ZSL Conservation Programmes

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Thames Marine Mammal Sightings Survey

July 2004 – June 2005

Renata Kowalik, Joe Pecorelli, Sophie Oliver and Alison Shaw

Marine and Freshwater Conservation Programmes

Zoological Society of London

Regent's Park

London NW1 4RY

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1. Introduction

1.1. Background

The Tidal Thames Habitat and Species Audit, (Thames Estuary Partnership (TEP), March 2004) highlighted a gap in current knowledge about the populations of marine mammals within the Thames Estuary. The harbour porpoise *Phocoena phocoena*, bottlenose dolphin *Tursiops truncates*, and harbour seal *Phoca vitulina* were reported as being frequent visitors to the tidal Thames, with sightings of individual animals from various locations along the river. However, little specific information exists on the location or frequency of the sightings to confirm any pattern or trend in species distribution and/or habitat use in the river. It was proposed that the Zoological Society of London (ZSL) establish and supervise a database of all marine mammal sightings in the River Thames and estuary. It was also expected that the information received would increase the knowledge of marine mammal movements in the River Thames and estuary, population distribution and environmental factors which affect their behaviour. In addition, this information could be fed into Species Action Plans (SAPs) for the dolphins and the local Biodiversity/Habitat Action Plans (BAPs and HAPs) and further research programmes.

Populations of bottlenose dolphins and harbour porpoises are known to have declined around English coastal waters (Hammond et al 2003). At present it is not possible to evaluate the extent of population changes for dolphins based on current data and knowledge. However, four main human activities are currently recognised as likely to be detrimental to dolphins, 1) ecosystem changes resulting from the widespread over-exploitation of marine biological resources in European waters, 2) interactions with fisheries (by-catches of various fisheries), 3) boat activities (merchant shipping, seismic, military and recreational) in coastal waters pose threats to dolphins by direct physical damage (collisions, and propeller damage) and by the sounds introduced into the environment and 4) contaminant inputs (impacting reproductive potential or causing immunosuppression in marine mammals) (Dti, 2002).

Increased knowledge of the population distribution would help address these conservation issues by providing data that could be linked to monitoring other components of the ecosystem, to identify important habitats and explore why they are important and improve our ability to predict temporal distributions of marine mammals at sea.

1.2. Conservation needs

Marine mammals are included in a wide range of conservation legislation. All three species are listed on Annex IV (Animal and Plant Species of Community Interest in Need of Strict Protection) of the European Commission's Habitats Directive. Under Annex IV, the keeping, sale or exchange of such species is banned as well as deliberate capture, killing or disturbance. The harbour porpoise, bottlenose dolphin, grey seal and harbour seal are also listed in Annex II of the Habitats Directive. Member countries of the EU are required to consider the establishment of Special Areas of Conservation (SACs) for Annex II species. Candidate SACs have been established for the bottlenose dolphin in the Moray Firth and in Cardigan Bay. No candidate SACs have yet been established for the harbour porpoise. A number of terrestrial candidate SACs have been established for grey and harbour seals around the coast of the UK; there are currently no marine candidate SACs for seals.

Under the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) provision is made for protection of specific areas, monitoring, research, information exchange, pollution control and heightening public awareness. Measures cover the monitoring of fisheries interactions and disturbance, resolutions for the reduction of by-catches in fishing operations, and recommendations for the establishment of specific protected areas for cetaceans. In UK waters, all species of cetacean are protected under the Wildlife and Countryside Act 1981 and the Wildlife (Northern Ireland) Order 1985. Guidelines to minimise the effects of acoustic disturbance from seismic surveys, agreed with the oil and gas industry, were published by the then Department of the Environment in 1995 and revised in 1998. In 1999, the then Department of the Environment, Transport and the Regions produced two sets of guidelines aimed at minimising disturbance to cetaceans.

2. Methods

2.1. Survey area

The survey area extended along the river Thames from the tidal limit at Teddington (TQ165717) to the Shoeburyness (TQ931839) - Sheerness (TQ909758) line in the outer estuary (see Appendix 2 for map of survey area).

2.2. Survey species

The three groups of marine mammals included on the sightings form were porpoise, dolphin and seal. Sightings could then be further classified into five species: harbour porpoise *Phocoena phocoena*; bottlenose dolphin *Tursiops truncates*; white-beaked dolphin *Lagenorhynchus albirostris*; common seal *Phoca vitulina* and grey seal *Halichoerus grypus*. These species were selected as the most likely to be spotted and identified in the river Thames and estuary following consultation with the Whale and Dolphin Conservation Society and Sea Life Surveys. However, observers were expected to include any unusual or rare sightings of marine mammal species.

