	0.40	3.00	4.00	8.00	1.40	2.00	3.00
2004	Time	14:35	17:25	13:05	14:05	09:32	15:35	11:58	10:44	
	Tide	Ebb			Flood					
	Wind	NW 5	SE 4	W 2	SSE 3	SW 1	SW 1	SE 1	W 3	
	Wave	4	2	2	3	2	1	1	3	
	Cloud		6		5		8	3	8	
	Depth		8.00	17.9	12.00	11.20	9.00	18.00	14.20	
	Clarity	0.75	1.00	1.50	1.00	5.00	4.00	3.00	6.00	
2005	Time	14:14	13:41	13:42	11:11	18:34	12:40	17:50	11:43	
	Tide	Flood	Low	Flood	Ebb	Flood	Low	Flood	Ebb	
	Wind	SE 2	SE 4	SW 3	SW 3	SE 3	S 2	NW 4	W 3	
	Wave	2	5		3	2	1	4	3	
	Cloud		8	8	7	3	8	8	7	
	Depth	17.70	18.40	15.70	15.70	15.70	15.70	15.70	15.70	
	Clarity		0.70	1.00	1.20	4.00	1.20	4.50	5.00	
2006	Time	16:37	13:10	13:10	10:00		13:23	12:25		
	Tide	Ebb	High	High	High	High	High	Ebb		
	Wind	3	SW 6	NW 2	NE 3	SE 4	E 1	SE 1		
	Wave	3.5	5	4	1	3	1	1		
	Cloud	7	7	8	8	6	1	5		
	Depth	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	
	Clarity	1.20	1.50	2.50	3.00	4.00	5.00	2.75	3.00	

Site 6.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			13:20	14:15	13:40	13:05	13:15	10:56	10:35
	Tide	Ebb	Flood							
	Wind									
	Wave									
	Cloud									
	Depth	7.20	4.50	4.50	4.50	3.60	4.50	6.00	5.40	4.50
	Clarity	0.75	1.50	2.50	1.50	3.00	1.50	1.50	2.00	2.00
2004	Time	15:10	16:30	13:35	16:45	11:25	14:55	12:35	13:02	
	Tide	Ebb								
	Wind	5	SE 4	NW 3	SE 3	SW 3	SW 1	SE 1	W 2	
	Wave	3	2	2	3	2	1	2	2	
	Cloud		6		4	7	8	3	8	
	Depth		6.00	13.00	11.00	5.30	4.30	7.20	6.20	
	Clarity	0.75	1.00	1.00	2.50	1.50	3.00	3.00	3.00	
2005	Time	14:50	14:22	14:20	11:45	19:07	13:10	17:14	12:17	
	Tide	High	Flood	Flood	Ebb	High	Low	Flood	Ebb	
	Wind	2	SE 2	SW 5	SW 4	SE 3	S 2	NW 4	NW 3	
	Wave	3	3		3	2	1	4	3	
	Cloud		7	8	7	3	8	8	7	
	Depth	7.20	5.20	6.60	5.90	5.90	6.60	4.90	7.90	
	Clarity	0.60	0.60	0.70	0.80	2.00	1.50	3.00	3.00	
2006	Time	16:00	13:45	14:45	10:321	15:59	12:30	13:40		
	Tide	Ebb	High	Ebb	High	High	High	Ebb		
	Wind	3	SW 6	NW 2	NE 3	SW 3	E 1	SE 1		
	Wave	3.5	5	3	1	3	1	1		
	Cloud	7	7	8	8	7	1	5		
	Depth	5.20	8.50	8.50	5.90	5.20	7.90	5.20	7.20	
	Clarity	1.00	1.20	2.50	1.50	2.50	2.50	3.00	1.50	

Site 7.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			14:05	16:40	16:15	15:35	15:33	16:00	15:30
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	7.20	6.00	6.00	9.00	6.00	9.00	4.80	6.00	6.00
	Clarity	0.25	1.00	1.50	2.00	1.50	1.50	0.50	1.50	3.00
2004	Time	12;37	16:55	15:35	16:18	10:14	18:05	14:15	10:19	
	Tide	Flood		Ebb		Ebb				
	Wind	NW 3	SE 4	NW 2	SE 3	SW 3	W 1	SE 3	W 2	
	Wave	3	2	2	3	2	1	3	2	
	Cloud		6		6		6	4	8	
	Depth		6.00	6.00	5.20	1.80	7.00	6.70	6.90	
	Clarity	0.05	0.75	0.60	1.50	1.00	3.00	3.50	3.00	
2005	Time	11:45	12:09	12:00	09:37	16:58	11:20	16:45	10:24	
	Tide	Flood	Low	Flood	Ebb	Flood	Ebb	Flood	Ebb	
	Wind	SE 2	SSW 3	SE 5	W 4	SE 3	SSE 1	NW 4	W 3	
	Wave	1	3		3	2	-	4	3	
	Cloud		6	4	5	3	8	8	3	
	Depth	6.60	5.90	9.20	6.20	3.30	5.90	6.60	7.90	
	Clarity	0.60	0.40	0.50	1.20	1.60	1.50	3.00	3.50	
2006	Time	18:40	15:29	12:25	08:30	12:3	10:02	13:14		
	Tide	Low	Ebb	High	Flood	Flood	Flood	Ebb		
	Wind	SE 3	SW 4	NW 3	NW 1	SW 3	E 1	SE 1		
	Wave	3.5	3.5	4	1	2	1	1		
	Cloud	7	7	8	8	7	1	3		
	Depth	6.60	9.80	5.90	7.20	7.90	7.20	5.90	5.90	
	Clarity	0.50	1.30	2.00	2.00	3.00	1.50	3.00	1.60	

Site 8.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time	19:35		18:15	17:20	16:40	16:05	16:09	15:32	15:50
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	5.40	4.80	5.10	6.60	3.00	4.20	6.00	4.80
	Clarity	0.25	1.50	1.75	1.75	1.50	2.00	1.00	1.50	1.50
2004	Time	12;05	19:10	16:00	15:55	10:42	17:40	14:39	09:54	
	Tide	Flood		Ebb		Ebb				
	Wind	NW 3	SE 3	NW 2	SSE 4	SW 3	SE 2	SE 3	W 2	
	Wave	3	1		4	2	1	2	2	
	Cloud		1		6	7	6	4	8	
	Depth		9.00	6.00	8.10	3.00	5.00	7.50	6.80	
	Clarity	0.50	1.00	0.20	1.50	1.25	2.00	4.00	3.00	
2005	Time	11:19	11:46	11:34	09:03	16:25	11:01	16:23	09:55	
	Tide	Flood	Ebb	Flood	Ebb	Flood	Ebb	Low	Ebb	
	Wind	1	SSW 3	SE 1	W 3	SE 3	NE 1	NW 3	W 3	
	Wave	1	3	2	2	2	1	3	2	
	Cloud		7	5	7	3	8	8	3	
	Depth	5.60	3.90	5.20	5.90	3.90	5.20	5.20	5.90	
	Clarity		0.50	0.60	0.80	1.20	2.50	2.50	2.50	
2006	Time	19:10	16:00	11:57	07:55	12:15	09:30	13:40		
	Tide	Low	Ebb	High	Flood	Flood	Flood	Ebb		
	Wind	SE 3	SW 4	NW 3	NW 1	SE 3	E 1	SE 1		
	Wave	3.5	3.5	4	1	2	1	1		
	Cloud	7	7	8	8	6	1	2		
	Depth	2.60	6.60	3.30	3.30	6.60	5.20	2.60	3.90	
	Clarity	0.40	1.20	1.20	2.00	2.25	1.00	2.00	1.75	

Site 9.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time	20:45		10:55	18:30	17:15	17:15	17:25	09:40	09:20
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	5.40	6.00	5.40	6.00	4.80	6.00	5.40	6.00
	Clarity	0.50	0.25	0.50	1.50	0.30	0.30	0.30	1.10	1.00
2004	Time	18:00	11:00	17:15	8:53	14:10	11:55	16:01	15:15	
	Tide				Ebb					
	Wind	NW 2	SE 1	NW 1		SW 4	SE 2	SE 2	W 3	
	Wave	1	1	1	<1	3	2	1	1	
	Cloud		8		7	8	8	3	8	
	Depth		7.50	12.00	4.00	8.00	4.00	3.90	5.00	
	Clarity	0.30	1.50	0.20	0.30	0.50	1.00	0.30	0.30	
2005	Time	16:55	16:52	16:28	16:07	21:50	18:10	21:12	14:30	
	Tide	Ebb	Flood	High	Flood	High	High	High	Low	
	Wind	3	SE 5	-	W 2	SSW 1	SW 3	NW 1	W 2	
	Wave	3	5	-	1	3	3	2	1	
	Cloud		6	8	8	3	8	8	7	
	Depth	6.60	6.90	5.20	3.90	5.90	5.20	5.90	5.90	
	Clarity	0.20	0.30	1.20	0.50	0.50	0.75	0.45	0.30	
2006	Time	14:11	17:10	17:05	13:05	17:35	14:57	16:35		
	Tide	Ebb	High	Ebb	Ebb	Ebb	Ebb	Low		
	Wind	4.5	SW 4	NW 1	NE 3	SE 3	E 1	SE 2		
	Wave	3.5	3.5	1	3	2	1	1		
	Cloud	7	7	8	8	7	1	7		
	Depth	7.90	7.20	7.20	5.20	6.60	7.90	5.90	6.60	
	Clarity	0.40	0.25	0.30	0.40	0.50	2.50	0.30	0.80	

Site 10.

Year	Species	Survey Number								
		1	2	3	4	5	6	7	8	9
2003	Time			11:27	17:55	15:45	16:30	16:41	09:56	09:40
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	6.00	3.60	4.50	6.00	6.00	4.50	4.20	4.50	6.00
	Clarity	0.40	0.25	0.75	0.30	0.30	0.20	0.30	0.75	1.00
2004	Time	17:10	11:15	16:30	09:10	13:30	12:15	15:06	14:27	
	Tide				Ebb					
	Wind	NW 2		NW 1	-	SW 4	SE 2	SE 2	W 1	
	Wave	1		2	<1	3	2	1	1	
	Cloud		8		7	8	8	4	8	
	Depth		5.50	6.50	8.00	9.00	4.10	8.30	7.00	
	Clarity	0.25	1.25	0.20	0.20	0.25	1.00	1.75	0.30	
2005	Time	16:16	16:18	15:44	15:31	20:28	15:45	20:30	13:45	
	Tide	High	Flood	High	Flood	Flood	Flood	Flood	Ebb	
	Wind	3	SE 5	SE 1	W 3	SSW 3	SW 3	NW 1	NW 2	
	Wave	3	5	2	2	3	3	2	1	
	Cloud		4	8	8	3	8	8	7	
	Depth	6.60	3.30	4.60	5.90	4.60	5.90	5..90	3.90	
	Clarity	0.20	0.20	0.70	0.30	0.30	0.60	0.20	0.45	
2006	Time	14:40	16:30	16:25	12:20	17:04	10:38	15:42		
	Tide	Ebb	High	Ebb	Ebb	Ebb	Flood	Ebb		
	Wind	4.5	SW 4	NW 1	NE 3	SW 3	E 1	SE 3		
	Wave	3.5	3	1	3	1	2	2		
	Cloud	7	7	8	8	7	1	3		
	Depth	1.70	4.60	7.90	5.90	5.20	6.60	5.20	6.60	
	Clarity	0.40	0.50	0.35	0.30	1.00	0.50	0.50	0.50	

Site 11.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			12:10	15:40	14:45	14:35	14:52	10:13	10:00
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	3.60	3.60	3.60	4.50	3.60	4.50	4.20	4.80	4.50
	Clarity	0.08	0.25	1.00	0.50	0.20	0.20	0.25	0.50	0.90
2004	Time	16:30	11:33	14:40	09:25	12:50	12:30	13:38	14:03	
	Tide	Ebb	High		Ebb					
	Wind	NW 2	SE 1	NW 2	-	W 4	SE 2	SSE 3	W 1	
	Wave	1	1	2	<1		2	2	1	
	Cloud		8		7		8	2	8	
	Depth		4.40	2.80	4.70	3.40	4.60	6.60	4.90	
	Clarity	0.15	0.50	0.30	0.20	0.20	0.50	2.00	0.30	
2005	Time	15:50	15:45	15:19	15:00	20:05	17:30	20:08	13:11	
	Tide	High	Flood	High	Flood	Flood	High	Flood	Ebb	
	Wind	3	SSW 4	W	W 2	SSW 3	SW 2	NW 1	NW 1	
	Wave	2	4	-	1	3	1	2	1	
	Cloud		6	8	8	3	8	8	7	
	Depth	5.20	3.90	3.90	2.60	4.60	4.60	4.60	3.30	
	Clarity	0.25	0.25	0.60	0.50	0.40	1.00	0.40	0.30	
2006	Time	15:01	15:00	15:45	11:20	16:43	11:15	15:06		
	Tide	Ebb	Ebb	Ebb	High	Ebb	Flood	Ebb		
	Wind	3	SW 6	NW 1	NE 3	SW 3	E 1	SE 3		
	Wave	3.5	5	3	1	1	1	2		
	Cloud	7	7	8	8	7	1	3		
	Depth	3.90	4.60	3.90	5.90	3.90	5.90	2.60	4.60	
	Clarity	0.25	1.00	0.25	0.40	1.00	1.50	0.50	0.25	

Site 12.

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time			12:40	15:00	14:10	13:55	14:13	10:31	10:10
	Tide		Flood							
	Wind									
	Wave									
	Cloud									
	Depth	4.50	5.40	4.80	3.60	4.80	4.50	3.60	4.50	4.50
	Clarity	0.10	0.50	1.00	0.75	0.30	0.50	0.60	0.70	2.00
2004	Time	15:45	11:53	14:05	09:50	11:50	12:48	13:08	13:27	
	Tide	Ebb								
	Wind	NW 2	SE 1	NW 2	-	W 4	SE 2	SSE 2	W 1	
	Wave	1	1	2	<1		2	2	1	
	Cloud		8		7		8	3	8	
	Depth		5.50	33.20	7.30	4.00	4.00	4.40	4.00	
	Clarity	0.20	0.30	0.30	0.50	1.00	0.75	1.00	2.00	
2005	Time	15:20	15:10	14:50	12:11	19:40	17:07	19:45	12:40	
	Tide	High	Flood	Flood	Ebb	High	Flood	Flood	Ebb	
	Wind	3	SSW 3	W	W 2	SSW 3	SW 1	NW 1	NW 2	
	Wave	2	2	-	1	3	3	2	1	
	Cloud		5	8	7	3	8	8	7	
	Depth	3.30	5.20	3.30	3.90	4.60	5.20	5.20	5.20	
	Clarity	0.30	0.30	0.60	0.30	0.40	0.60	0.40	0.60	
2006	Time	15:30	14:15	15:10	11:00	15:59	11:52	14:35		
	Tide	Ebb	High	Ebb	High	High	Flood	Ebb		
	Wind	3	SW 6	NW 2	NE 3	SW 3	E 1	SE 2		
	Wave	3.5	5	3	1	1	1	1		
	Cloud	7	7	8	8	7	1	5		
	Depth	6.60	5.20	5.90	5.20	4.60	3.90	5.20	6.60	
	Clarity	0.40	0.70	0.60	0.40	2.50	1.50	2.50	0.50	

Hemsby[1]

Year	Species	Survey Number								
		1	2	3	4	5	6	7	8	9
2004	Time		12:16		10:11		13:17			
	Tide									
	Wind		SE 1		SE 1		SE 2			
	Wave		1		<1		2			
	Cloud		8		6		8			
	Depth		4.50		3.30		3.00			
	Clarity		0.50		0.50		1.00			
2005	Time				12:55		16:45			
	Tide				Low		Flood			
	Wind				SW 2		SE 3			
	Wave				1		3			
	Cloud				6		8			
	Depth				2.60		2.60			
	Clarity				0.40		1.30			
2006	Time					15:36				
	Tide					High				
	Wind					SE 3				
	Wave					1				
	Cloud					4				
	Depth					7.90	7.20			
	Clarity					2.50	2.00			

[1] This site was not surveyed in 2002.

Winterton

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time	17:30	11:15	11:10	08:50		12:30	11:31	12:05	11:45
	Tide									
	Wind									
	Wave									
	Cloud									
	Depth	3.60	4.80	4.80	4.80	3.60	3.00	4.80	3.60	4.50
	Clarity	0.25	0.20	0.20	1.00	0.40	0.30	1.00	1.50	2.00
2004	Time		12:35		10:35		13:40			
	Tide				Slack					
	Wind		SE 1		SE 2		SW 1			
	Wave		1		1		1			
	Cloud		6		7		8			
	Depth		4.30		3.00		2.30			
	Clarity		0.50		0.50		0.50			
2005	Time				13:45		16:17			
	Tide				Low		High			
	Wind				NW 3		SE 3			
	Wave				2		3			
	Cloud				4		8			
	Depth				2.60		5.90			
	Clarity				0.40		0.90			
2006	Time					15:11				
	Tide					High				
	Wind					SE 4				
	Wave					2				
	Cloud					4				
	Depth					3.90	2.60			
	Clarity					3.00	2.50			

Horsey

Year	Species	Survey Number								
		1	2	3	4	5	6	7	8	9
2003	Time	17:10		15:35	13:31					
	Tide									
	Wind									
	Wave									
	Cloud									
	Depth	5.40	3.00	4.80	4.20					
	Clarity	0.75	1.00	1.00	0.80					
2004	Time		13:24		11:10					
	Tide		Low		Low					
	Wind		SE 1		SE 2					
	Wave		1		1					
	Cloud		6		4					
	Depth		5.20		6.70					
	Clarity		1.00		0.60					
2006	Time									
	Tide									
	Wind									
	Wave									
	Cloud									
	Depth						5.90			
	Clarity						3.00			

Waxham[2]

Year	Species	Survey Number								
		1	2	3	4	5	6	7	8	9
2003	Time	16:55								
	Tide									
	Wind									
	Wave									
	Cloud									
	Depth	4.80								
	Clarity	0.50								
2004	Time		13:45		11:54					
	Tide		Low		Low					
	Wind		SE 1		SW 2					
	Wave		1		2					
	Cloud		6		8					
	Depth		4.50		6.90					
	Clarity		0.75		0.50					
2005	Time						13:25			
	Tide									
	Wind						S 2			
	Wave						1			
	Cloud						8			
	Depth						6.60			
	Clarity						1.50			

[2] This site was initially located at Sea Palling (2002), but changed to Waxham in all other years to provide a more evenly spaced site arrangement. The site was not surveyed in 2006.