2.3. Data collection

It was important to get wide exposure of the scheme to the general public, which was achieved through websites, posters, leaflet dissemination, club magazines and the media . In order to get good coverage of the Thames Estuary, it was necessary to harness the support of regular river users such as the pilots for the Port of London Authority, Royal Yachting Association/sailing clubs and the river police.

Marine mammal data were collected using 'ZSL marine mammal sightings forms' (see Appendix 1). Sightings were recorded predominantly by non-expert sources using a formulaic report card in leaflet form, or from the ZSL website that could be emailed or faxed. In addition, a number of sightings were reported by email or phone with as much detail as possible. The report card used tick boxes where possible to facilitate ease of completion and provide standardised information that could be interpreted. Leaflets provided identification guides and descriptors that would assist recognition and identification of seal and dolphin species.

It was predicted that there would be multiple sightings of the same animal or group of animals, and these were noted during data entry as replicate sightings.

3. Results

This was the first year of results for ZSL's Thames Marine Mammal Sighting Survey. In total ZSL received 192 sightings of 496 animals since the start of the scheme in July 2004.

However, a number of these records were not included in this report as the sightings either fell outside the survey area or were made prior to the start of the survey. For the survey period July 2004 to June 2005 a total of 103 sightings occurred within the survey area, totalling 197 animals (Appendix 2). Bottlenose dolphin make up 9%, harbour porpoise 31%, common seal 23%, grey seal 15% and seal (unknown species) 21% of the sightings (Table 1). Species identification, in the majority of sightings, was estimated to be >75% certainty with the exception of seals (unknown species) that have been separately grouped for this analysis. An estimate of replicate sightings (see methods) identified (Table 1).

Table 1. Marine mammal sightings on the river Thames and estuary between July 2004 and June 2005. *Sightings* = the total number of reported observations even if they were the same observation but recorded by different people, *Animals* = the total number of animals reported from each sighting and *Estimated replicate sightings* = estimated number of sightings were replicated based on location, date and number of animals recorded.

Species	Sightings	Animals	Estimated repilicate sightings
Dolphin	8	18	3
Harbour porpoise	19	62	8
Common seal	31	46	0
Grey Seal	19	30	2
Seal (unknown)	26	41	0
Total	103	197	13

3.1. Dolphin distribution

There were eight sightings of bottlenose dolphin (Appendix 3), which totalled 18 individuals, including 13 adults, two juveniles, two calves and one of unknown age (Figure 1). Dolphins have been spotted from sailing vessels in Mid-Sea Reach, and observed swimming mid-channel in a pair and a group of four, two and four miles south-west of South End respectively. The maximum pod size reported was four animals, and two juveniles were sighted from vessels in September 2004 in the outer estuary (not included in Figure 1).

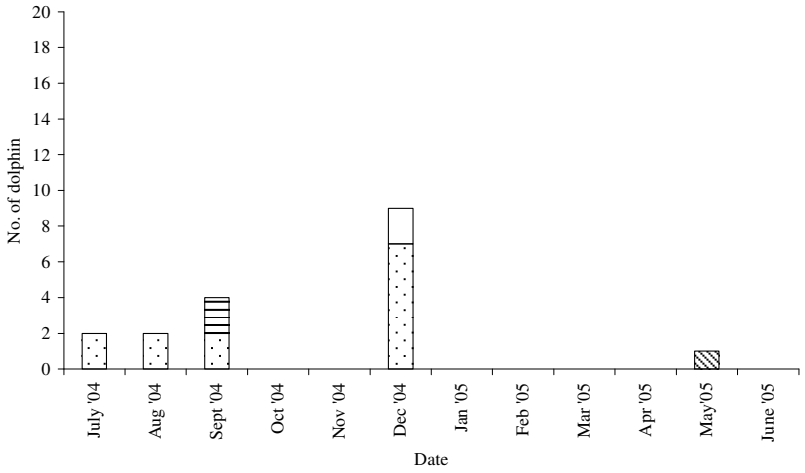

Figure 1. Number of dolphin sightings recorded between July 2004 and June 2005. The animals observed have been separated into estimated age groups: calves ☐, juveniles ▤, adults ⁙ and unknown age. ▨.