Eccles[3]

Year	Species	Survey Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2003	Time	16:55								
	Tide									
	Wind									
	Wave									
	Cloud									
	Depth	4.80								
	Clarity	0.50								
2004	Time		14:10		12:20					
	Tide				Flood					
	Wind		SE 1		SW 2					
	Wave		1		2					
	Cloud		6		8					
	Depth		4.00		6.20					
	Clarity		0.75		0.60					
2005	Time						13:25			
	Tide						Flood			
	Wind						S 2			
	Wave						1			
	Cloud						8			
	Depth						6.60			
	Clarity						1.50			

[3] Not sampled in 2006

APPENDIX III. Daily chronology of events in the lives of radio-tagged Little Ternsand the telemetry procedures following tagging at both North Denes & Winterton from 2003 to 2006 inclusive.

a) Winterton in 2003

	Tag identification and type								
Bird ID	**10.1**	**0.4**	**1.7**	**11.7**	**3.8 (blue/grey)**	**0.9**	**13.0**	**2.4**	**8.1**
Tag Type	**back mount tail tag**	**back mount tail tag**	**back mount**	**back mount**	**back mount**	**back mount + ground plane**	**back mount**	**tail mount**	**tail mount**
Tagging site	Winterton	Winterton	Winterton	Winterton	Winterton	Winterton	Winterton	Winterton	Winterton
Nest history	-3 eggs	-2 eggs	-3 eggs	-2 eggs	-2 eggs	-3 eggs	-2 eggs	-2 eggs	-2 eggs
Date of tagging									
Day from tagging↓ 0						-seen flying -back incubating c. 1hr after tagged		-slow piercing signal as left	
1	1 chick hatched -brought in fish but ate itself -changeover -incubating -tag /aerial seen -tracked for >1km from beach -flight slightly clumsy	-changeover -incubating -looks fit and clean	-incubating - -tracked for 42 mins foraging 300m off beach -visual loafing on beach -incubating asleep head over tag	-changeover -flies well -looks very fit -tracked for 25mins foraging to 300m off beach -aerial 5cm past tail tip				-tag failed	-no signal for >4 hrs -found as leaving had drifted
2	-successful telemetry at sea -fishing signals -successful fishing seen -scruffy and hunched in flight	- attempted telemetry at sea -tag failed	-attempted telemetry at sea -tag failing	-successful telemetry at sea -'near visual ' observations -fishing signals	-tag drifted off scale -incubating -changeover -foraging offshore	-seen on ground -incubating -changeover -foraging c. 200m offshore	-changeover		
3	-least 2 chicks hatched	-changeover	-3 chicks hatched	-missing	-successful	-successful	-successful		

	-changeover -brooding	-no signal	today -brought in fish x3 -brooding -no aerial		telemetry at sea -near visual -fishing signals	telemetry at sea -fishing signals	telemetry at sea -near visual		
4	-aberrant behaviour; rolling on back -signal weak								
5	-no aerial -lot preening -fluttering flight -2 chicks well fed by partner	-no aerial -lot preening –not keen to incubate -flies well but landing quickly							
6	-missing -chicks and partner also absent	-refusal to incubate even when partner leaves + displays -flies OK walks well							
7			-3 chicks present fed by partner -not brooding or feeding -other males trying to present fish -preening	-present with mate which incubating -preening -not clear if tag attached					-signal but tag not moving
8	-young chick c. 2 days old found dead in area	-not incubating but standing close		-no signal at sea					
9									
10		-tag seen -refusal to incubate even in heavy rain -several males tried to present fish -one accepted and allowed to copulate with mate a few metres away			-changeover -incubating	-brooding at least two chicks which hatched today -stood apart and preened -foraged at sea -looks fit, fresh and well	-tag present but failed -incubating -foraged at sea -1 chick hatched by evening		
11					-successful telemetry at sea -signal weak and variable	-successful telemetry at sea -near visual obs -fishing signals			
12									

13								-2 small chicks present	-signal but tag not moving - a bird at nest
14									
15									
16		-missing -nest and mate also missing	-possible sighting with mate and 2 chicks	-incubating at least 1 egg -tag attached				-2 small chicks -both adults feeding	-tag recovered with tail feather attached
17					-tag failed no signal at sea	-tag failed no signal at sea	-tag failed no signal at sea		
18									
19									
20									
21									
22									
23						-seen with 2 near fledged chicks -seen flying and interacting with chicks and other birds			
24									
25									
26						-missing -chicks and mate also missing			
Summary	-immediate aberrant behaviour -chicks lost -some telemetry -255 mins, 47 locational fixes -aerial lost and tag failed within 6 days	-aberrant behaviour -nest failed -aerial lost and tag failed within 4 days	-some erratic behaviour -chicks may have survived -aerial lost and tag failed within 4 days	- aerial lost and tag failed within 8 days -missing and reappeared -some telemetry -333 mins, 64 locational fixes -likely to have re-laid	- tag working 11 days failed within 17 days -successful telemetry at sea, 121 minutes, 42 fixes.	-tag working 11 days failed within 17 days -2 chicks likely to have fledged -excellent telemetry, -339 minutes and 106 locational fixes	-tag working 3 days failed within 10 days -a little telemetry at se -136 minutes, 16 locational fxes.	-tag failed within minutes	-tag shed within 8 days -recovered after 17 days

b) Winterton & North Denes in 2004

Bird tag frequency and tag type														
Bird ID	**7.1 (mid-grey)**	**5.5**	**13.9**	**9.4**	**7.0**	**3.0**	**12.0**	**9.0** (blue-grey)	**8.2**	**10.2**	**0.7**	**6.4**	**4.7**	**11.0**
Tag type	**Ag376**	***Ag379 GP***	***Ag376***	***Ag379***	***Ag379***	***Ag379 GP***	***Ag376***	***Ag376***	**Ag376**	**Ag376**	**Ag376GP**	**Ag376**	**Ag376**	**Ag376GP**
Tagging site	North Denes	Winterton	Winterton	Winterton	Winterton	Winterton	North Denes	North Denes	North Denes	North Denes	North Denes	North Denes	North Denes	North Denes
Nest ID/ history	Nest pole 23 Lumps –blue plastic bag S colony from 10th June -2 eggs present	No number, from at least 24th June, 2 eggs	Nest 39? From at least 14th June, 2 eggs	Nest 38 from at least 24th June, 2 eggs	Nest 48 from at least 24thJune, 2 eggs	Nest 50 from at least 24th June 2 eggs	Nest pole 15-N colony from 18th June 2 eggs present	Nest pole 19 (H) S colony from 25th June eggs present	Nest D S colony from 1st July eggs present	Nest G? S colony from 27th June eggs present	Nest C S colony from 1st July eggs present	Nest ZZ S colony from 12th July eggs present	No nest Control from Whoosh	No nest taken by Whoosh
Date of tagging	22nd June	26th June	26th June	26th June	26th June	26th June	30th June	30th June	2nd July	2nd July	2nd July	14th July	14th July Whoosh	14th July
Day from tagging↓ 0	Checked 1hour after tagging -Bird from N to incubate													
1							nest lost for unknown reasons. Telemetry at sea tracked 40 mins, 3 fixes at Winterton on beach	Telemetry at sea, tracked 106 mins at North Denes, 23 fixes On nest, 1 foraging bout, 2 near visuals						
2		Telemetry from beach	Telemetry from beach,	Telemetry from	Telemetry from	Telemetry from	-telemetry at sea single fix	-telemetry at sea	-nest predate	-nest predated	-nest predated	-no signal during	-no signal during prey	-no signal during prey

		for 32 mins, 7 fixes. 2 foraging bouts, changeover at nest, 3 x visual, but did not return	no signal, nest gone.	beach, 1 fix, nest apparently gone (hatched?)	beach, no signal, nest gone	beach, sporadic signal – 1 fix – partner on nest	fishing at North Denes	-bird tracked for 118 mins - 61 fixes - on nest - 2 foraging bouts - 7 visuals	d assume d fox	assumed fox	assumed fox	prey survey	survey	survey
3	204 minutes tracking from beach, 24 fixes, 3 foraging bout, changeover + incubating x3, also rested nearby, receiver/tag temperamental? (bird on beach no signal)	Telemetry at sea, single fix from Winterton	Telemetry at sea – no signal	Telemetry at sea, tracked for 149 mins, 55 fixes, 8 bouts, poss feeding chick, partner seen near nest	Telemetry at sea – no signal	Telemetry at sea, tracked 26 mins, 5 fixes, foraging & fishing								
4									- telemet ry at sea-no signal	-telemetry at sea-no signal	- telemetry at sea-no signal	-nest lost-unknown reason		
5		Telemetry at sea, tracked for 13 mins foraging at North Denes, 4 fixes	Telemetry at sea, tracked for 83 mins, 31 fixes at North Denes, foraging and loafing	Telemetry at sea, tracked 45 mins, 19 fixes, 2 bouts.		Telemetry at sea, no signal						- telemetry at sea-no signal	-telemetry at sea-no signal	-telemetry at sea-no signal
6		Telemetry at sea – no signal	Telemetry at sea, tracked 25 mins (3 fixes) on beach	Telemetry at sea 23 mins, 2 fixes on beach – chick gone?		Telemetry at sea, tracked 15 mins, 8 fixes, at North Denes and 22 mins, 6 fixes at	-telemetry at sea-single fix on beach at North Denes	-telemetry at sea -bird tracked for 33 mins - 21 fixes -1 foraging bout – fishing	- telemet ry from beach at North Denes and	-telemetry from beach at North Denes and Winterton -single fix at North Denes–	- telemetry from beach at North Denes and Winterto n	- telemetry at sea-no signal	-telemetry at sea-no signal	-telemetry at sea-no signal

						Winterton, no evidence of nest		-at nest	Winter ton -no signal		-no signal			
7	-birds seen on/near nest during telemetry at sea –no signal													
8	-nest gone -unknown cause but possibly hatched and chicks predated						-telemetry from beach at North Denes and Winterton -no signal	-telemetry from beach at North Denes and Winterton -no signal						
9	-telemetry at sea-no signal													
10	-tag drifted to mid-grey -bird tracked for 35 mins -12 fixes -2 foraging bouts, 2 fishing fixes	Telemetry at sea at North Denes, no signal	Telemetry at sea, tracked for 20 mins foraging (2 fixes) & on beach	Telemetry at sea – no signal		Telemetry at sea at North Denes, tracked 4 mins, 5 fixes, loaf & forage		nest lost - predated		- signal during foraging obs at North Denes				
11									- telemetry at sea-no signal	-telemetry at sea-no signal	- telemetry at sea-no signal			
12			Telemetry from beach at North Denes and Winterton, no signal			Telemtry from beach at North Denes – no signal		- signal during foraging obs at North Denes	- telemetry at sea-no signal	-telemetry at sea -bird tracked for 56 mins - 7 fixes - 1foraging bout also on beach at North Denes-tag found on beach removed	- telemetry at sea-no signal			

13							-telemetry at sea -North Denes tracked for 250 mins - 45 fixes - 3 foraging bouts - near visual on beach in flock x2 -also at Winterton, 17 mins, 8 fixes early evening	-telemetry at sea-no signal						
14	-telemetry at sea at North Denes, no signal						-telemetry at sea -no signal -telemetry from beach –signal at North Denes	-telemetry at sea-no signal		-no signal during prey survey	-no signal during prey survey			
15														
16	-telemetry on beach -single fixes at both North Denes and Winterton						-signal at sea during prey survey at North Denes	-no signal during prey survey						
17										-telemetry at sea-no signal	-telemetry at sea-no signal			
18										-telemetry at sea-no signal	-telemetry at sea-no signal			
19							telemetry at sea - no signal	-telemetry at sea-no signal						
20	- signal during foraging obs at North Denes						telemetry at sea - no signal	-telemetry at sea-no signal						
21	-telemetry at sea-no signal													
22	-telemetry at sea -1 fix loafing on													

	beach at North Denes													
23														
24	- signal during prey survey at North Denes													
25														
26														
27	-telemetry at sea-no signal													
28	-telemetry at sea-no signal													
29														
Summary	-normal behaviour -tag failing after 3 days -nest failed on day 8 after chicks possibly hatched -tag drifted and re-contacted after 10 days -some telemetry from beach and sea both at North Denes and Winterton -204 minutes, 24 location fixes whilst nest active, -tag 'working' for 24 days (<27 days)	-normal behaviour, some telemetry, 13 mins, 5 location fixes whilst nest active, tag working at least 5 days, bird contacted at both Winterton and North Denes, nest lost.	-normal behaviour, nest lost immediately, bird switched to North Denes, -good telemetry, 132 minutes, 39 fixes -tag working at least 10 days	-normal behaviour, nest poss hatched chicks, -good telemetry, 217 mins, 76 fixes, -tag working for 6 days. Not contacted after nest failed.	-nest failed within 2 days, bird never contacted	-nest failed within 6 days -some telemetry, bird contacted both North Denes and Winterton, 21 minutes, 5 fixes whilst active -Tag working at least 10 days.	-normal behaviour -nest lost immediately for unknown reasons -good tracking -307 minutes 42 location fixes -tag working for 16 days (<19 days) -bird contacted at Winterton as well as North Denes	-normal behaviour -good tracking -257 minutes 105 fixes -tag working for 6 days (<8 days) -nest lost to predator on day 10	-nest predated by fox after 2 days -tag never contacted -removed tag with no signal, found on day 12	-nest predated by fox after 2 days -bird first contacted at 6 days -some tracking on day 12, not contacted thereafter - 56 minutes 7 fixes -tag working for 12 days (<14 days)	-nest predated by fox after 2 days -tag never contacted	-no initial signal when nest present -tag failed <2 days? -nest lost by day 4	-tag never contacted	-tag never contacted

c) North Denes & Winterton 2005

Bird Tag frequency and type															
Bird ID	**0.3**	**2.6**	**4.7**	**7.4**	**10.0 GREY**	**1.2**	**3.8 MID GREY**	**6.4**	**8.8**	**12.8**	**1.9**	**3.1**	**5.6**	**8.1**	**13.9**
Tag type	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**
Tagging site	ND	ND	ND	ND	ND	WINT	WINT	WINT	WINT	ND	ND	ND	ND	ND	ND
Nest ID/history	11a South. CR added. Incubation start 31/05. -2 eggs present.	8b South. Incubation start 13/06. -2 eggs present.	8d South. Incubation start 13/06. No. of eggs not known.	9d South. Incubation start 13/06. No. of eggs not known.	8c South. Incubation start 06/06. -1 egg present.	2 yellow signs from southern fence. -2 eggs present.	3 yellow signs from southern fence. -2 eggs present.	Half way between groynes 63-64. -2 eggs present.	Between groynes 64-65. -2 eggs present.	Porta-cabin North 3 18 -2 eggs present	9 South wasp nest -2 eggs present	11 South beer can -2 eggs present	8 South roped off bubble -2 eggs present?	11 K South -1 egg present	11 South close to fence
Date of tagging	15/06	17/06	17/06	17/06	17/06	22/06	22/06	22/06	22/06	09/07	11/07	11/07	11/07	11/07	11/07
Day from tagging 0											Telemetry at sea ND. Tracking Session 1: 35 mins, 11 fixes. Additional fixes: 1. Nest thought to be present.	Telemetry at Sea ND: single fix. Nest thought to be present.	Telemetry at sea ND. Tracking Session 1: 7 mins, 11 fixes. Additional fixes: 1.. Tracking Session 2: 9 mins, 11 fixes. Additional fixes: 2.	Telemetry at Sea ND. Single fix.	Telemetry at Sea ND. Single fix.
1	Checked from beach – tag working & bird on nest		Nest (partially) predated by fox	Nest predated by fox							Telemetry at sea ND. Tracking Session 2: 5 mins, 2 fixes. Tracking Session 3:	Telemetry at sea. Tracking Session 1: 62 mins, 34 fixes. Additional fixes: 1.	Telemetry at sea ND. Tracking Session 3: 138 mins, 77 fixes. Nest thought	Telemetry at sea ND. Tracking Session 1: 3 mins, 3 fixes. Additional fixes: 2.	Telemetry at sea: single fix.

											35 mins, 8 fixes.		present		
2	Telemetry at sea ND. Tracking Session 1: 319 mins, 33 fixes.									Telemetry at sea (ND). Tracking Session 1: 119 mins, 69 fixes. Tracking Session 2: 19 mins, 26 fixes. Additional fixes: 2. Nest thought present.	Telemetry at Sea ND. Tracking Session 4: 15 mins, 4 fixes. Tracking Session 5: 35 mins, 10 fixes.		Telemetry at sea ND. Tracking Session 4: 16 mins, 12 fixes. Tracking Session 5: 41 mins, 24 fixes. Nest thought present	Telemetry at sea ND. Tracking Session 2: 10 mins, 8 fixes. Tracking Session 3: 44 mins, 31 fixes. Nest thought present	Telemetry at Sea. Tracking Session 1: 15 mins, 4 fixes. Additional fixes: 2.
3		Telemetry at sea W. Tracking Session 1: 66 mins, 29 fixes. Tracking Session 2: 15 minutes, 3 fixes.			Telemetry at Sea. Tracking Session 1: 35 mins, 13 fixes (as Grey). Additional fixes: 4					Telemetry at Sea ND. Tracking Session 3: 8 mins, 3 fixes.	Single fix during obs			Single fix during obs	
4		Telemetry at Sea. Tracking Session 3: 74 mins, 33 fixes. Additional fixes: 1.	Telemetry at sea ND. Tracking Session 1: 41 mins, 27 fixes.	Telemetry at sea W. Tracking Session 1: 26 mins, 3 fixes. Pm: observed ND: 1 fix	Telemetry at Sea ND. Tracking Session 2: 49 mins, 11 fixes. Additional fixes: 1 (as Grey) Nest present (RSPB)					Telemetry at Sea ND. Tracking Session 4: 15 mins, 4 fixes. Tracking Session 5: 30 mins, 31 fixes, Tracking Session 6: 15 mins, 24 fixes. Nest present?	Telemetry at sea ND. Single fix.		Telemetry at Sea ND. Tracking Session 6: 30 mins, 6 fixes. Tracking Session 7: 68 mins, 8 fixes. Additional fixes: 1. Nest thought present	Telemetry at sea ND. Tracking Session 4: 21 mins, 6 fixes. Tracking Session 4: 156 mins, 98 fixes. Hatched chick?	

5	Telemetry at sea ND. Tracking Session 2: 24 mins 33 fixes.	Encountered during foraging obs ND (3 fixes). Nest thought present			Observed during foraging obs ND: 3 fixes. Nest thought lost as bird gone >3hrs	Telemetry at Sea W. Tracking Session 1: 131 mins 88 fixes. Nest thought present	Telemetry at sea ND. Single fix. Pm: 3 fixes at W during foraging obs.	Telemetry at sea W to ND-nest lost? Tracking Session 1: 133 mins, 91 fixes. Evening: observed during W foraging obs & tracked from beach, 34 mins, 9 fixes.	Telemetry at sea W 1 fix. Tracking Session 1: 20 mins, 3 fixes in foraging obs						
6	Telemetry at sea. Tracking Session 3, 25 minutes, 3 fixes. Additional fixes: 2. Still incubating (RSPB)							Telemetry at sea W. Tracking Session 2: 16 mins, 8 fixes. Addit. fix from beach telemetry							
7		Telemetry at sea ND. 4 fixes.	Telemetry at sea ND. Tracking Session 2: 241 mins, 99 fixes. Loafing suggests no nest		Telemetry at Sea ND. Single fix.										
8												Present in foraging obs			Colour ringed bird (no tag) in

															photo with 2 chicks
9	Telemetry at Sea. 3 single fixes.					Observed at W during trawl survey.	Telemetry at Sea ND. Tracking Session 4: 149 mins, 83 fixes. Additional fixes: 1		Telemetry at sea-ND Tracking Session 2: 142 mins, 57 fixes.						
10			Telemetry at sea ND: single fix.												
11		Chicks hatched (RSPB)	Bird now re-nesting? Telemetry at sea ND. Tracking Session 3: 134 mins, 19 fixes. Additional fixes: 2.		Telemetry at Sea ND. Tracking Session 1: 150mins, 74 fixes. Tracking session 2: 49 mins 12 fixes. Tracking Session 3: 63 mins 14 fixes. Additional fixes: 1.					Both adults present-no tag and no signal					
12	Nest still present and incubating														
13			Present ND foraging obs: 3 fixes. Re-nest												
14											Tag			Tag	

											recorded on bird			recorded on beach – not found despite searching	
15	Birds appear to be present – but not tagged		.				Observed during W foraging: 1 fix.	Observed ND foraging: single fix.							
16															
17															
18															
19							Telemetry at sea ND: single fix								
20			.	Observed during W foraging: 2 fixes.			Telemetry at Sea ND: single fix.	Telemetry at sea ND: single fix.							
21								Telemetry at sea ND. Tracking Session 4: 21 mins, 10 fixes. PM: Tracking Session 5: 22 mins, 2 fixes.							
22															
23								Telemetry at sea ND. Tracking Session 6: 27 mins, 3 fixes.							
24				Telemetry at Sea ND: single fix.											

25															
26															
27															
28			Telemetry at sea ND: single fix on beach					Present during foraging obs-but tag off bird?							
29															
30															
31															
32															
33								Tag recovered during foraging obs – live							
34			If still present, nest certainly lost on												

			high tide												
Summary	-normal behaviour -tag working 9 days (<15 days) -tag seemingly off bird <15 days -good telemetry at ND with nest - 368 mins, 69 +5 = 74 fixes -extended incubation	-normal behaviour - tag working 7 days (<10 days) -good telemetry at ND with nest -155 mins, 65+8=73 fixes -chicks subsequently hatched, probably predated by kestrel	-normal behaviour -nest predated by fox day 1 -re-nested 10 days later -tag working 28 days (<34 days) receiving on Grey- excellent telemetry without nest, and moderate telemetry with nest at ND -282 mins and 127 fixes after failure. 134 mins and 25 fixes on re-nesting bird.	-normal behaviour -nest predated by fox day 1 -tag working 24 days - intermittently contacted at ND+W -poor telemetry -26 mins, 3+3=6 fixes	-normal behaviour -nest present day 4, lost (?) by 5 - tag working 11 (<13 days) -tag drifted to grey immediately -84 minutes and 35 fixes before failure, 262 minutes and 101 fixes after nest failed.	-normal behaviour -tag working 9 (<15) days -good telemetry -131 mins, 88+1=89 fixes with nest at W -nest ultimately lost	-normal behaviour -nest presumed lost by day 5 -tag working 20 (<21) days -intermitt contacted at ND+W -good telemetry -149 mins, 83+9=92 fixes	-normal behaviour -nest presumed lost by day 5, tracked W to ND, both after -tag working on bird 23 days -off bird (?) 28 days -tag recovered live 33 days -good telemetry -253 mins, 123+4=127 fixes without nest	-normal behaviour -nest presumed lost by day 5 -tag working 9 (<11) days -contact both ND +W -moderate telemetry -162 mins, 60+1=61	-normal behaviour -tag working 4 days (<11 days) seemingly shed -good telemetry -206 mins, 157+2=159 fixes with nest at ND	-normal behaviour -tag working 14 days, no contact after -moderate telemetry 125 mins, 35+3=38 fixes prob at nest, which ultimately lost	-normal behaviour -tag working 8 days no contact after -moderate telemetry 62 mins 34+3=37 fixes prob at nest, which ultimately lost	-normal behaviour -tag working 4 days, shed after?, -good telemetry 309 mins, 149+4=153 fixes with nest at ND	-normal behaviour -tag working on bird 4 days, recorded (not recovered) on beach – day 14 -good telemetry -234 mins, 146+4=150 fixes with nest (+ chicks?) at ND -any chicks certainly taken by kestrel	-normal behaviour -tag working 2 days no contact after - this upside-down colour-ringed bird seen with chicks on day 8 showing tag shed -chicks almost certainly taken by kestrel -poor telemetry -15 mins, 4+4=8 fixes at ND.

*18 June - 2 foxes got into colony at night – 10 nests lost (volunteer).

d) North Denes in 2006

Bird tag frequency and tag type													
Bird ID	**0 – Algeria** NW09981	**11.9 – Under** NV51860	**6.4** NW09597	**8.6 –Feather** NW09982	**3.2** NV95962	**1.1 Atlantis** NV95983	**4.2 Brilliance** NV95984	**6.8** NV95985	**12.9 Cathedral** NV95986	**9.1 Zoology** BV57282	**1.8** NW19285	**13.5** NV30311	**7.6** NW19286
Tag type	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**	**Ag 376**
Tagging site	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nest ID/history	18. **GBW** Incubation start 7/6. 2 eggs present.	26. **BBB** Incubation start 6/6. 3 eggs present.	25. **GYB** Incubation start unknown. 2 eggs.	10. **BYG** Incubation start 13/6. 3 eggs.	10. **GWG** Incubation start unknown. 3 eggs.	22. **G stick then GGG** Incubation start unknown.. 2 eggs.	22. **RWB** Incubation start unknown, 3 eggs.	24. **WGY** Incubation start unknown, 2 eggs	17. **YRY** Incubation start unknown, 2 eggs	25. **YYB** Incubation start unknown, 2 eggs.	23. **BWR** Incubation start unknown, 2 eggs.	24. **WBR** Incubation start unknown, 2 eggs.	25. **WBG** Incubation start unknown, 2 eggs.
Date of tagging	23/06/06	23/06/06	23/06/06	23/06/06	23/06/06	28/06/06	28/06/06	28/06/06	28/06/06	28/06/06	09/07/06	09/07/06	09/07/06
Day from tagging 0				Telemetry at sea (1) 131 fixes, 182 minutes		Telemetry at sea (1) 19 fixes, 70 minutes	Contacted – 3 fixes	Telemetry at sea (1) 94 fixes, 217 minutes	Contacted – 2 fixes	Telemetry at sea (1) 37 fixes, 14+27+26 = 67 minutes			
1						Telemetry at sea (2) 62 fixes, 210 minutes	Telemetry at sea (1) 16 fixes, 128 minutes		Telemetry (1) – 5 fixes 15 minutes				
2							In obs - incubates chicks whilst mate feeds -atypical for 'male'?	In obs – begs for food from mate with chicks – complicit to attempted mating from another male - mate attacks. Unwilling to incubate	In obs - seen to incubate & changeover with mate also loaf on foreshore	Seen to return and incubate	Telemetry at sea (1) 128 fixes, 397 minutes	Not contacted	Telemetry at sea (1) 31 fixes, 47+67=114 minutes
3											Telemetry at sea (1) 157 fixes,		Telemetry at sea (2) 14 fixes,

											348 minutes		4+22=26 minutes
4	Telemetry at sea (1) 27 fixes, 145 minutes	Nest still active – but no sign of tagged bird	Nest failed	Discarded tag found on beach, nest still active.	Nest failed						Contacted in obs		
5	Telemetry at sea (2) 60 fixes, 72 minutes												
6	Telemetry at sea (3) 54 fixes, 89 minutes												
7	Chick present (~4 days). Bird begs from mate (x3) attempts to steal from chick without success, leaves inland for Breydon	Nest seems not to be present		In obs – changeover but no presentation of prey and not quite willing to incubate chicks									
8											Telemetry at sea (1) 75 fixes, 387 minutes		Telemetry at sea (1) 33 fixes, 105 minutes
9							Telemetry at sea (2) 18 fixes, 200 minutes	Telemetry at sea (2) 13 fixes, 53 minutes	Telemetry at sea (2) 43 fixes, 116 minutes	Telemetry at sea (1) 28 fixes, 63+9+ = 72 minutes	Telemetry at sea (1) 39 fixes, 221 minutes		Telemetry at sea (1) 69 fixes, 115+24= 139 minutes
10													
11						Contacted – 1 fix	No contact						
12											Not contacted		Telemetry at sea (1) 28 fixes, 221 minutes
13						Telemetry at sea (3) 5 fixes, 37		Telemetry at sea (3) 16 fixes, 48 minutes	Not contacted	Not contacted			

						minutes							
14	Contacted – 2 fixes					Contacted on nest – 2 fixes		Telemetry at sea (4) 15 fixes, 106 minutes					
15								Contacted in obs					
16													
17													
18	Contacted – 1 fix												
19	Not contacted					Telemetry at sea (4) 5 fixes, 37 minutes		Telemetry at sea (5) 3 fixes, 23 minutes					
20	Not contacted					Contacted - 1 fix		Contacted – 2 fixes					
21													
22													
23						No contact		Telemetry at sea (6) 4 fixes, 10 minutes Tag shed					
Summary	- aberrant behaviour observed day 7 -tag working 18 days -excellent telemetry with chick, which hatched before any tracking was undertaken - 418 mins, 27+60+54+2+1 = 147 fixes	-tag never contacted (immediate failure) -nest failed by day 7.	-tag never contacted (immediate failure) -nest failed by day 4.	-tag working 1-3 days, shed and recovered from beach on day 4. - aberrant behaviour observed day 7 –nest hatched chicks, fate not known. -telemetry 182 minutes, 131 fixes	-tag never contacted (immediate failure) -nest failed by day 4.	-normal behaviour -tag working 20 days -excellent telemetry with nest – 334 mins, 21+62+1+5+2+5+1=97 fixes	-normal behaviour -tag working 9 days -moderate telemetry, 328 mins, 3+16+18=37 fixes,	-aberrant behaviour observed day 2 -tag working 23 days when shed during tracking -excellent telemetry, 418 mins, 94+53+16+15+3+2+4 = 147 fixes	-normal behaviour -tag working 9 days -good telemetry, 131 mins, 2+5+43=50 fixes	-normal behaviour -tag working 9 days -good telemetry, 139 mins, 37+28 = 65 fixes	-normal behaviour -tag working 9 days -excellent telemetry, 597 minutes, 128+157+75+ 39= 399 fixes	-tag never contacted	-normal behaviour -tag working 12 days -excellent telemetry, 234 minutes, 31+14+33+69 + 28 = 175 fixes

APPENDIX IV. Biometrics of all Little Terns captured and tag characteristics of individuals tagged at North Denes (ND) & Winterton (W) from 2003 to 2006 inclusive.

Year	Date	Site	BTO ring No./types	Retrap first ringed	Sex/ brood patch	Wgt (g)	Bill length (mm)	Wing length (mm)	Tail fork (mm)	Tag type	Tag ID
2003	19/06	W	NW09527 Y Left		F 3	60		187		Ag379[1]	10.1
	19/06	W	NW09528 Y Left		F 3	54		173		Ag379[1]	0.4
	19/06	W	NV576538	1992/93		58		181			
	23/06	W	NV91429 Y Left		F	55	31.3	176	32.5	Ag379[1]	1.7
	23/06	W	NW09530 Y Left	24/06/88 pulli	M 3	58.6	29.7	185	37.3	Ag379[1]	11.7
	28/06	W	NV51914 Y Left	05/07/93 pulli	M	56	31.9	180	35.8	Ag379	3.8
	28/06	W	BV87138 Y Left	18/06/01 pulli	F 3	51.5	31.3	172	26.2	Ag379 GP	0.9
	28/06	W	NW09581 Y Left		M	53	31.0	180	43.3	Ag379[1]	13.0
	08/07	W	NW09880 Y Left		F 3	52.5	29.4	172	23.9	Ag379 TM	2.4
	08/07	W	NW09881 Y Left		F 3	57.5	28.9	174	27.0	Ag379 TM	8.1
2004	22/06	ND	NW09890		M 3	54	29.0	182	39.0	Ag376	7.1
	26/06	W	NV91042 Y/B Left	02/07/98 pulli	F 3	51	30.1	181	24.0	Ag379 RF+GP	5.5
	26/06	W	NW09891[4] Y/B Left		M 3	51	32.7	180	37.0		
	26/06	W	NW09892 Y/B Left		M 3	56	30.6	183	40.0	Ag376	13.9
	26/06	W	NV91076 Y/B Left	24/06/98 pulli	F 3[2]	52	32.5	175	28.0	Ag379	9.4
	26/06	W	NV80812 Y/B Left	29/06/94 pulli	F 3	53	31.3	179	32.0		
	26/06	W	NW09893 Y/B Left		F 3	49[3]	30.0	172	35.0	Ag379	7.0
	26/06	W	NW09894 Y/B Left		M 3[4]	58	31.5	182	50.0R 46.0L		
	26/06	W	NW09895 Y/B Left		M 3[5]	57[6]	33.0	178	43.0	Ag379 GP	2.9
	30/06	ND	NW09896		F	58	30.8	183	31.0	Ag376	12.0
	30/06	ND	NW09897		F	58	31.4	175	26.8	Ag379	9.0 (B/G)
	30/06	ND	NW09898		F	54	29.0	175	28.6		
	02/07	ND	NV82475	26/06/95 pulli	F	49	27.8	174	26.8	Ag376	8.2
	02/07	ND	NW09899		F	51	28.0	182	30.1	Ag376	10.2
	02/07	ND	NV80731	29/06/94 pulli	F 3	52	28.3	180	36.2	Ag379 GP	0.7
	14/07	ND	NW09900		F 3	51	27.4	174	35.0	Ag379 RF	6.4
	14/07	ND	NV95791	26/06/00 pulli	M	60	29.9	180	49.0	Ag379 RF	4.7

[4] Recovered dead at the same weight twelve days later at North Denes on 8th July, after an intense storm and high winds in the preceeding 24 hours (Smart *et al*. 2005).

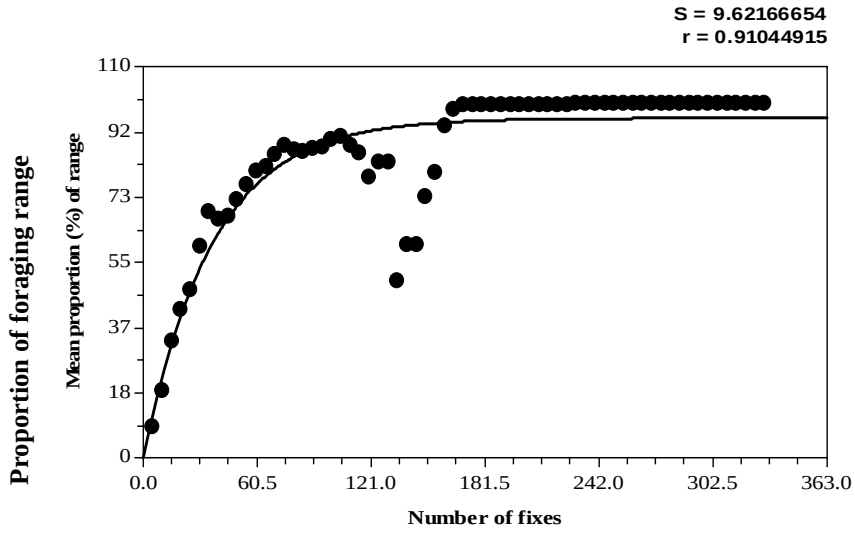
	14/07	ND	NW09927		F	54	28.8	174	33.5	Ag379 GP	11.0
2005	15/06	ND	NV95748 O/W Left	21/06/99 pulli	F	54	30.0	173	26.0	Ag376	0.3
	17/06	ND	NW09929 O/W Left		M	53	31.0	181	40.0	Ag376	2.6
	17/06	ND	NW09930 O/W Left		F	55	31.5	184	26.0	Ag376	4.7
	17/06	ND	NW09931 O/W Left		F	55	31.6	177	32.0	Ag376	7.4
	17/06	ND	NV82490 O/W Left	06/07/95 pulli	M	53	30.6	178	48.0	Ag376	10.0
	23/06	W	NW09932 G/Y Left		F	51	28.8	178	34.5	Ag376	1.2
	23/06	W	NW09933 G/Y Left		M	50	33.0	182	42.0	Ag376	3.8
	23/06	W	NW09934 G/Y Left		M	59	31.1	181	43.0	Ag376	6.4
	23/06	W	NW09935 G/Y Left		M	54	28.5	179	38.9	Ag376	8.8
	23/06	W	NW09880 Y Left	08/07/03 adult	F	51	30.0	172	30.0		
	09/07	ND	NV95611	17/07/98 pulli	F	50	30.2	180	31.8	Ag376	12.8
	11/07	ND	NW09977		M	52	31.6	181	40.0	Ag376	1.9
	11/07	ND	NW09976		F	54	31.8	178	27.0	Ag376	3.1
	11/07	ND	NW09978		M	53	33.7	179	40.2	Ag376	5.6
	11/07	ND	NW09979		M	58	31.6	192	40.8	Ag376	8.1
	11/07	ND	NW09980 W/O Left		F	57	32.0	177	34.0	Ag376	13.9
2006	23/06	ND	NW09981 B/O Left		F	52	30.0	178	17.0	Ag376	0
	23/06	ND	NV51860 B/O Left	29/06/93	F	52	28.2	176	27.0	Ag376	12.9
	23/06	ND	NW09597	05/07/03 pulli (at W)	M?	54	31.0	180	35.1	Ag376	6.4
	23/06	ND	NW09982		F	64	32.4	179	24.0	Ag376	8.6
	23/06	ND	NV95962 B/O Left	28/06/99	M	56	31.8	182	46.0	Ag376	3.2
	28/06	ND	NV95983 B/O Left		M	60	34.1	178	44.0	Ag376	1.1
	28/06	ND	NV95984 B/O Left		M	55	28.8	174	37.0	Ag376	4.2
	28/06	ND	NV95985 B/O Left		F	53	29.2	175	30.0	Ag376	6.9
	28/06	ND	NV95986 B/O Left		M	57	32.1	175	40.0	Ag376	13.5
	28/06	ND	BV87282	29/06/01 pulli	M	56	31.5	178	43.0	Ag376	9.1
	09/07	ND	NW19285		M	51	31.0	175	39.7	Ag376	1.8
	09/07	ND	NV30311	2001 pulli?[7]	F	54	29.0	177	28.0	Ag376	13.9
	09/07	ND	NW19286		F	55	29.9	170	21.0	Ag376	7.6

Notes
Wgt (g) = weight in grams, Tag ID = position on receiver dial indicative of tag frequency, TM= tail mount, GP = ground plane aerial, RF = re-fitted tag, B/G = tag drifted beyond the calibrated blue part of the receiver dial into the grey uncalibrated zone [1]Tail mount tag with thin wire aerial, [2]This bird also had brownish crown feathers, [3]Five fish (probably 4 larval clupeids and 1 sand eel) were disgorged upon capture,
[4] Relatively small brood patch, [5] Large brood patch, [6] Two sand eels were disgorged. [7] Languard, Suffolk

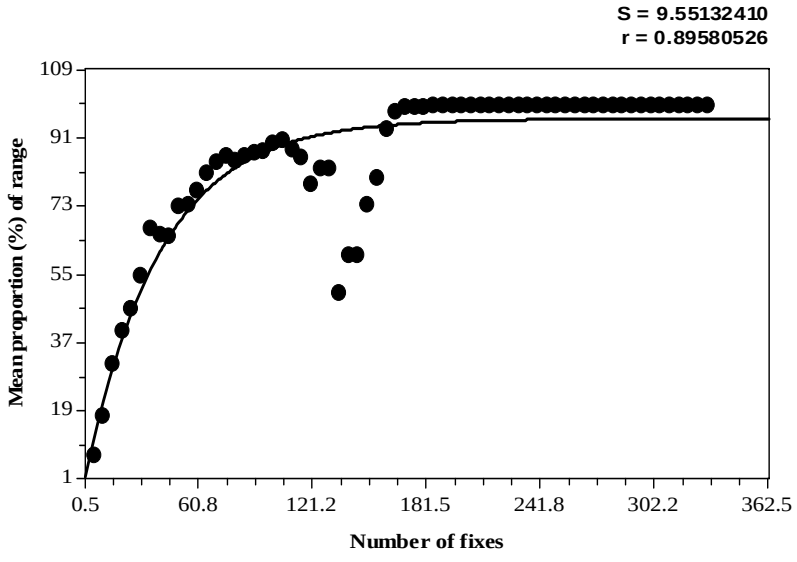
*APPENDIX V. Incremental area analysis between proportion of foraging range and number of fixes (total n= 2125) for Little Terns tagged from 2003-2006 inclusive according to the relationship exponential curve equation y = a + b * (1-e-cx) for both A. minimum convex polygons (MCP's) and B. kernel contours with i) the entire sample n=27 of tagged Little Terns from North Denes (ND) and Winterton (W), ii) birds from active nests, n=20 and iii) birds from failed nests, n=7. Standard error (S) and correlation coefficient (r) are shown.*

A. Minimum Convex Polygons

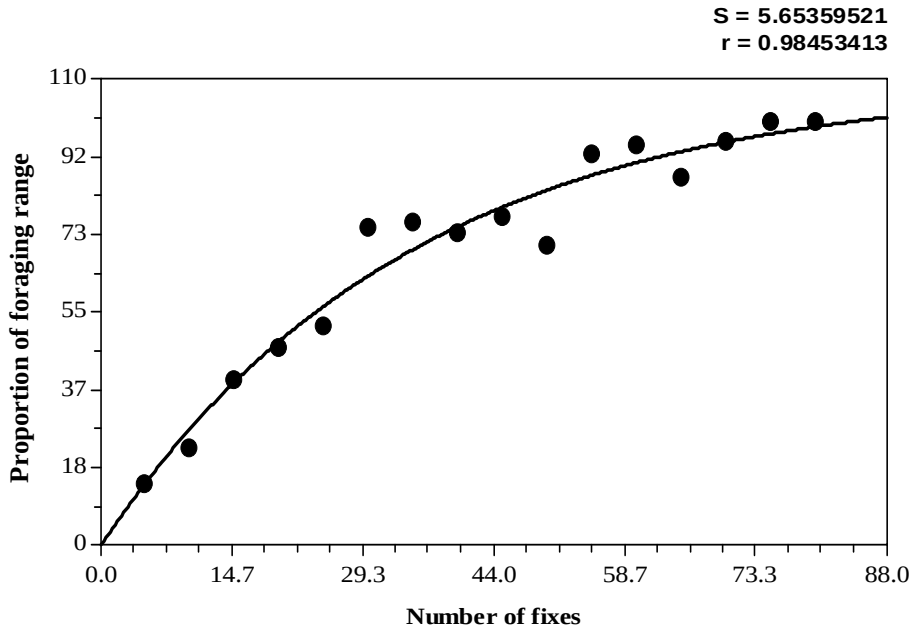
i) all Little Terns where 95%= 95.696 + 0 * (1-e$^{-0.0273}$180)



ii) active birds only, where 95% = 96.181 + 0 * (1-e$^{-0.025*176}$)

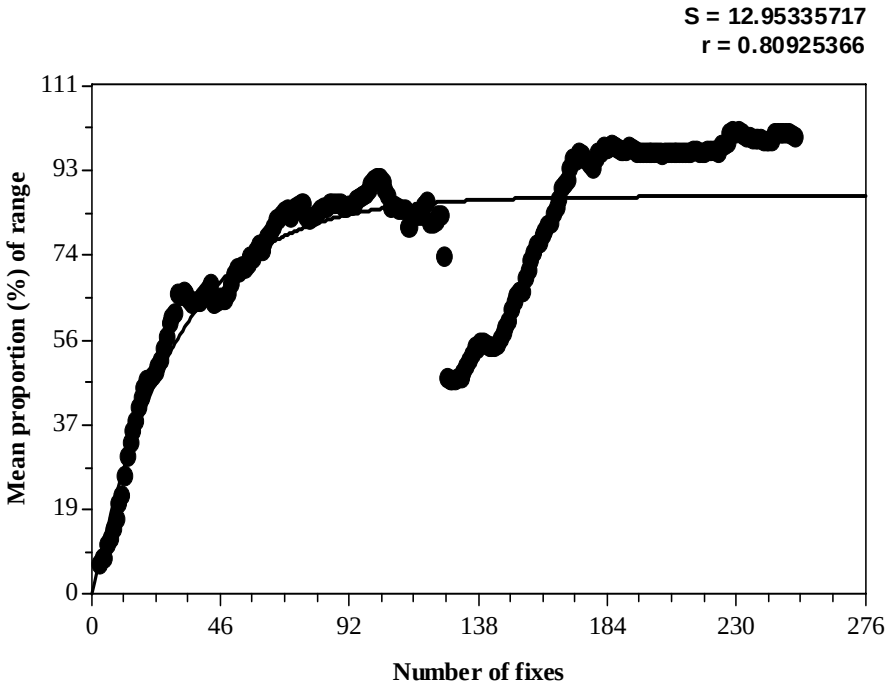


iii) failed birds only, where 95% = 109.564 + 0 * (1-e$^{-0.025*74}$)

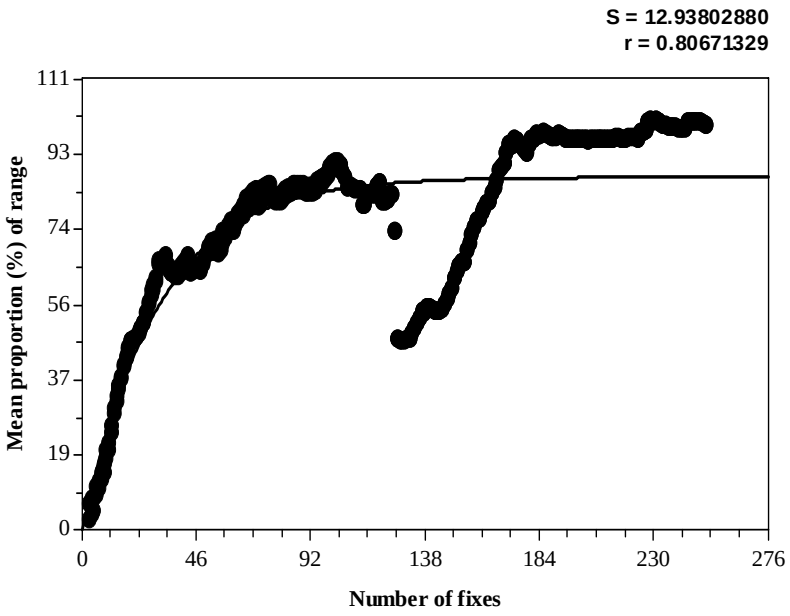


B. Kernel contours

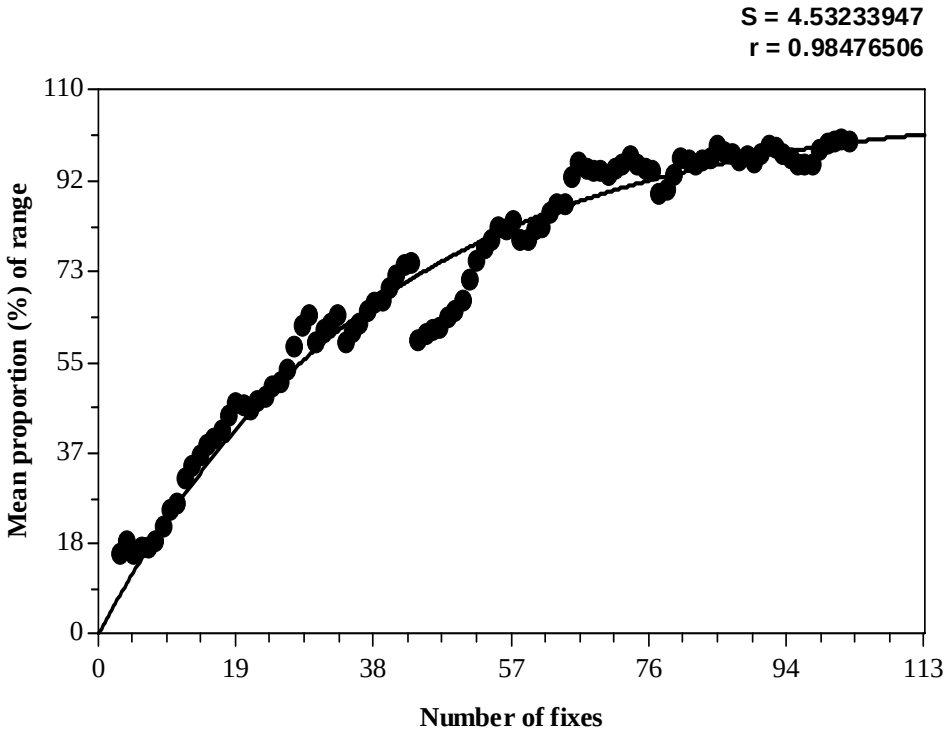
i) all Little Terns where 85%= 86.9647 + 0 * (1-e$^{-0.03363*113}$)



ii) active birds only, where 85% = 86.981 + 0 * (1-e$^{-0.0321*x}$)



iii) failed birds only, where 85% = 106.8966 + 0 * (1-e$^{-0.0260*x}$)



APPENDIX VI. *Counts of birds (ind.) pooled from all sites on each sampling occasion during boat-based surveys at Scroby and the Would from 2002- 2006 inclusive. Survey numbers correspond to dates presented in Table 3 of the main report and shaded cells indicate occasions when data was not collected.*

Site 1

Year		Survey Number									
	Species	1	2	3	4	5	6	7	8	9	Total
2002	Common Scoter					2					2
	Cormorant				2		2	2		1	7
	Shag					1					1
	Skua sp.								1		1
	Little Gull									1	1
	Common Gull									1	1
	Lesser Black-backed Gull				8	1	3	2	7	75	96
	Herring Gull				11	5	6		24	5	51
	Great Black-backed Gull									1	1
	Kittiwake							1			1
	Little Tern							1	5		6
	Sandwich Tern				2	6			1	1	10
	Common Tern				3	4	10	11	21		49
	Swift					2					2
2003	Fulmar						1				1
	Gannet				1		1				2
	Cormorant							1	1		2
	Lesser Black-backed Gull			5	13	1		1	3	5	28
	Herring Gull			16		1		1	2	1	21
	Great Black-backed Gull							1			1
	Kittiwake						1				1
	Little Tern	2						9	2		13
	Sandwich Tern			4			6	2	7	7	26
	Common Tern				1		1	7	2	2	13
2004	Fulmar		1		1						2
	Gannet			1							1
	Cormorant				2	2	6				10
	Arctic Skua							1	1		2
	Black-headed Gull										1
	Lesser Black-backed Gull		42	1	9	1		3			66
	Herring Gull	14	33	2	48	11	6		3		111
	Great Black-backed Gull			2		5		4			12
	Kittiwake		4	1		6	12				17
	Unidentified gull						40				40
	Little Tern		157	21	17	14					209
	Sandwich Tern			1		3	26		2		32
	Common Tern	2	50	1	26	50	4	1	1		135
	Unidentified tern						100				100
	Swift					2					2

Site 1 continued

Year	Species	Survey Number									Total
		1	2	3[5]	4	5	6	7	8	9	
2005	Cormorant	1							2		3
	Common Gull	1									1
	Lesser Black-backed Gull		4		7	7	6	9			33
	Herring Gull	7	11	3	7	5	1	4			38
	Great Black-backed Gull		1		1	1		3	1		7
	Kittiwake	1									1
	Little Tern		2		8	5	3	1	6		25
	Sandwich Tern	2						20	1		23
	Common Tern		2		1	1		11	12		27
	Razorbill								2		2
2006	Black-throated Diver			1							1
	Gannet			4				2			6
	Cormorant					1		2			3
	Oystercatcher	2									2
	Curlew	1	1								2
	Little Gull		1								1
	Black-headed Gull						1				1
	Common Gull	1	5	2		1					9
	Lesser Black-backed Gull	10	1	2	1	2	5	2			23
	Herring Gull	55	9	4		17	3				98
	Great Black-backed Gull	14	1	2		2		1			20
	Unidentified large gull						75				75
	Unidentified gull								12		12
	Sandwich Tern					5	3		5		13
	Common Tern	3	1	1	7	3	1	4	1		21
	Little Tern		4	2	3		8	15	1		33
	Unidentified tern						120				120
	Guillemot					26					26

[5] Data was gathered by a different observer and whilst correct is not comprehensive.

Site 2

Year		Survey Number									
	Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2002	Fulmar									1	1
	Gannet						1				1
	Cormorant						3		1	11	15
	Arctic Skua								1		1
	Lesser Black-backed Gull				19	4	3		1	157	184
	Herring Gull				102	5			1	6	114
	Great Black-backed Gull								1		1
	Sandwich Tern				2	10		9	9	3	33
	Common Tern				1	1		8	16	1	27
	Guillemot							1			1
2003	Common Scoter					5	70				75
	Fulmar			1							1
	Lesser Black-backed Gull	1		5	2	1	1		10		20
	Herring Gull	1		9			8		1		19
	Great Black-backed Gull			1						1	2
	Kittiwake								1		1
	Little Tern	16							7		23
	Sandwich Tern						6	5	1	4	16
	Common Tern	4					3	11	2	3	23
	Unidentified tern								2		2
2004	Fulmar	1									1
	Gannet					25	2				27
	Cormorant					1			1		2
	Lesser Black-backed Gull	4	2		2	16	2	1			27
	Herring Gull	4	2	1	41	1	8	1			58
	Great Black-backed Gull	1				4	1				6
	Kittiwake		1								1
	Little Tern	4									4
	Sandwich Tern				1	2	3				6
	Common Tern			27	3	10	3		4		47
	Swift					2					2

Site 2 continued.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2005	Common Scoter	1									1
	Fulmar								1		1
	Gannet		1				1		1		3
	Cormorant	1	1		3						5
	Curlew						9				9
	Redshank					2					2
	Common Gull	2	9		25	5		7	2		50
	Lesser Black-backed Gull	1	21		2	10	3	2	2		41
	Herring Gull	7	49		42	22		1			121
	Great Black-backed Gull	4	3			9		2	1		19
	Kittiwake		1					1			2
	Unidentified gull			10							10
	Little Tern	4	13	10	13		3				43
	Sandwich Tern							3	5		8
	Guillemot								2		2
	Swallow				1						1
	House Martin				1						1
2006	Common Scoter							11			11
	Fulmar				1						1
	Cormorant						6	3			9
	Unidentified skua					1		1			2
	Common Gull		1								1
	Lesser Black-backed Gull	2	2			7	3	2			16
	Herring Gull	5	1	3	1		1				11
	Great Black-backed Gull	3	3	4							10
	Unidentified large gull						55				55
	Unidentified gull								3		3
	Sandwich Tern					5	13	1	2		21
	Common Tern		1	3	5	2	11	3			25
	Little Tern			11	1		1				13
	Guillemot					1		2			3

Site 3.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Common Scoter						13				13
	Gannet						1				1
	Lesser Black-backed Gull				3	5		7	1	7	23
	Herring Gull				5			1			6
	Great Black-backed Gull									2	2
	Sandwich Tern					3		1			4
	Common Tern				4	2		2			8
	Little Tern								2		2

Site 3 continued.

Year	Species	Survey Number									Total
		1	2	3	4	5	6	7	8	9	
2003	Fulmar			1				1			2
	Gannet						2			1	3
	Cormorant			1			4	1	1		7
	Arctic Skua			5						1	1
	Lesser Black-backed Gull					1	1		1		8
	Herring Gull			15	2		5		1		23
	Kittiwake			1							1
	Little Tern	1									1
	Sandwich Tern						2	3	1		6
	Common Tern						2	9	2		13
	Swallow				1						1
2004	Common Scoter		3								3
	Fulmar			1							1
	Gannet					13			3		16
	Cormorant						2		1		3
	Lesser Black-backed Gull		2	5	10		2				19
	Herring Gull			13	29		2	1			45
	Great Black-backed Gull					3					3
	Kittiwake						1				1
	Little Tern		1								1
	Sandwich Tern					3	1				4
	Common Tern			1	2	28			3		34
	Guillemot					2			2		4
	Swallow		2								2
2005	Common Scoter							1			1
	Fulmar		1								1
	Gannet		6					5	6		17
	Cormorant						1				1
	Lesser Black-backed Gull	3			1	6	3	3			16
	Herring Gull	1	3		8	1	2				15
	Great Black-backed Gull	6			2	1					9
	Kittiwake							2			2
	Little Tern	5	44	5	4	4					62
	Sandwich Tern			3				10	10		23
	Common Tern		4			2		4	25		35
	Guillemot								3		3
	Swift						4				4

Site 3 continued.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2006	Gannet					2			1		3
	Cormorant							1			1
	Common Gull	1									1
	Lesser Black-backed Gull	14	1	2		10	2	1			30
	Herring Gull	7	1		1	3	2				14
	Great Black-backed Gull			1							1
	Unidentified gull								3		3
	Sandwich Tern	2				6	3		6		17
	Common Tern	3		1	1	13					18
	Little Tern	2	201	4	2	3					212
	Guillemot							3			3
	Razorbill			1							1
	Woodpigeon		1								1
	Swallow	1									1

Site 4.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Fulmar					1					1
	Gannet					1	1			1	3
	Arctic Skua								1		1
	Black-headed Gull						1				1
	Lesser Black-backed Gull					2	1	1			4
	Herring Gull				29			1			30
	Kittiwake						1				1
	Sandwich Tern				11	4				1	16
	Common Tern				2	1	2	1	1		7
	Guillemot						3	6		3	12
2003	Fulmar			1							1
	Gannet					1		1		1	3
	Arctic Skua								1	1	2
	Lesser Black-backed Gull			1	1	1	16	3			22
	Herring Gull			3	3		18		1		25
	Great Black-backed Gull						1				1
	Kittiwake					1					1
	Sandwich Tern				1		3		2		6
	Common Tern	4			2			2	3		11
	Guillemot						1	1		3	5

Site 4 continued.

Year	Species	1	2	3	4	5	6	7	8	9	Total
2004	Fulmar	2									2
	Gannet					4					4
	Black-headed Gull					1	5				6
	Lesser Black-backed Gull	3	1	1	3						9
	Herring Gull	1		6	20			1			28
	Little Tern	18	2			2					22
	Sandwich Tern				1	17	1	1			20
	Common Tern		1	13	1	11		1	2		29
	Guillemot							1	2		3
	Swift				1						1
	Swallow			1							1
2005	Gannet							2	6		8
	Lesser Black-backed Gull		1				1	2			5
	Herring Gull	6	1		2		1	1			11
	Great Black-backed Gull		1			2	1				4
	Kittiwake							5			5
	Little Tern	33	13	8	12	8	2				76
	Sandwich Tern				3	1		8			12
	Common Tern				3		2	2	16		23
	Unidentified tern								46		46
	Feral Pigeon		1								1
	Sand Martin				1						1
2006	Gannet					4			3		
	Lesser Black-backed Gull	6	1	2		2					
	Herring Gull	3	1	4							
	Great Black-backed Gull	1	2			1		1			
	Kittiwake			2							
	Unidentified large gull					4					
	Unidentified gull								6		
	Sandwich Tern					1		2	2		
	Common Tern			1		7			1		
	Little Tern			1							
	Guillemot					2	1	4			

Site 5

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Cormorant						1				1
	Skua sp.							1			1
	Lesser Black-backed Gull					1	1	3		1	6
	Herring Gull						4	1			5
	Kittiwake						2	1			3
	Sandwich Tern						4		1	10	15
	Common Tern					3	2	4		1	10
	Guillemot						9	9			18

Site 5 continued.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2003	Gannet	1								1	2
	Lesser Black-backed Gull						19				19
	Herring Gull				1		9				10
	Great Black-backed Gull			1		1		1			3
	Kittiwake							1			1
	Sandwich Tern			1			7			4	12
	Common Tern				7		1	2		2	12
	Guillemot				1		1	3	1		6
2004	Fulmar	1		1							2
	Gannet					26		1			27
	Lesser Black-backed Gull	6		7	4	1					18
	Herring Gull	1	1	4	20	1					27
	Great Black-backed Gull	1				1					2
	Kittiwake	4									4
	Little Tern	19	2								21
	Sandwich Tern					1	3				4
	Common Tern				3	7					10
	Guillemot					4			3		7
2005	Common Scoter								7		7
	Fulmar			4							4
	Gannet		3					13	2		18
	Arctic Skua							1			1
	Black-headed Gull	1									1
	Common Gull	1									1
	Lesser Black-backed Gull		5		5	4		2	1		17
	Herring Gull	7			22			2			31
	Great Black-backed Gull	1							1		2
	Kittiwake							2			2
	Little Tern		6		2						8
	Sandwich Tern							6	7		13
	Common Tern		1			1		6	3		11
	Guillemot							1	3		4
	House Martin		2								2
2006	Red-throated Diver			1							
	Fulmar	2	1	1							
	Gannet		1			2		1	1		
	Common Gull	1									
	Lesser Black-backed Gull	2	1	5		8					
	Herring Gull	4		5	4						
	Great Black-backed Gull	1	1	1							
	Unidentified large gull				1						
	Sandwich Tern		1		1	2			1		
	Common Tern	2				1		2			

Site 6

Year	Species	Survey Number									Total
		1	2	3	4	5	6	7	8	9	
2002	Common Scoter					1					1
	Gannet				2						2
	Lesser Black-backed Gull				2	1	2	1	1		7
	Herring Gull				4	1	1	2			8
	Great Black-backed Gull								1		1
	Sandwich Tern				3	3		2			8
	Common Tern					7	2	5			14
	Guillemot							3			3
2003	Gannet				1	1		1	4		7
	Arctic Skua								1	1	2
	Black-headed Gull							1			1
	Lesser Black-backed Gull	2		1	1	3	5			2	14
	Herring Gull	3		1	1	1					6
	Sandwich Tern	2		3		1	2	3	3		14
	Common Tern						7	3	12		22
	Swift									2	2
2004	Fulmar						1				1
	Black-headed Gull		6								6
	Lesser Black-backed Gull		3		2	1	1	4			11
	Herring Gull	2	1	6	2						11
	Great Black-backed Gull	1									1
	Little Tern			2							2
	Sandwich Tern					1	3				4
	Common Tern	2		1							3
2005	Fulmar					1					1
	Common Gull				1						1
	Lesser Black-backed Gull	2	3		4		17	3			29
	Herring Gull	13	6		7	1	8	1			36
	Kittiwake					2					2
	Unidentified gull			2							2
	Little Tern			9							9
	Sandwich Tern			3		1		2	5		11
	Common Tern			1			6	3	5		15
2006	Fulmar		2		1						
	Lesser Black-backed Gull		1	1	2	1	2				
	Herring Gull	2		2	3	2	18	1			
	Great Black-backed Gull	1	1		5						
	Unidentified gull								15		
	Sandwich Tern					3	4	1	50		
	Common Tern	1									
	Little Tern			3							
	Guillemot							5	25		
	Swift					1					

Site7

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Common Scoter								2		2
	Cormorant						1		1	2	4
	Turnstone								3		3
	Little Gull						1				1
	Common Gull								1		1
	Lesser Black-backed Gull				2	22	1	1	5	96	127
	Herring Gull				6		1	2	2	1	12
	Great Black-backed Gull									4	4
	Kittiwake						1				1
	Little Tern					2		1			3
	Sandwich Tern				7		5				12
	Common Tern					17	4	6	5		32
	Guillemot							6			6
2003	Fulmar				1						1
	Gannet					2					2
	Cormorant							1			1
	Lesser Black-backed Gull	3		1			1	9		1	15
	Herring Gull	12		8		1	4	28			53
	Great Black-backed Gull			1		1	1	3			6
	Kittiwake					1					1
	Little Tern							3	5		8
	Sandwich Tern	4			14	1	11	78		5	113
	Common Tern					2	10	11	2	1	26
2004	Cormorant							2			2
	Redshank		1								1
	Common Gull	2									2
	Lesser Black-backed Gull	2	1	2		6		1			12
	Herring Gull	12	3	27	12	3	1	6			64
	Great Black-backed Gull			2		1					3
	Kittiwake				2						2
	Little Tern			24	10	14		2			50
	Sandwich Tern								1		1
	Common Tern	1		8	1	10		2	2		24
	Feral Pigeon							1			1
	Swallow			1							1
2005	Common Gull			8					1		1
	Lesser Black-backed Gull	1				6	4	2	1		14
	Herring Gull	1				10	2				13
	Great Black-backed Gull		2			2	1				5
	Kittiwake		1								1
	Little Tern	3	5			4	12	4			36
	Sandwich Tern								1	6	7
	Common Tern	2	2			3		4	1	2	14
	Guillemot									1	1
	Feral Pigeon	2									2
	Swallow		1								1

Site7 continued

2006	Black-headed Gull					3					3
	Lesser Black-backed Gull	7				5		1			13
	Herring Gull	10		1	1						12
	Great Black-backed Gull	2		2		1					5
	Unidentified gull				2						2
	Sandwich Tern	7									7
	Common Tern	6		2		1		1			8
	Little Tern	2		14	1	6	6	24			53
	Guillemot					2					2

Site 8.

Year	**Species**	**Survey Number**									**Total**
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
2002	Cormorant							1			1
	Mediterranean Gull				1		2		3		6
	Black-headed Gull						1	69	8	14	92
	Common Gull						1	2		1	4
	Lesser Black-backed Gull				3	9	5	13	2	3	35
	Herring Gull				1	7	2	27	9	4	50
	Sandwich Tern				1		5	17			23
	Common Tern	4	2		7						13
2003	Cormorant								2		2
	Ringed Plover							1			1
	Mediterranean Gull						3	1			4
	Black-headed Gull						20	5		2	27
	Common Gull					1	3			1	5
	Lesser Black-backed Gull	25		1	8	4	4	10	11	51	114
	Herring Gull	9		15	12	7	30	21	19	7	120
	Great Black-backed Gull						1				1
	Kittiwake							2			2
	Sandwich Tern							3			3
	Common Tern					2		11	2		15

Site 9 continued.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2004	Sanderling	2									2
	Common Sandpiper								2		2
	Mediterranean Gull						1		1		2
	Black-headed Gull			1			2				3
	Common Gull		1		3				1		5
	Lesser Black-backed Gull	1	4	9	3	5	12		1		35
	Herring Gull	11	11	24	3	8	22	4	15		98
	Kittiwake	4					1				5
	Little Tern	10					3				13
	Sandwich Tern	4					8	1			13
	Common Tern	9	1				1		5		16
	Feral Pigeon										1
	Swift						1		13		14
2005	Mediterranean Gull	1					5	3	2		11
	Black-headed Gull	1				2	1	16	2		22
	Common Gull	2									2
	Lesser Black-backed Gull	2	2		4		4	6	6		24
	Herring Gull	1	5		6	6	3	10	18		49
	Great Black-backed Gull								1		1
	Unidentified gull			13							13
	Little Tern			23			10				33
	Sandwich Tern								4		4
	Common Tern				1			12	16		29
	Feral Pigeon				5		1				6
	Swift								6		6
2006	Cormorant					1					1
	Black-headed Gull	1	3			15	16				35
	Common Gull						1				1
	Lesser Black-backed Gull	3	6	2	3	3	1				18
	Yellow-legged Gull			1							1
	Herring Gull	11	15	6	3	10	12				57
	Great Black-backed Gull		2	3	1						6
	Mediterranean Gull	1				2	3	8			14
	Unidentified gull							1			1
	Sandwich Tern					2					2
	Common Tern		4	2							6
	Little Tern		1	1	3				2		7
	Feral Pigeon			2		1					3

Site 10

Year	Species	Survey Number									Total
		1	2	3	4	5	6	7	8	9	
2002	Great Crested Grebe				1						1
	Ringed Plover						1				1
	Black-tailed Godwit									4	4
	Common Gull								4		4
	Lesser Black-backed Gull					1		2			3
	Herring Gull				6	11	6	15	13	3	54
	Great Black-backed Gull							2		1	3
	Little Tern				14	23	5	47	4		93
	Sandwich Tern				1	1	1				3
	Common Tern				6	5	1	5	2		19
2003	Cormorant			1					1		2
	Oystercatcher			1	4						5
	Unidentified sandpiper							5			5
	Dunlin							1			1
	Mediterranean Gull						1				1
	Black-headed Gull						9	2			11
	Common Gull						2				2
	Lesser Black-backed Gull	6			10		1	3		15	35
	Herring Gull	9		25	55	2	12	8	13	4	128
	Great Black-backed Gull						1				1
	Kittiwake					1		1			2
	Little Tern	2		1	12	5	4	3	11		38
	Sandwich Tern					2	3		3		8
	Common Tern			16	6	5	4	2	4		37
2004	Fulmar				1						1
	Cormorant						1				12
	Whimbrel	3									3
	Sandpiper sp.							1			1
	Common Gull		1								1
	Lesser Black-backed Gull	1				4		2			7
	Herring Gull	8	10	11	2	10	4	21	9		75
	Great Black-backed Gull	1						1	1		3
	Kittiwake	3									3
	Little Tern	4		3	1	10	39	1			58
	Sandwich Tern					3	2	1			6
	Common Tern	8				1	2		3		14
	Feral Pigeon					1		5			6

Site 10 continued.

2005	Kestrel								1		1
	Oystercatcher							2			2
	Dunlin	75									75
	Mediterranean Gull							4	6		10
	Black-headed Gull					2	1				3
	Common Gull	2									2
	Lesser Black-backed Gull		3		10			1	5		19
	Herring Gull	5	4		64	4		1	5		83
	Great Black-backed Gull						1				1
	Kittiwake						1				1
	Unidentified gull			10							10
	Little Tern	35	27	100	25	64	70	524	22		867
	Sandwich Tern								6		6
	Common Tern	1	1				4	2	3		11
	Swift						1		6		7
2006	Mallard					3					3
	Kestrel						1				1
	Ringed Plover	1									1
	Dunlin		3								3
	Curlew					2					2
	Unidentified wader		30								30
	Black-headed Gull	1				2	3				6
	Common Gull		1		4			3			8
	Lesser Black-backed Gull		4	1	1			2			8
	Herring Gull	8	7	5		5	4	9			38
	Great Black-backed Gull	1			3			1			5
	Mediterranean Gull					2	3	2			7
	Unidentified gull								3		3
	Sandwich Tern					4	1		1		6
	Common Tern		2	3		1	4	31	1		42
	Little Tern	9	67	98	20	574	500	355	10		1633
	Crow	1									1

Site 11.

		Survey Number									
Year	**Species**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2002	Gannet				1						1
	Cormorant									1	1
	Oystercatcher							2			2
	Little Gull				1						1
	Black-headed Gull					1					1
	Common Gull							1			1
	Lesser Black-backed Gull				1	6	3	4	1		15
	Herring Gull						6	11	10	5	32
	Kittiwake						3				3
	Little Tern					1		6			7
	Sandwich Tern				3			6			9
	Common Tern					2	2	3			7

Site 11 continued.

2003	Grey Plover							1			1
	Sandpiper sp.					1					1
	Black-headed Gull							2			2
	Common Gull							1			1
	Lesser Black-backed Gull	4		9	3		2	2	1	4	25
	Herring Gull	12		12	13	2	3	6	8	3	59
	Kittiwake				1						1
	Sandwich Tern					1		1		2	4
	Common Tern			3	2	13		1	3	1	23
2004	Kestrel		1								1
	Dunlin	6									6
	Redshank							1			1
	Arctic Skua								1		1
	Black-headed Gull							1			1
	Lesser Black-backed Gull	3		3	1	7		3	1		18
	Herring Gull	27	10	18	12	20	4	18	8		117
	Kittiwake	1									1
	Little Tern				1	6					7
	Sandwich Tern	6				5			1		12
	Common Tern		1			4		1	1		7
	Racing Pigeon								6		6
	Swift				25	1					26
2005	Oystercatcher							2			2
	Knot								1		1
	Unidentified calidrid		2								2
	Whimbrel								2		2
	Arctic Skua							2			2
	Black-headed Gull						1				1
	Lesser Black-backed Gull	2	23		3	3		2	3		36
	Herring Gull	13	35		7	8	7	7	8		85
	Great Black-backed Gull				1						1
	Kittiwake					1					1
	Unidentified gull			3							3
	Little Tern		1	2		2	1	11			17
	Sandwich Tern							4	7		11
	Common Tern						1	6	3		10
2006	Cormorant							1			1
	Black-headed Gull	1				3	3	4			11
	Common Gull		1		1	2		1			5
	Lesser Black-backed Gull		7			1		5			13
	Herring Gull	4	4	5	1	7	2	5			28
	Great Black-backed Gull				1						1
	Mediterranean Gull					2					2
	Unidentified gull			1					2		3
	Sandwich Tern			2		4		1	1		8
	Common Tern				1	1		4			6
	Little Tern		3	4	6	20		7			40
	Feral Pigeon		1								1
	Swallow		3								3
	Crow							1			1

Site 12

Year		Survey Number									
	Species	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2002	Fulmar				4	1					5
	Cormorant				1						1
	Black-headed Gull				1	2	3	3		6	15
	Common Gull							1			1
	Lesser Black-backed Gull					1	1	3	3	4	12
	Herring Gull				1	4		21	13	6	45
	Little Tern				2	3		2	1		8
	Sandwich Tern				2			3	1		6
	Common Tern							3	2		5
	Sand Martin				19	18	2				39
2003	Common Scoter					30					30
	Fulmar			2	8	1					11
	Oystercatcher									1	1
	Black-headed Gull				1	3	4				8
	Common Gull					1	1	1			3
	Lesser Black-backed Gull	1			3		4				8
	Herring Gull	1		5	8	5	10	6	12	22	69
	Little Tern				3						3
	Sandwich Tern			4	1	2		1	3	1	12
	Common Tern			1	1	4				9	15
	Sand Martin	1			5						6
	Swallow			1							1
2004	Fulmar	6	2	7	1	2					18
	Cormorant								1		1
	Oystercatcher								6		6
	Curlew					2					2
	Turnstone								1		1
	Black-headed Gull						3	7			10
	Common Gull					1			1		2
	Lesser Black-backed Gull	1		3					1		5
	Herring Gull	8	8	17	21	8	7	3	7		79
	Great Black-backed Gull		1					2			3
	Kittiwake	3					1				4
	Little Tern				2	1					3
	Sandwich Tern	2				6	2		14		30
	Common Tern			1		1					2
	Feral Pigeon			1		1					2
	Woodpigeon								1		1
	Swift				9						9
	Sand Martin				4	1					5

Site 12 continued.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2005	Fulmar	8					5				13
	Sanderling		3								3
	Black-headed Gull	13					3	4	1		21
	Common Gull	6	2					1	1		10
	Lesser Black-backed Gull	4	9		4	4	1	2			24
	Herring Gull	18	13		10	8	11	5	2		67
	Great Black-backed Gull	2									2
	Kittiwake		2					42			44
	Unidentified gull			17							17
	Little Tern		1	10		25	1				37
	Sandwich Tern							5	6		11
	Common Tern		1					1			2
	Sand Martin		4				8				12
	Swallow		1								1
2006	Fulmar	7		5	5						17
	Ringed Plover		2								2
	Turnstone							1	1		2
	Little Gull					5		1			6
	Black-headed Gull			1		33	9	1			44
	Common Gull					1	2	3			6
	Lesser Black-backed Gull	2	2		2	1	2				9
	Herring Gull	7	6	10	2	12	4	9			50
	Great Black-backed Gull		1		1						2
	Unidentified gull				2						2
	Sandwich Tern		3			2	2		4		11
	Common Tern					1					1
	Little Tern		2	3		1			3		9
	Guillemot								2		2
	Feral Pigeon				18						18
	Sand Martin					1					1
	Crow				1						1

Hemsby[6]

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2003	Common Scoter							2			2
	Gannet						10				10
	Cormorant			1				1	1		3
	Oystercatcher			1			3				4
	Little Gull				1						1
	Black-headed Gull	4	2	1	21		4		2		34
	Lesser Black-backed Gull			2	1		1				4
	Herring Gull	4	9	2	6		14	12	3		50
	Little Tern		1	9				5			15
	Sandwich Tern			1			1	1	5		8
	Common Tern								1	1	

[6] This site was not surveyed in 2002.

Hemsby continued.

Year	Species	Survey Number									Total
		1	2	3	4	5	6	7	8	9	
2004	Cormorant						1				1
	Oystercatcher		1		2						3
	Bar-tailed Godwit		1								1
	Black-headed Gull						1				1
	Lesser Black-backed Gull		1								1
	Herring Gull		19		15		4				38
	Great Black-backed Gull						1				1
	Little Tern				6		1				7
	Sandwich Tern						7				7
2005	Common Scoter						3				3
	Black-headed Gull						3				3
	Common Gull						1				1
	Lesser Black-backed Gull				1						1
	Herring Gull				11		11				22
	Little Tern				4		2				6
2006	Black-headed Gull					2					2
	Common Gull					2					2
	Lesser Black-backed Gull					1					1
	Herring Gull					7					7
	Sandwich Tern					3					3
	Common Tern					2					2

Winterton

Year	Species	Survey Number									Total
		1	2	3	4	5	6	7	8	9	
2002	Common Scoter								21		21
	Great Crested Grebe					1					1
	Cormorant					1		1	4	3	9
	Marsh Harrier					1			1		1
	Black-headed Gull										1
	Lesser Black-backed Gull							1	1	8	10
	Herring Gull					1	2	6	13		22
	Great Black-backed Gull								1	2	3
	Little Tern						5	2			7
	Sandwich Tern						1	1			2
	Common Tern					31	54	54	3		142

Winterton continued.

		Survey Number									
Year	**Species**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2003	Common Scoter							2		2	4
	Cormorant						1			1	2
	Common Sandpiper								1		1
	Bar-tailed Godwit							1			1
	Black-headed Gull	8	1		1	4	4			18	36
	Common Gull							1		1	2
	Lesser Black-backed Gull								1	1	2
	Herring Gull		4		2	2	1	2	3	14	28
	Little Tern	54	67	103	125	87	148	3	2	589	1178
	Sandwich Tern			1		2	1			4	8
	Common Tern			3	1		3	1	4	12	24
	Sand Martin				2					2	4
2004	Ringed Plover		2								2
	Sanderling		6								6
	Black-headed Gull						1				1
	Common Gull		2								2
	Lesser Black-backed Gull				1		2				3
	Herring Gull		11		10		6				27
	Little Tern		2		29		153				184
	Sandwich Tern						54				54
	Common Tern		1				1				2
	Arctic Tern						1				1
	Crow		1								1
2005	Gannet						1				1
	Lesser Black-backed Gull				2						2
	Herring Gull				5		3				8
	Little Tern				24		121				145
	Swift				3						3
2006	Black-headed Gull					9					9
	Herring Gull					1					1
	Great Black-backed Gull					4					4
	Sandwich Tern					2					2
	Common Tern					6					6

Horsey

		Survey Number									
Year	**Species**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2002	Widgeon									10	10
	Fulmar									1	1
	Gannet								1		1
	Oystercatcher										3
	Whimbrel										1
	Redshank										3
	Lesser Black-backed Gull					1	2			1	26
	Herring Gull					1	3		6	2	64
	Little Tern					14	5				19
	Sandwich Tern					3	2				5
	Common Tern					1	1				2
	Guillemot										1
	Racing Pigeon						3				3
2003	Black-headed Gull	3	1		1						5
	Lesser Black-backed Gull				1						1
	Herring Gull	2	4		2						8
	Kittiwake				1						1
	Common Tern		1	1	1						3
2004	Horsey				1						1
	Cormorant				1						1
	Black-headed Gull				8						8
	Herring Gull				1						1
	Little Tern										
2005	Ringed Plover							2			2
	Herring Gull							2			2
	Little Tern							3			3
	Common Tern							3			3

Waxham[7]

		Survey Number									
Year	**Species**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
2002	Eider						2				2
	Fulmar							1			1
	Cormorant						2	1	4	6	13
	Curlew					3		1			4
	Skua sp.							3			3
	Black-headed Gull							2			2
	Common Gull							2	4		6
	Lesser Black-backed Gull							2	1		3
	Herring Gull					1	10	1	18	7	37
	Great Black-backed Gull									1	1
	Kittiwake						1				1
	Little Tern					4		9	1		14
	Sandwich Tern					1	9	2			12
	Common Tern						3	1			4
2003	Eider	4									4
	Herring Gull	15									15
2004	Cormorant		1								1
	Oystercatcher		1								1
	Dunlin		8								8
	Turnstone		2								2
	Black-headed Gull				4						4
	Common Gull		1		17						1
	Herring Gull		9								26
	Little Tern				5						5
	Common Tern		6								6
	Feral Pigeon		2								2
2005	Cormorant						1				1
	Black-headed Gull						1				1
	Lesser Black-backed Gull						2				2
	Herring Gull						25				25
	Great Black-backed Gull						3				3
	Sandwich Tern						3				3

[7] This site was initially located at Sea Palling (2002), but changed to Waxham in all other years to provide a more evenly spaced site arrangement. The site was not surveyed in 2006.

Eccles[8]

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Cormorant								1	3	4
	Arctic Skua							2			2
	Herring Gull					1	2	1			4
	Little Tern					1					1
	Sandwich Tern					2		2	2		6
	Common Tern					2		2			4
2003	Lesser Black-backed Gull				6						6
	Herring Gull				4						4
	Little Tern				5						5
2004	Eccles		6		6						8
	Herring Gull										1
	Great Black-backed Gull		8		8						10
	Little Tern										2
	Feral Pigeon										1
	Swift										
2005	Common Gull						1				1
	Herring Gull						2				2
	Swift						9				9

Outer Wold sites – Sampled 2002 only

Site name	Species name	Sampling occasion 5	6	7	8	9	Total
Site 5A	Fulmar					1	1
	Gannet					1	1
	Sandpiper sp.			2			2
	Skua sp.		1				1
	Common Gull		1				1
	Lesser Black-backed Gull	1					1
	Herring Gull	1					1
	Sandwich Tern	2		2			4
	Guillemot		1				1
Site 6A	Gannet	1	4	5		2	12
	Skua sp.			1			1
	Lesser Black-backed Gull			2			2
	Herring Gull	1					1
	Kittiwake	5			1		6
	Sandwich Tern	1		1			2
	Guillemot			2		2	4
Site 7A	Gannet		1	19		1	21
	Skua sp.			1			1
	Lesser Black-backed Gull			2	1		3
	Herring Gull	1		1			2
	Kittiwake	3	1	3	1		8
	Sandwich Tern					3	3
	Common Tern			2	1	1	4
	Guillemot		1			3	4

[8] Not sampled in 2006

Outer Wold sites – continued

Site 8A	Gannet		13	13		2	28
	Skua sp.			1		1	2
	Lesser Black-backed Gull			2	1		3
	Herring Gull	1				1	2
	Great Black-backed Gull				1		1
	Kittiwake			1			1
	Sandwich Tern		2	3	1		6
	Common Tern		1	4		2	7
	Guillemot			5			5

APPENDIX VII. Counts of seals (ind.) from each site on each sampling occasions during boat-based surveys at Scroby and the Would from 2002-2006 inclusive. Survey numbers correspond to dates presented in Table 3 of the main report and shaded cells indicate occasions when data was not collected.

Site 1

Year		Survey Number									
	Species	1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal				2	3	2	1		5	13
	Grey Seal				3		2			6	11
2003	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0
2004	Harbour Seal		1								
	Grey Seal		2								
	Unidentified seal		1			48		17			
2005	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0
2006	Harbour Seal					24		15			39
	Grey Seal	100	2			46		35			183
	Unidentified seal	59			1						59

Site 2

Year		Survey Number									
	Species	1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal				12	2	1			3	13
	Grey Seal				38	1	4	1		13	11
2003	Harbour Seal										
	Grey Seal										
	Unidentified seal					2				2	4
2004	Harbour Seal					1					1
	Grey Seal					1		7			8
	Unidentified seal			5							5
2005	Harbour Seal										
	Grey Seal	2									2
	Unidentified seal			15							15
2006	Harbour Seal						16				16
	Grey Seal						13	1			14
	Unidentified seal										0

Site 3

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal										0
	Grey Seal										0
	Unidentified seal										0
2003	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0
2004	Harbour Seal										0
	Grey Seal								1		1
	Unidentified seal										0
2005	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0
2006	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0

Site 4 – none sighted in any year

Site 5 – none sighted in any year

Site 6 – none sighted 2002-2005

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2006	Harbour Seal										0
	Grey Seal			1							1
	Unidentified seal										0

Site 7 – none sighted 2002, 2003, 2005 or 2005

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2004	Harbour Seal										0
	Grey Seal										0
	Unidentified seal		1	1							2

Site 8

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal								27		27
	Grey Seal										0
	Unidentified seal										0
2003	Harbour Seal							1			1
	Grey Seal										0
	Unidentified seal	20					54	70			144
2004	Harbour Seal										
	Grey Seal	1		2							3
	Unidentified seal					70					70
2005	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0
2006	Harbour Seal										0
	Grey Seal										0
	Unidentified seal										0

Site 9 – none sighted 2002, 2003, 2005 and 2006.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2004	Harbour Seal										0
	Grey Seal										0
	Unidentified seal		40								40

Site 10 – none sighted in 2003 or 2005.

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal										0
	Grey Seal				1						1
	Unidentified seal										0
2003	Harbour Seal								1		1
	Grey Seal								1		1
	Unidentified seal								0		0
2006	Harbour Seal										0
	Grey Seal										0
	Unidentified seal			1							1

Site 11 – none sighted in 2002 and 2005

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2003	Harbour Seal										0
	Grey Seal							3			3
	Unidentified seal										0
2004	Harbour Seal										0
	Grey Seal			1							1
	Unidentified seal										0
2006	Harbour Seal				1						1
	Grey Seal					1					1
	Unidentified seal										0

Site 12 – none sighted in 2003 or 2006

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal										0
	Grey Seal									1	1
	Unidentified seal										0
2004	Harbour Seal				2			1			3
	Grey Seal				1						1
	Unidentified seal										0
2005	Harbour Seal			1						1	2
	Grey Seal										0
	Unidentified seal										0

Hemsby – none seen in 2002, 2005 or 2006

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2003	Harbour seal										
	Grey Seal			1			1				2
	Unidentified seal										
2004	Harbour Seal				2						2
	Grey Seal				2						2
	Unidentified seal										0

Winterton – none seen 2005 or 2006

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal						1				1
	Grey Seal										0
	Unidentified seal										0
2003	Harbour Seal										0
	Grey Seal			1			1				1
	Unidentified seal										0
2004	Harbour Seal				1						1
	Grey Seal		1								1
	Unidentified seal										0

Horsey – none seen in 2003 or 2006

Year	Species	Survey Number 1	2	3	4	5	6	7	8	9	Total
2002	Harbour seal								1		1
	Grey Seal										0
	Unidentified seal										0
2004	Harbour Seal		1								1
	Grey Seal				1						1
	Unidentified seal										0
2005	Harbour Seal						0				0
	Grey Seal						1				1
	Unidentified seal						0				0

Outer Would sites– sampled 2002 only

Site 8A

Year	Species	Survey Number 5	6	7	8	9	Total
	Common Seal						
	Grey Seal					1	1

APPENDIX VIII. Counts of faunal taxa (ind.) recorded in net tows at each site in each sampling occasion during boat-based surveys at Scroby and the Would from 2002-2006 inclusive. Survey numbers correspond to dates presented in Table 3 of the main eport and shaded cells indicate occasions when data was not collected.

Site 1

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata						1				1
	Chrysaora hysocella						44				44
	Pleurobranchia pileus				36	23	18	5	8	5	95
	Siriella armata						1				1
	Unidentified clupidae						2				2
2003	Pleurobranchia pileus		21	92	133	4	10	9	2	15	286
	Schistomysis spiritus	15									15
	Idotea linearis								3		3
	Nephrops norvegicus						1				1
	Larval crab									1	1
	Unidentified clupidae	1	15		1						17
	Belone belone						1				1
2004	Chrysaora hysocella					5	1	1			7
	Pleurobranchia pileus	2	5	43	21	15	10	4	31		131
	Schistomysis spiritus		6938		165						7103
	Siriella armata					6					6
	Chaetogammarus marinus				1						1
	Liocarcinus arcuatus							1			1
	Unidentified crab larvae			2							2
	Gasterosteus aculeatus							1			1
	Sygnathus rostellatus							1			1
	Lipophrys pholis							1			1
	Hyperoplus lanceolatus	1									1
	Belone belone							1			1
	Arnoglossus laterna				1						1
2005	Pleurobranchia pileus		9	3	13	83	357	67	13		545
	Schistomysis spiritus	1									1
	Idotea linearis			1							1
	Chaetogammarus marina			1							1
	Unidentified clupidae	1			2						3
	Hyperoplus lanceolatus	1									1
	Solea solea			2							2
2006	Pleurobranchia pileus		1	2	204	114	15	4	4		344
	Schistomysis spiritus	9	2								11
	Unidentified clupidae		1								1

Site 2

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella					1	39				40
	Pleurobranchia pileus				15	18		150	30	32	245
	Idotea linearis								1		1
2003	Pleurobranchia pileus	1	55	493	104	2	12	11	4	12	694
	Schistomysis spiritus	1						1			2
	Siriella armata	3				1					4
	Idotea linearis								1	1	2
	Chaetogammarus marinus	1									1
	Larval crab				1			1			2
	Gasterosteus aculeatus				1						1
	Hyperoplus lanceolatus	2									2
2004	Chrysaora hysocella						1				1
	Aurelia aurita						1				1
	Pleurobranchia pileus	5	2	75	18	48	22	9	82		261
	Nebalia bipes					2					2
	Schistomysis spiritus			1					2		3
	Siriella armata					1					1
	Chaetogammarus marinus				1	1		1			3
	Crangon crangon								2		2
	Nephrops norvegicus					1					1
	Liocarcinus arcuatus					1					1
	Gasterosteus aculeatus						1				1
	Aphia minuta					1					1
	Unidentified larval flatfish		1								1
2005	Pleurobranchia pileus			7	5	99	443	135	28		717
	Unidentified nematode	1									1
	Lacewing	1									1
	Schistomysis spiritus	2									2
	Siriella armata				1	2					3
	Idotea linearis	1					1				2
	Unidentified clupidae	2			2						4
	Hyperoplus lanceolatus	7									7
2006	Pleurobranchia pileus			2	191	220	35	12	10		470
	Schistomysis spiritus	16	2								18
	Siriella armata		1								1
	Idotea linearis					3					3

Site 3.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella				1		5				6
	Pleurobranchia pileus				227	7	16	2	52	24	328
	Idotea linearis						1				1
2003	Pleurobranchia pileus		22	56	12	3	5	14	10	16	138
	Schistomysis spiritus	3									3
	Acanthomysis longicornis			1							1
	Idotea linearis			1						1	2
	Unidentified crangon									1	1
	Hyperoplus lanceolatus	1									1
	Unidentified larval fish							1			1
2004	Tubulanidae sp.					2					2
	Jellyfish sp.					1					1
	Pleurobranchia pileus			38	89	4	9	4	286		430
	Nebalia bipes					7					7
	Schistomysis spiritus	2	2			3					7
	Siriella armata					2		1			3
	Chaetogammarus marinus					1					1
	Liocarcinus arcuatus					1		1			2
	Crab larvae sp.			6							6
	Clupidae sp.					1		1			2
	Gasterosteus aculeatus							1			1
	Sygnathus rostellatus		1								1
	Belone belone							1			1
2005	Pleurobranchia pileus				15	40	107	6	29		197
	Schistomysis spiritus			1	2						3
	Idotea linearis						1				1
	Unidentified clupidae			7							7
	Pleuronectes platessa			1							1
	Solea solea			1							1
2006	Pleurobranchia pileus			142	14	270	38	12	1		477
	Schistomysis spiritus		17								17
	Siriella armata		2								2
	Larval sac	1									1

Site 4

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella				398		1				399
	Pleurobranchia pileus						129	1	139	11	280
	Siriella armata						1				1
	Alloteuthis subulata						1				1
	Unidentified clupidae				33						33
2003	Pleurobranchia pileus		9	309	92	39	80	30	8	11	578
	Siriella armata	1			1						2
	Acanthomysis longicornis		20								20
	Idotea linearis			1							1
	Chaetogammarus marinus			1							1
	Corystes cassivelaunus				1						1
	Liocarcinus holstatus				1						1
	Belone belone					1					1
2004	Aurelia aurita								2		2
	Rhizostoma octopus							2			2
	Pleurobranchia pileus	2	5	34	70	26	10	20	430		597
	Nebalia bipes					2					2
	Schistomysis spiritus		2					2			4
	Siriella armata							1			1
	Endeis spinosa							1			1
	Crangon crangon						2				2
	Liocarcinus arcuatus							1			1
	Alloteuthis subulata							1			1
	Atherina presbyter								1		1
	Hyperoplus lanceolatus						1				1
	Aphia minuta					1					1
2005	Pleurobranchia pileus			5	17	68	291	24	25		430
	Unidentified nematod		1								1
	Semibalanus balanoides		1								1
	Schistomysis spiritus		13	3							16
	Siriella armata			1	2						3
	Idotea linearis						3				3
	Clupea harangus			3							3
	Unidentified clupidae			1							1
	Hyperoplus lanceolatus	1									1
	Pleuronectes platessa			1							1
	Solea solea			2							2
	Larval sac				1						1
2006	Pleurobranchia pileus		1	49		149	86	34			319
	Schistomysis spiritus		2								2
	Idotea linearis							1			1
	Crangon crangon							1			1
	Unidentified ensis							2			2
	Hyperoplus lanceolatus	1									1

Site 5

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella				791						791
	Pleurobranchia pileus					10	79		8	12	109
	Endeis spinosa							1			1
	Unidentified clupidae				8						8
2003	Pleurobranchia pileus	10	508	25	2	360	8	4	7		924
	Siriella armata			1							1
	Acanthomysis longicornis		3								3
	Idotea linearis								2		2
	Chaetogammarus marinus		1	1					1		3
	Unidentified crangon								1		1
	Liocarcinus holstatus		1								1
	Unidentified clupidae		5								5
	Hyperoplus lanceolatus		1								1
	Belone belone				6						6
	Cyclopterus lumpus						1				1
2004	Chrysaora hysocella						2				2
	Pleurobranchia pileus		3	11	2	36	12		65		129
	Schistomysis spiritus		1								1
	Crab larvae sp.					4					4
	Scophthalmus maximus							1			1
2005	Pleurobranchia pileus			1	46	28	112	32	141		360
	Unidentified nematode		1								1
	Siriella armata				1						1
	Idotea linearis		1								1
	Hyperoplus lanceolatus		2								2
2006	Pleurobranchia pileus				10	4	3	17			34
	Schistomysis spiritus	1									1
	Unidentified larval crab			1							1
	Belone belone							1			1
	Larval sac	1									1

Site 6.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella					3	2			1	6
	Pleurobranchia pileus					5520	343	13	243	3	6122
	Idotea linearis								1		1
	Macropodia rostrata					1					1
	Unidentified clupidae				1						1
2003	Chrysaora hysocella					1					1
	Pleurobranchia pileus	15	3	55	8	60	13	3	4	12	173
	Schistomysis spiritus	2									2
	Siriella armata	1									1
	Acanthomysis longicornis		2								2
	Idotea linearis									2	2
	Nephrops norvegicus									1	1
2004	Chrysaora hysocella							1			1
	Aurelia aurita						1				1
	Jellyfish sp.					1					1
	Pleurobranchia pileus	11	2	38	34	23	10		131		249
	Schistomysis spiritus	1									1
	Acanthomysis longicornis								1		1
	Idotea linearis	1							3		4
	Chaetogammarus marinus						2				2
	Dichelopandalus bonnieri							1			1
	Nephrops norvegicus						3				3
	Liocarcinus pusillus					1					1
	Endeis spinosa							1			1
2005	Pleurobranchia pileus		2	6	29	54	239	67	8		405
	Unidentified nematode	2									2
	Unidentified ensis					1					1
	Unidentified clupidae			2							2
2006	Pleurobranchia pileus		1	124	108	1413	17	80			1743
	Schistomysis spiritus	1									1
	Siriella armata		1								1
	Unidentified ensis/solen	1						27			28
	Unidentified clupidae						1				1
	Gadus morhua					3					3

Site 7.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Chrysaora hysocella				724	2					726
	Pleurobranchia pileus					173			8	3	184
	Idotea linearis							1		2	3
	Unidentified clupidae				19						19
	Belone belone								1		1
2003	Pleurobranchia pileus	102	27	117	26	37	6	68	2	9	394
	Schistomysis spiritus	103									103
	Siriella armata	3									3
	Idotea linearis							1			1
	Nephrops norvegicus									1	1
	Unidentified crangon	1									1
	Unidentified clupidae	2									2
	Belone belone					1	1				2
2004	Pleurobranchia pileus		6	24	49	12	7	7	40		145
	Schistomysis spiritus	1	1	1							3
	Siriella armata					1					1
	Unidentified clupidae			3		1					4
2005	Cyanea capillata							1			1
	Pleurobranchia pileus		8	10	9	67	120	84	300		598
	Unidentified nematode	1									1
	Siriella armata				1	1					2
	Idotea linearis						1				1
	Unidentified clupidae			2							2
2006	Pleurobranchia pileus		1		20	12	25	12	1		71
	Larval crab						1				1
	Galathea intermedia				1						1
	Unidentified ensis/solen						4				4
	Unidentified clupidae						1				1
	Belone belone						1				1

Site 8.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata						1				1
	Chrysaora hysocella				356		4			1	361
	Pleurobranchia pileus					90	131	5	4	11	241
	Idotea linearis								1		1
	Hyperoplus lanceolatus						1				1
2003	Chrysaora hysocella						1				1
	Pleurobranchia pileus	3	30	44	31	54	5	33	4	9	213
	Schistomysis spiritus	14									14
	Idotea linearis								1		1
	Nephrops norvegicus					1					1
	Unidentified crangon	1								2	3
	Unidentified hermit crab						1				1
2004	Chrysaora hysocella					1					1
	Aurelia aurita					1					1
	Pleurobranchia pileus	1		31	6	3	15	3	45		104
	Schistomysis spiritus	1	5			1					7
	Chaetogammarus marinus					2					2
	Crangon crangon	1									1
	Liocarcinus holstatus			1							1
	Clupea harengus		1								1
	Clupidae sp.		1	1							2
2005	Pleurobranchia pileus	3	1		3	27	139	174	121		468
	Gaidropsarus mediterraneus								1		1
	Solea solea					1					1
2006	Pleurobranchia pileus		10	1	150	79	38	35	1		314
	Schistomysis spiritus	75									75
	Phinoe trispinosa							1			1
	P serratus	1									1
	Idotea linearis	1	2								3
	Chaetogammarus marinus					1					1
	Crangon crangon	4									4
	Galathea intermedia				1						1
	Carcinus maenas	1									1
	Unidentified ensis/solen						6				6

Site 9.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata							1			1
	Pleurobranchia pileus					272	306	221	36	17	852
	Eulalia bilineata						1				1
	Schistomysis spiritus							5			5
	Siriella armata						1	3			4
	Idotea linearis							2	2		4
	Alloteuthis subulata							1			1
	Macropodia rostrata							1			1
	Unidentified clupidae						5	38			43
	Unidentified gobiidae							4			4
	Syngnathus rostellatus							5			5
	Scopthalmus maximus								1		1
	Solea solea							1			1
2003	Pleurobranchia pileus	9	2000	267	196	114		44	9	10	2647
	Schistomysis spiritus	19				19		4			42
	Idotea linearis	3		1						2	6
	Chaetogammarus marinus	3		1							4
	Nephrops norvegicus						1				1
	Unidentified crangon	2				1					3
	Clupea harangus					6		4			10
	Unidentified clupidae		60			73	5	2			140
	Gasterosteus aculeatus			1				1			2
	Unidentified larval fish					1					1
	Unidentified larval flatfish	3									3
2004	Aurelia aurita							1			1
	Pleurobranchia pileus	2		12	76	11	13	105	10		230
	Schistomysis spiritus	125	1	36	2				65		229
	Idotea linearis		2				2		38		42
	Lysianassa ceratina	2									2
	Nephrops norvgicus							1			1
	Athanas nitescens							1			1
	Endeis spinosa							2			2
	Ensis sp.							1			1
	Clupea harengus							39			39
	Sprattus sprattus	1						37			38
	Clupidae sp.			9	3			73			85
	Gasterosteus aculeatus					2		1			3
	Solea solea			1							1

Site 9 cont.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2005	Pleurobranchia pileus	2		12	2	707	611	333	90		1757
	Semibalanus balanoides	1	2								3
	Schistomysis spiritus	20	115	3	32		1				171
	Siriella armata		28								28
	Neomysis integer				1						1
	Idotea linearis			11	3						14
	Chaetogammarus marina								2		2
	Crangon crangon				2						2
	Unidentified ensis								1		1
	Clupea harangus							4			4
	Sprattus sprattus							1	5		6
	Unidentified clupidae		3	4	36		4	1	6		54
	Hyperoplus lanceolatus				1						1
	Aphia minuta				2						2
	Limanda limanda		1		22						23
	Larval sac			1	2				1		4
2006	Aurelia aurita					2					2
	Pleurobranchia pileus		35		175	697		67			974
	Schistomysis spiritus		866	40				3			909
	Siriella armata		7								7
	Idotea linearis	4	7	2		3			2		18
	Chaetogammarus marinus			3	2	1		1			7
	Crangon crangon		2								2
	Unidentified crab		1								1
	Alloteuthis subulata		2								2
	Unidentified ensis/solen							1			1
	Clupea haregus			4							4
	Clupidae sp	1	24	109	14			2			150
	Sprattus sprattus			20				1			21
	Gaidropsarus mediterraneus						1				1
	Hyperoplus lanceolatus							1			1
	Pholis minuta							2			2
	Belone belone						1				1
	Unidentified fish								1		1

Site 10

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Pleurobranchia pileus					2016	133	184	3	1	2337
	Schistomysis spiritus							3			3
	Siriella armata							2			2
	Idotea linearis						1		12	2	15
	Chaetogammarus marinus							1			1
	Alloteuthis subulata							2			2
	Unidentified clupidae						3	78			81
	Unidentified gobiidae							1			1
	Syngnathus rostellatus							1			1
2003	Pleurobranchia pileus	19	100	331	1061	154	2	69	6	32	1774
	Schistomysis spiritus	211				7					218
	Siriella armata		3							3	6
	Idotea linearis								1	4	5
	Chaetogammarus marinus	1									1
	Unidentified crangon	5									5
	Clupea harangus					14	1				15
	Sprattus sprattus							1			1
	Unidentified clupidae	5	410	117	1119	75	44	4			1774
	Sygnathus rostellatus	1									1
	Hyperoplus lanceolatus			1							1
	Unidentified larval fish			1							1
	Unidentified larval flatfish	1									1
2004	Chrysaora hysocella					2					2
	Unidentified jellyfish								5		5
	Pleurobranchia pileus	2	4	53	82	142	54	49	50		436
	Schistomysis spiritus	204	1	18					4		227
	Idotea linearis	1			1		1	8	7		18
	Lysianassa ceratina	2									2
	Iphimedia minuta	1									1
	Chaetogammarus marinus				1	1		1			3
	Crangon crangon	1							2		3
	Nephrops norvegicus							2			2
	Endeis spinosa							3			3
	Clupea harengus	3				19		13	16		51
	Sprattus sprattus			1		42		6	20		69
	Unidentified clupidae		1	7	1	26		33	19		87
	Gasterosteus aculeatus					1					1
	Lipophrys pholis							1	1		2
	Sygnathus rostellatus							1			1
	Hyperoplus lanceolatus						1	22			23
	Scophthalmus maximus							1			1

Site 10 continued.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2005	Chrysaora hyocella						1				1
	Cyanea capillata						2				2
	Pleurobranchia pileus		5	22	10	448	1336	617	488		2926
	Unidentified nematode		1								1
	Semibalanus balanoides		6								6
	Schistomysis spiritus	12	131	11	55						209
	Siriella armata	1	15								16
	Idotea linearis	5	1	9	10		1		14		40
	Chaetogammarus marina		2		1	7			4		14
	Unidentified ensis							1	2		3
	Clupea harangus		6					14			20
	Sprattus sprattus		1			1		12	5		19
	Unidentified clupidae	6	16	3	47	66	28	8	4		178
	Gasterosteus aculeatus					1					1
	Hyperoplus lanceolatus								2		2
	Aphia minuta				1						1
	Limanda limanda		1								1
	Solea solea		1		7						8
	Larval sac								1		1
2006	Chrysaora hysoscella					1					1
	Pleurobranchia pileus	1	46		117	2407	3	241			2815
	Schistomysis spiritus		38								38
	Siriella armata		1	1							2
	Idotea linearis	7	5	6		3			1		22
	Chaetogammarus marinus		8	27							35
	Crangon crangon		1								1
	Alloteuthis subulata			1							1
	Unidentified ensis/solen						10	7			17
	Unidentified clupidae		4	40	19			3	1		67
	Sprattus sprattus		1	1							2
	Gasterosteus aculeatus						1				1
	Syngnathus rostellatus							1			1
	Hyperoplus lanceolatus			1							1
	Belone belone						1				1

Site 11.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata						1				1
	Chrysaora hysocella						7				7
	Pleurobranchia pileus					2198	3575	138	51		5962
	Schistomysis spiritus						1				1
	Idotea linearis							5	3	96	104
	Chaetogammarus marinus					1	3		1	5	10
	Ampithoe gammaroides									3	3
	Hyperia galba						1				1
	Carcinus maenas								1		1
	Unidentified clupidae						15	77	11		103
	Unidentified gobiidae						1				1
	Syngnathus rostellatus							1	1		2
2003	Pleurobranchia pileus	46	300	82	237	114	18	22	19	15	853
	Schistomysis spiritus	823				23				1	847
	Siriella armata	7									7
	Idotea linearis	9			1				6	4	20
	Unidentified idotea	1									1
	Chaetogammarus marinus	37					1				38
	Unidentified crangon	1				1			2	3	7
	Alloteuthis subulata					1					1
	Clupea harangus					126			1		127
	Sprattus sprattus								1		1
	Unidentified clupidae	6	80	1	1936	56	22				2101
	Gaidropsarus mediterraneus				1						1
	Gasterosteus aculeatus						1				1
	Lipophrys polis					1					1
	Hyperoplus lanceolatus				1						1
	Belone belone					1					1
	Unidentified larval flatfish	5									5

Site 11 continued

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2004	Aurelia aurita								1		1
	Pleurobranchia pileus			99	182	384	28	9	38		740
	Schistomysis spiritus	90	4	434				1	3		532
	Siriella armata					1					1
	Idotea linearis		1	28	13		1	6	26		75
	Lysianassa ceratina	2		65							67
	Chaetogammarus marinus				74				2		76
	Crangon crangon			1					16		17
	Carcinus maenas								2		2
	Liocarcinus holstatus								1		1
	Endeis spinosa							1			1
	Ensis sp.								6		6
	Clupea harengus	4	6								10
	Sprattus sprattus		2			8	1		1		12
	Unidentified clupidae		2	17	3	2	7				31
	Sygnathus rostellatus								1		1
	Hyperoplus lanceolatus		2						8		10
	Aphia minuta								4		4
2005	Cyanea capillata						4	1			5
	Pleurobranchia pileus	1	18	4		77	489	352	287		1220
	Unidentified nematode		1								1
	Semibalanus balanoides		12								12
	Nebalia bipes					1					1
	Schistomysis spiritus	5	34	2	32				1		74
	Siriella armata	3	75			1					79
	Idotea linearis	1	6	1	8				2		18
	Crangon crangon		1								1
	Unidentified ensis							1	2		3
	Clupea harangus		2			2					4
	Sprattus sprattus		1						1		2
	Unidentified clupidae	1	4	3	16	22	64	2	1		113
	Atherina presbyter		1								1
	Sygnathus rostellatus		1								1
	Solea solea		2	1	9						12
	Larval sac				1						1
2006	Pleurobranchia pileus		1		23	436		196			658
	Schistomysis spiritus	3		9	1						13
	Idotea linearis	6	8	1				3			18
	Chaetogammarus marinus						1	12			13
	Crangon crangon			1							1
	Carcinus maenas							1			1
	Unidentified ensis						16	9			27
	Unidentified clupidae	2	1	134	21						158
	Sygnathus rostellatus	1						1			2
	Aphia minuta						1				1
	Pomatoschistus minuta						1				1
	Belone belone						1				1

Site 12

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata					1					1
	Pleurobranchia pileus					4567	1586	46	3		6202
	Idotea linearis						1	3	13	17	34
	Chaetogammarus marinus									3	3
	Macropodia rostrata									2	2
	Endeis spinosa									1	1
	Clupea harangus					2					2
	Unidentified clupidae						21	8			29
	Sygnathus rostellatus							1			1
2003	Aurelia aurita									1	1
	Pleurobranchia pileus	8	300	703	199	22	3	12	13	1	1241
	Schistomysis spiritus	674				19			3		969
	Siriella armata								1		1
	Idotea linearis	4							5	5	14
	Unidentified crangon	2							5		7
	Liocarcinus arcuatus								1		1
	Clupea harangus					70	3				73
	Unidentified clupidae	1	74	2	46	37	1				161
	Gaidropsarus mediterraneus						1				1
	Gasterosteus aculeatus						1				1
	Hyperoplus lanceolatus				2	1					3
	Belone belone						2				2
	Unidentified larval fish		4								4
	Unidentified larval flatfish	3							1		4
2004	Chrysaora hysocella					1					1
	Rhizostoma octopus							1			1
	Jellyfish sp.								11		11
	Pleurobranchia pileus		1	150	207	165	16	5	201		745
	Callerina buegeri		1								1
	Schistomysis spiritus	453	18	7	2	1	6		3		491
	Acanthomysis longicornis								5		5
	Idotea linearis	2						1	8		11
	Chaetogammarus marinus				1			1			2
	Crangon crangon	1					11		6		18
	Liocarcinus holstatus								1		1
	Endeis spinosa						1	3			4
	Alloteuthis subulata	1									1
	Clupea harengus	2	1				3				6
	Sprattus sprattus						8				8
	Clupidae sp.	1		5			80		2		88
	Sygnathus rostellatus	2									2
	Aphia minuta					5					5
	Solea solea			1							1

Site 12 continued.

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2005	Cyanea capillata						2				2
	Pleurobranchia pileus			5	614	121	269	451	83		1543
	Schistomysis spiritus	3	1		1						5
	Siriella armata		4								4
	Idotea linearis	1	13		1	4			3		22
	Unidentified ensis							1	1		2
	Alloteuthis subulata					1					1
	Clupea harangus		5		5						10
	Sprattus sprattus	2			3			1			6
	Unidentified clupidae	3	2	4	49	29	51	1			129
	Atherina presbyter				1						1
	Hyperoplus lanceolatus				1						1
	Limanda limanda					1					1
	Larval sac					1					1
2006	Pleurobranchia pileus		6		65	1119		383	1		1574
	Unidentified nematode	1									1
	Schistomysis spiritus	8	31	3							42
	Siriella armata	1									1
	Idotea linearis	2	5	1							8
	Crangon crangon						1				1
	Unidentified ensis/solen						1	3			4
	Unidentified clupidae	2		17	32						51
	Sprattus sprattus			2							2
	Gaidropsaus mediterraneus						2				2
	Hyperoplus lanceolatus	1		1							2
	Belone belone						6				6

Hemsby[9]

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2003	Aurelia aurita			3							3
	Pleurobranchia pileus	452	77	14	15	11	29	24	19	160	801
	Schistomysis spiritus		1								1
	Idotea linearis		1	1			1	1	7		11
	Chaetogammarus marinus								1		1
	Unidentified larval crab									1	1
	Clupea harangus				4						4
	Unidentified clupidae	55	3	140	17						215
	Hyperoplus lanceolatus	8		20	2						30
	Belone belone			1							1
2004	Pleurobranchia pileus		1		137		1				139
	Schistomysis spiritus		3				10				13
	Idotea linearis		1		4		3				8
	Crangon crangon						61				61
	Clupea harengus		8								8
	Sprattus sprattus		1								1
	Sygnathus rostellatus						1				1
	Limanda limanda						1				1
2005	Cyanea capillata						1				1
	Pleurobranchia pileus				37		517				554
	Schistomysis spiritus				7						7
	Siriella armata				4						4
	Idotea linearis				2						2
	Crangon crangon				1						1
	Liocarcinus pusillus				2						2
	Clupea harangus				1						1
	Sprattus sprattus				1						1
	Unidentified clupidae				15		48				63
	Echiichthys vipera				1						1
	Limanda limanda				7						7
2006	Pleurobranchia pileus					19	13				32
	Chaetogammarus marinus						1				1

[9] This site was not surveyed in 2002.

Winterton

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata					1					1
	Pleurobranchia pileus					870	125	12	11	6	1024
	Solen marginatus						12				14
	Unidentified ensis						14				14
	Idotea linearis							1			1
	Chaetogammarus marinus									1	1
2003	Aurelia aurita				1						1
	Pleurobranchia pileus	228	34	65	281	2	24	27	17	7	685
	Schistomysis spiritus			2		5					7
	Siriella armata		1								1
	Idotea linearis		1		1		1		2	9	14
	Chaetogammarus marinus									199	199
	Unidentified larval crab									1	1
	Endeis spinosa									1	1
	Alloteuthis subulata		1								1
	Clupea harangus				2		2				4
	Unidentified clupidae	699	101 3	258	13	90	1				2074
	Syngnathus rostellatus									2	2
	Hyperoplus lanceolatus	19	7		1	1	3				31
	Aphia minuta						1				1
	Belone belone						1				1
2004	Chrysaora hysocella						2				2
	Pleurobranchia pileus		9		61		87				157
	Schistomysis spiritus		4		1		1				6
	Siriella armata						1				1
	Idotea linearis				1		7				8
	Iphimedia minuta		1								1
	Crangon crangon				2						2
	Endeis spinosa						1				1
	Ensis sp.						1				1
	Clupea harengus		2				4				6
	Sprattus sprattus						3				3
	Clupidae sp.				1		8				9
	Gaidropsarus mediterraneus						1				1
	Sygnathus rostellatus						1				1
	Hyperoplus lanceolatus						2				2
2005	Cyanea capillata						7				7
	Pleurobranchia pileus				51		496				547
	Schistomysis spiritus				3						3
	Siriella armata				1						1
	Idotea linearis				1						1
	Chaetogammarus marinus						1				1
	Unidentified clupidae				11		112				123
	Limanda limanda				4						4
	Solea solea				2						2
	Larval sac				2						2
2006	Chrysaora hysoscella					2					2
	Pleurobranchia pileus					159	10				169
	Idotea linearis						1				1
	Unidentified ensis/solen						1				1

Horsey

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata						1				1
	Pleurobranchia pileus					1984	120	71	9		2184
	Idotea linearis						1	1	4	1	7
	Alloteuthis subulata						1				1
	Lipophrys pholis						1				1
	Merlangius merlangus					1					1
2003	Aurelia aurita	1									1
	Pleurobranchia pileus	167	7	44	11						229
	Schistomysis spiritus		4								4
	Idotea linearis				2						2
	Unidentified clupidae	8	5		13						26
	Hyperoplus lanceolatus	18	3		4						25
2004	Pleurobranchia pileus		1		46						47
	Schistomysis spiritus		13								13
	Processa caniculata		2								2
	Endeis spinosa				1						1
	Alloteuthis subulata		1								1
2006	Pleurobranchia pileus						1				1
	Crangon crangon						1				1
	Unidentified ensis/solen						10				10

Waxham[10]

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata							1			1
	Pleurobranchia pileus					624	180	39	3	1	847
	Idotea linearis								1		1
	Unidentified crangon						1	1	1		3
2003	Chrysaora hysocella	2									2
	Aurelia aurita	3									3
	Pleurobranchia pileus	164									164
	Unidentified clupidae	22									22
2004	Pleurobranchia pileus		16		229						245
	Schistomysis spiritus		2								2
	Hyperoplus lanceolatus				1						1
2005	Pleurobranchia pileus						8105				8105

[10] This site was initially located at Sea Palling (2002), but changed to Waxham in all other years to provide a more evenly spaced site arrangement. The site was not surveyed in 2006.

Eccles[11]

Year	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
2002	Cyanea capillata						1	1			2
						134					
	Pleurobranchia pileus					7	761	3	5		2116
	Idotea linearis								1	3	4
	Unidentified clupidae						1				1
2003	Chrysaora hysocella	2									2
	Aurelia aurita	2									2
	Pleurobranchia pileus	87									87
	Unidentified clupidae	10									10
	Hyperoplus lanceolatus	18									18
2004	Pleurobranchia pileus		8		98						106
	Schistomysis spiritus				1						1
	Idotea linearis		3								3
	Unidentified clupidae.				1						1
2005	Cyanea capillata						3				3
	Pleurobranchia pileus						3999				3999

Outer Wold sites – Sampled 2002 only

Site	Species	Survey Number									
		1	2	3	4	5	6	7	8	9	Total
5A	Chrysaora hysocella						1				1
	Pleurobranchia pileus					254	2		1	2	259
	Unidentified clupidae					1					1
	Syngnathus rostellatus								1		1
6A	Cyanea capillata						1				1
	Pleurobranchia pileus					256	31			11	298
	Idotea linearis								1		1
7A	Pleurobranchia pileus					18	4		1	2	25
8A	Pleurobranchia pileus					72	12		39	1	124
	Idotea linearis						2				2

[11] Not sampled in 2006

APPENDIX IX. Frequency of occurrence (%) of all faunal taxa amongst sampling occasions (n=2-9 with all tows at all n=2-8 sites pooled on each occasion) at Scroby from 2002 to 2006 inclusive. Potential differences between taxa and years are highlighted by colour shading according to the following scale: absent (no fill), scarce -<25% of occasions (yellow), infrequent – 26-50% of occasions (gold), frequent – 51-75% of occasions (orange) and widespread– 76-100% of occasions (red).

Group	Common name	Species	Year				
			2002	2003	2004	2005	2006
Jellyfish	Compass Jellyfish	*Chrysaora hysoscella*		22.2	37.5	12.5	12.5
	Lion's Mane Jellyfish	*Cyanea capillata*	60			25	
	Moon Jellyfish	*Aurelia aurita*	60	11.1	37.5		12.5
	a jellyfish	*Rhizostoma octopus*			12.5		
	a jellyfish				25		
Comb jellies	Sea Gooseberry	*Pleurobranchia pileus*	100	100	100	100	87.5
Nemertea (worms)		Tubulanidae *spp.*[*]			25		
		'nematode' worm				25	25
Annelids (true worms)	a paddleworm	*Eulalia bilineata*	20				
Crustaceans	a barnacle	*Semibalanus balanoides*				25	
	a Leptostracan shrimp	*Nebalia bipes*			12.5		
	a cumacean	*Iphinoe trispinosa*					12.5
	Ghost Shrimp	*Schistomysis spiritus*	40	33.3	100	62.5	62.5
	a mysid shrimp	*Siriella armata*	40	66.7	25	62.5	37.5
	a mysid shrimp	*Acanthomysis longicornis*		33.3	12.5		
	a mysid shrimp	*Neomysis integer*				12.5	
	a sea slater	*Idotea linearis*	80	77.8	87.5	87.5	87.5
	an amphipod	*Lyianassa ceratina*			37.5		
	an amphipod	*Iphimedia minuta*			12.5		
	an amphipod	*Chaetogammarus marinus*	100	55.6	62.5	62.5	
	an amphipod	*Amphitoe gammeroides*	20				
	an amphipod	*Hyperia galba*	20				
	Common Prawn	*Palaemon serratus*					12.5
	a shrimp	*Athanas nitescens*			12.5		
	a shrimp	*Dichelopandalus bonnieri*			12.5		

	Brown Shrimp	*Crangon crangon*			50	25	62.5
	a shrimp family	Crangonidae sp.		44.4			
	Norway lobster	*Nephrops norvegicus*		33.3	37.5		
	Larval crab			22.2		25	25
	a hermit crab			11.1			
	a squat lobster	*Galathea intermedia*					12.5
	Long-legged Spider Crab	*Macropodia rostrata*	60				
	Masked crab	*Corystes cassivelaunus*		11.1			
	a swimming crab	*Liocarcinus arcuatus*			25		
	a swimming crab	*L. pusillus*			12.5		
	a swimming crab	*L. holsatus*		11.1	25		
	Shore Crab	*Carcinus maenas*	20				25
	Unidentified crab						12.5
Sea spiders	a sea spider	*Endeis spinosa*	40		25		
Molluscs	a razor shell	*Ensis/Solen* sp.			25	37.5	50
Cephalopods	a squid	*Alloteuthis subulata*	40	11.1		12.5	25
Fish	Herring family	Clupeid sp.	60	77.8	100	100	87.5
	Herring	*Clupea harengus*		33.3	62.5	50	12.5
	Sprat	*Sprattus sprattus*		22.2	87.5	75	37.5
	Cod	*Gadus morhua*					12.5
	Shore Rockling	*Gaidropsarus mediterraneus*		22.2	37.5	12.5	12.5
	Garfish	*Belone belone*	20	33.3	12.5		25
	Three-spined Stickleback	*Gasterosteus aculeatus*		22.2		12.5	12.5
	Sand Smelt	*Atherina presbyter*			12.5	25	
	Lesser Pipefish	*Sygnathus rostellatus*	40	11.1	50	12.5	25
	Lumpsucker	*Cyclopterus lumpus*		11.1			
	Shanny	*Lipophrys pholis*		11.1	12.5		
	Greater Sand Eel	*Hyperoplus lanceolatus*	20	55.6	62.5	37.5	37.5
	Goby family	Gobiid sp.	40				
	Transparent Goby	*Aphia minuta*			25	12.5	12.5
	Sand Goby	*Pomatoschistus minutus*					12.5

	larval flatfish			11.1	12.5		
	Scaldfish	*Arnoglossus laterna*			12.5		
	Turbot	*Scophthalmus maximus*	20		12.5		
	Dab	*Limanda limanda*				37.5	
	Plaice	*Pleuronectes platessa*				12.5	
	Sole	*Solea solea*	20		12.5	50	

Notes: * Some identified as *Callinera buergeri* on one occasion.

APPENDIX X. Frequency of occurrence (%) of all faunal taxa amongst sampling occasions (n=2-9 with all tows at all 2-8 sites pooled on each occasion) in the Would from 2002 to 2006 inclusive. Potential differences between taxa and years are highlighted by colour shading according to the following scale: absent (no fill), scarce -<25% of occasions (yellow), infrequent – 26-50% of occasions (gold), frequent – 51-75% of occasions (orange) and widespread– 76-100% of occasions (red).

Group	Common name	Species	Year				
			2002	2003	2004	2005	2006
Jellyfish	Compass Jellyfish	*Chrysaora hysoscella*		11	33		50
	Lion's Mane Jellyfish	*Cyanea capillata*	40	11		50	
	Moon Jellyfish	*Aurelia aurita*		33			
Comb jellies	Sea Gooseberry	*Pleurobranchia pileus*	100	100	100	100	100
Crustaceans	a barnacle	*Semibalanus balanoides*			33		
	Ghost Shrimp	*Schistomysis spiritus*		33	100	50	
	a mysid shrimp	*Siriella armata*		11	33	50	
	a sea slater	*Idotea linearis*	80	78	100	50	50
	an amphipod	*Iphimedia minuta*			33		
	an amphipod	*Chaetogammarus marinus*	20	22		50	50
	a prawn	*Processa canaliculata*			33		
	Brown Shrimp	*Crangon crangon*			67	50	50
		Crangonidae sp.	20				
	larval crab			11			
	a swimming crab	*L. pusillus*				50	
Sea spiders	a sea spider	*Endeis spinosa*	20	11	67		
Molluscs	a razor shell	*Ensis/Solen* sp.	20				50
Cephalopods	a squid	*Allotheuthis subulata*	20	11	33		
Fish	Herring family	Clupeid sp.	40	67	67	100	
	Herring	*Clupea harengus*		22	67	50	
	Sprat	*Sprattus sprattus*			67	50	
	Whiting	*Merlangius merlangus*	20				
	Garfish	*Belone belone*		22			

	Lesser Pipefish	*Sygnathus rostellatus*	20	11			
	Lesser Weever	*Echiichthys vipera*				50	
	Shanny	*Lipophrys pholis*	20				
	Greater Sand Eel	*Hyperoplus lanceolatus*		67	67		
	Transparent Goby	*Aphia minuta*		11			
	Dab	*Limanda limanda*			33	50	
	Sole	*Solea solea*				50	

Appendix XI. Summary statistics of radio tracking effort on individual Little Terns from 2003 to 2006 inclusive.

Year	Bird ring number	Tag ID	Tag status	Status of breeding attempt	Total track time (mins)	No. sessions	No. other track days	Total fixes	Fixes at sea	Total fishing fixes	No. visual fixes	No. 'near visual' fixes
2003	NW09527	10.1	live 4 days	active	255	2[1]	-	47	35	7	0	0
	NW09528	0.4	failed	failed								
	NV91429	1.7	failed	active?								
	NW09530	11.7	live 2 days	active	333	2	-	64	55	16	3	0
	NV51914	3.8 (grey)	live 11days	active	121	2	-	42	35	9	1	0
	BV87138	0.9	live 11 days	active	339	2	-	106	77	7	3	0
	NW09581	13.0	live 3 days	active	136	1	-	16	7	0	1	7
	NW09880	2.4	failed									
	NW09881	8.1	failed + shed									
2004	NW09890	7.1 (mid-grey)	live 24 days	active	204	1	1	24[2]	0	0	16[2]	0
				failed	35	1	2	16	6	8	0	0
	NV91042	5.5	live 5 days	failed	13	1	1	5	5	1	0	0
	NW09892	13.9	live 10 days	failed	132	3	1	39	39	1	0	2
	NV91076	9.4	live 6 days	active	217	3	2	76	188	17	1	2
	NW09893	7.0	not contacted									
	NW09895	3.0	live 10 days	active	21	1	0	5	6	6	1	0
				failed	36	2	0	14	20	0	1	0
	NW09896	12.0	live 16 days	failed	58	1	0	42	36	23	0	0
	NW09897	9.0 (blue-grey)	live 6 days	active (later predated)	257	3	0	105	54	10	8	5
	NV82475	8.2	failed + shed	predated by fox								
	NW09899	10.2	live 12 days	failed predated by fox	56	1	0	7	6	0	0	0
	NV80731	0.7	not contacted	predated by fox								
	NW09900	6.4	not contacted									
	NV95791	4.7	not contacted									
	NW09927	11.0	not contacted									
2005	NV95748	0.3	live 9 days	Active	368	3	1	74	48	2	12	22
	NW09929	2.6	live 7 days	active	155	2	2	73	36	2	1	0
	NW09930	4.7	live 28 days	failed predated by fox	282	2	0	126	104	0	0	0
				active re-nest	134	1	1	24	8	0	0	13

	NW09931	7.4	live 24 days	failed	26	2	1	6	3	0	0	3
	NV82490	10.0 (grey)	live 11 days	active	84	2	0	28	6	2	0	0
				failed	262	2	2	101	58	12	0	9
	NW09932	1.2	live 9 days	active	131	2	1	89	5	16	20	2
	NW09933	3.8	live 20 days	failed	149	2	3	92	44	20	0	0
	NW09934	6.4	live 23 days + shed	failed	253	5	2	127	77	21	11	0
	NW09935	8.8	live 9 days	failed	162	2	0	61	34	1	0	0
	NV95611	12.8	live 4 days + shed?	active	206	6	0	159	127	51	5	1
	NW09977	1.9	live 14 days	active	125	4	1	38	25	4	0	0
	NW09976	3.1	live 8 days	active	62	1	1	37	32	11	0	1
	NW09978	5.6	live 4 days + shed?	active	309	6	0	153	119	40	0	1
	NW09979	8.1	live 4 days + shed	active	234	4	1	150	113	24	4	2
	NW09980	13.9	live 2 days + shed	active	15	1	2	8	0	0	0	0
2006	NW09981	0	live 18 days	active	418	5	1	147	105	37	45	2
	NV51860	11.9	not contacted	failed								
	NW09597	6.4	not contacted	failed								
	NW09982	8.6	live 1 day + shed	active	182	1	0	131	126	16	4	6
	NV95962	3.2	not contacted	failed								
	NV95983	1.1	live 20 days	active	134	4	3	96	70	21	2	3
	NV95984	4.2	live 9 days	active	72	6	1	37	12	0	0	0
	NV95985	6.8	live 23 days + shed	active	418	8	1	147	106	37	44	2
	NV95986	12.9	live 9 days	active	131	3	0	50	19	6	0	1
	BV87282	9.1	live 9 days	active	199	2	0	65		13	5	2
	NW19285	1.8	live 9 days	active?	957	4	0	399	43	54	30	10
	NV30311	13.5	not contacted									
	NW19286	7.6	live 12 days	active?	234	5	0	175	234	15	0	4

Notes: [1] same day

[2]but all fixes are from beach

Birds contacted at both North Denes and Winterton in the same season were 7.1, 5.5, 13.9, 3.0 and 12.0 in 2004 and 3.8, 6.4, 8.8 in 2005.

Appendix XII. Individual variation in foraging parameters as derived from radio telemetry of individual Little Terns from 2003 to 2006 inclusive. Mean (± 1SE) data from different tracking sessions are shown.

Year	Bird ring number	Tag ID	Sex	Status	Feeding bouts		Distance travelled (m)	Flying speed (km hr^{-1})	Distance from shore		
					Bouts hr^{-1}	Duration (min)			Min. (m)	Max. (m)	Mean (m)
2003	NW09527	10.1	F?	3 (day old) chicks	2.35	15.20 (*6.04*)	1508 (*347*)	7.34 (*1.43*)	188 (*46*)	538 (*154*)	349 (*81*)
	NW09530	11.7	M	2 eggs	1.80	19.33 (*5.33*)	2542 (951)	10.05 (*2.89*)	266 (*97*)	821 (*224*)	552 (*146*)
	NV51914	3.8Grey	M	2 eggs	5.45	6.00 (*2.02*)	1441 (*471*)	18.61 (*3.55*)	117 (*31*)	326 (*129*)	208 (*68*)
	BV87138	0.9	F	3 eggs → chicks	3.72	7.43 (*1.76*)	2182 (*480*)	21.84 (*2.80*)	171 (*65*)	492 (*144*)	331 (*99*)
	NW09581	13	M	2 eggs	1.32	31.00 (*16.74*)	3177 (*1365*)	9.27 (*2.89*)	189 (*81*)	1497 (*529*)	923 (*315*)
2004	NW09890	7.1	M	2 eggs → failed	1.25	30.00 *(10.08)*	2160 *(29)*	12.72 *(3.91)*	299 *(145)*	795 *(333)*	482 *(241)*
	NV91042	5.5	F	2 eggs	1.14	17.5 *(4.5)*	1404 *(219)*	9.67 *(3.13)*	5 *(0)*	1005 *(166)*	385 *(25)*
	NW09891[12]	13.9	M	failed	2.77	33.3 *(22.92)*	4602 *(3473)*	9.09 *(3.56)*	68 *(15)*	975 *(484)*	496 *(239)*
	NW09892	9.4	F	chick →failed	4.02	8.15 *(1.61)*	2171 *(443)*	11.73 *(1.67)*	118 *(47)*	430 *(80)*	234 *(51)*
	NV91076	3.0	M	2 eggs →failed	8.00	15.00 *(4.76)*	10692 *(786)*	18.03 *(3.99)*	49 *(12)*	527 *(143)*	282 *(77)*
	NW09896	12.0	F	failed	0.77	66.50 *(24.75)*	11763 *(5082)*	16.47 *(2.1)*	212 *(105)*	2421 *(600)*	1368 *(699)*
	NW09897	9.0	F	eggs	3.88	10.22 *(2.85)*	2278 *(642)*	13.14 *(2.95)*	80 *(36)*	367 *(97)*	175 *(56)*
	NW09899	10.2	F	failed	1.09	55.00	9764	11.64	12	1131	490

[12] Recovered dead at the same weight twelve days later at North Denes on 8th July, after an intense storm and high winds in the preceeding 24 hours (Smart *et al*. 2005).

2005	NV95748	0.3	F	2 eggs	0.74	39.38 *(10.64)*	2747 *(896)*	13.86 *(4.36)*	4	1131 *(430)*	592 (242)
	NW09929	2.6	M	2 eggs	1.16	14.75 *(2.14)*	6398.5 *(2648)*	17.44 *(133)*	240 *(133)*	1361 *(652)*	646 (206)
	NV95791	4.7	F	eggs→failed re-nest	0.98	25.86 *(15.11)*	12065 *(8470)*	27.33 *(3.62)*	179 *(125)*	2166 *(877)*	1073 *(412)*
	NW09931	7.4	F	2 eggs →failed	0.52	6	1015	2.55	3378	3945	3583
	NV82490	10	M	1 egg	0.77	27 *(10)*	12762 *(10262)*	31 *(11.5)*	29 *(29)*	668 *(665)*	339 *(339)*
	NW09932	1.2	F	eggs →failed	0.92	30 *(10)*	23322 *(12522)*	37.75 *(12.54)*	0 *(0)*	1755 *(608)*	244 *(6)*
	NW09933	3.8	M	2 eggs →failed	0.37	39	43904	68.83	118	4541	2594
	NW09934	6.4	M	2 eggs →failed	1.04	18.25 *(10.44)*	5166 *(2726)*	30.04 *(7.8)*	7.25 *(6.48)*	2759 *(1004)*	734 *(311)*
	NW09935	8.8	M	2 eggs →failed	0.75	46 *(26.5)*	11058	47.18	155	3742	2038
	NV95611	12.8	F	eggs	1.54	13.17 *(2.48)*	7976 *(1308)*	34.44 *(4.96)*	62 *(18)*	957 *(78)*	428 *(35)*
	NW09977	1.9	M	eggs	1.5	13 *(11)*	5448 *(1458)*	48 *(1.6)*	47 *(39.5)*	1347 *(752)*	718 *(290)*
	NW09976	3.1	F	eggs	1.94	15.5 *(4.5)*	5609 *(2916)*	27.32 *(15.24)*	77.5 *(72.5)*	1263 *(367)*	516 *(76)*
	NW09978	5.6	M	eggs	1.86	13.18 *(2.8)*	5639 *(1310)*	34 *(2.8)*	339 *(240)*	1491 *(382)*	746 *(256)*
	NW09979	8.1	M	eggs	1.79	14 *(7)*	8326 *(4001)*	38 *(8)*	100 *(41)*	1357 *(523)*	732 *(289)*

2006	NW09981	0	F	2 eggs →chicks	1.20	13 *(6.7)*	6888 *(2300)*	32 *(6.16)*	138 *(5)*	951 *(30)*	477 *(160)*
	NW09982	8.6	F	3 eggs →chicks	0.98	31 *(16.60)*	2476 *(1421)*	46.42 *(3.20)*	137 *(38)*	3610 *(662)*	2037 *(381)*
	NV95983	1.1	M	eggs	1.34	28 *(10.41)*	1133 *(736)*	24.33 *(14.11)*	10 *(4)*	1610 *(876)*	872 *(426)*
	NV95984	4.2	M	eggs →chicks	2.50	7.0 *(4.7)*	2087 *(794)*	31.08 *(9.88)*	250 *(27)*	483 *(244)*	320 *(185)*
	NV95985	6.9	F	eggs	0.80	20.88 *(9.94)*	7794 *(3406)*	28.57 *(8.0)*	40 *(23)*	1529 *(811)*	520 *(311)*
	NW19285	1.8	M	eggs	0.81	19.50 *(5.11)*	9801 *(2501)*	24.80 *(3.314)*	202 *(47)*	1376 *(304)*	764 *(170)*
	NW19286	7.6	F	eggs	1.19	19.15 *(6.30)*	5121 *(1768)*	29.69 *(6.03)*	101 *(23)*	954 *(300)*	468 *(152)*
	NV95986	12.9	M	eggs	1.30	8.16 *(3.20)*	2010 *(604)*	19.60 *(6.7)*	403 *(388)*	510 *(400)*	450 *(398)*

APPENDIX XIII. Foraging range parameters of radio-tagged Little Terns from 2003-2006 inclusive. Both uncorrected and corrected (see text in section 4.3.5 of the main report and Appendix V above) 100% MCPs and 99% kernel contours are shown.

				100% MCPs						99% kernel contours	
Year	**Bird tag reference**	**Sex**	**No. of foraging fixes**	**Uncorrected foraging range (ha)**	**Corrected foraging range (ha)**	**Range span (m)**	**Locations from focus co-ordinates (m)**			**Uncorrected foraging range (ha)**	**Corrected foraging range (ha)**
							Mean	**Median**	**Max**		
2003	11.7	M	55	549.82	734.86	3993	715	492	2041	275.471	332.42
	3.8	M	35	175.92	301.11	2125	391	234	1257	56.179	83.28
	10.1	F	35	437.17	748.28	4564	815	413	3245	210.255	311.67
	0.9	F	77	462.45	540.9	3008	691	609	1911	212.209	231.82
2004	13.9	M	30	175.76	302.09	2333	741	728	1469	48.757	89.92
	9.4	F	47	419.61	422.88	3880	785	482	2409	158.363	203.4
	12	F	42	1332.71	1890.51	5497	3006	3552	4923	819.45	1232.07
	blue-grey	F	53	436.56	593.76	2933	622	374	1524	124.298	152.08
2005	0.3	F	48	2063.60	2743.45	7889	3546	4014	4623	551.19	701.63
	4.7	F	112	1550.41	1612.63	6501	3029	3462	5247	1398.343	1478.34
	10	M	64	1075.47	1273.8	5325	2055	2078	3777	440.092	543.67
	1.2	F	61	938.98	1198.64	5423	1512	1401	3374	447.3044	453.71
	3.8	M	44	1480.44	2038.93	5667	3095	3446	5194	795.142	1165.81
	6.4	M	77	5423.6	6070.72	14423	5115	2694	13003	3051.546	3526.26
	8.8	M	34	2385.15	3799.71	17670	3870	3416	10942	1140.958	1942.16
	2.6	M	36	1014.91	1707.09	4696	1775	1695	4012	252.811	369.12
	12.8	F	127	344.38	359.25	2804	587	505	1648	123.987	123.99
	3.1	F	32	191.17	346.48	2217	995	937	1966	74.975	116.83
	5.6	M	121	941.5	989.09	6737	1720	1443	5568	445.7219	445.72
	8.1	M	113	1601.87	1701.96	6177	1644	1579	3700	601.7025	601.7
2006	0	F	105	2200.39	2370.78	7700	2225	1944	5025	778.9038	806.7
	8.6	F	70	1413.55	1476.21	5139	2659	2841	4694	1206.452	1206.45
	1.1	M	126	1037.96	1254.88	6013	2326	1409	5229	791.084	884.76
	6.8	F	106	1840.05	1978.74	5628	2180	2284	5124	651.2835	673.79
	9.1	M	43	428.38	600.48	3221	870	641	2555	179.3357	239.67
	1.8	M	328	3311.34	3312.23	8782	1690	2093	5082	1749.058	1749.06
	7.6	F	104	1392.03	1502.78	7744	1690	1182	4499	996.7115	1033.51