3.2. Harbour porpoise distribution

There were 19 sightings of harbour porpoises (Appendix 4), which totalled 62 individuals including 35 adults, seven juveniles, two calves and 18 of unknown age (Figure 2). The majority of harbour porpoises sightings were observed off Lower Hope Point or Sea Reach near Blythe Sands but a small group of three individuals were recorded in December 2004 near Vauxhall Bridge. Half the sightings were observed from the shore and the other half from vessels. There were seven juveniles spotted between December 2004 to May 2005 and single individual calves spotted during August 2004, December 2004 and June 2005.

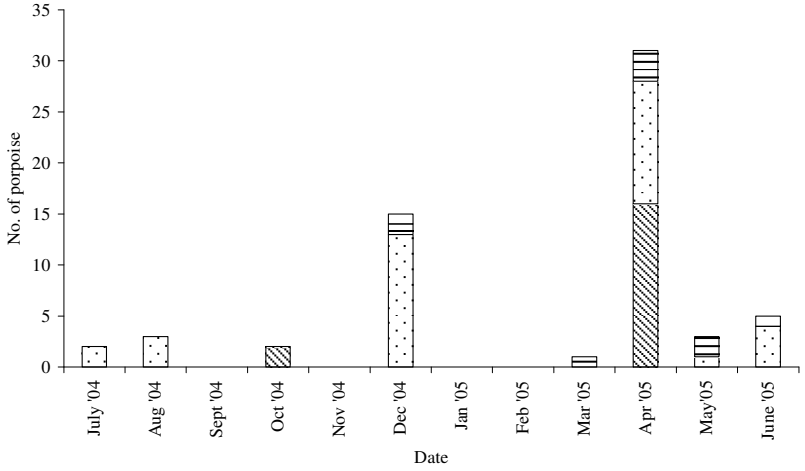

Figure 2. Number of harbour porpoise sightings recorded between July 2004 and June 2005. The animals observed have been separated into estimated age groups: calves ☐, juveniles ▤, adults ⬚ and unknown age. ▨.

3.3. Common seal distribution

There were 41 sightings of common seals (Appendix 5), which totalled 46 individuals including 29 adults, 13 juveniles and 3 pups (Figure 3). Common seals were reported by commercial vessels on the River Roach and individuals have been seen regularly swimming around the mouth of Cliffe Creek and Blyth Sands. A common seal was also seen regularly around Canary Warf, in Millwall Docks and West India Docks by the London Arena. In addition, one individual was spotted at the Thames Barrier. Historic sightings have shown that common seals do venture up the river as far as Richmond with individuals hauling out and resting on the riverbanks at low tide. Sightings of juveniles occurred between May and October.

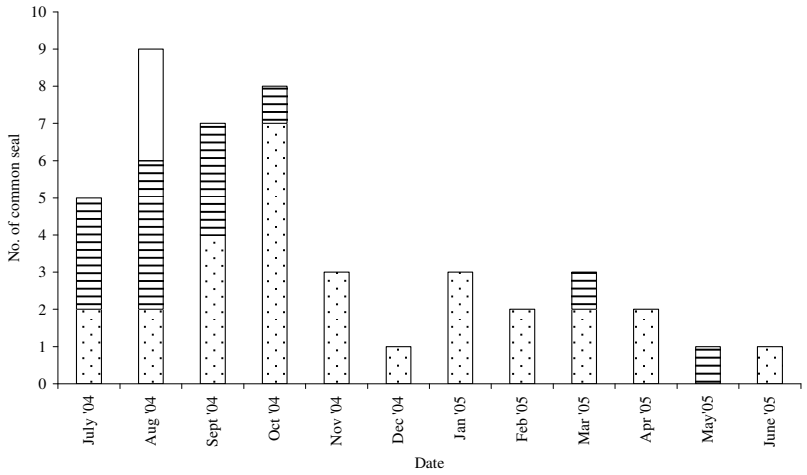

Figure 3. Number of common seal sightings recorded between July 2004 and June 2005. The animals observed have been separated into estimated age groups: pups ☐, juveniles ▤, adults ⬚ and unknown age. ▨.

3.4. Grey seal distribution

There were 19 sightings of grey seal (Appendix 6), which totalled 30 individuals including 25 adults, four juveniles and one of unknown age (Figure 4). Grey seals were largely observed at low tide and resting on exposed sand banks. There appeared to be three main areas where the seals congregated: Ridge Bank near the Princes Channel, these are observed by sailors and pilots; Ray Gut just off Southend where the seals are observed from land and sea; and River Swale near Shell Ness, Kent side of the estuary. Individuals have also been recorded resting on the Blyth Sands, near Cliffe Fort. However, it is thought that this may be a misidentified common seal which can often be seen in the area.

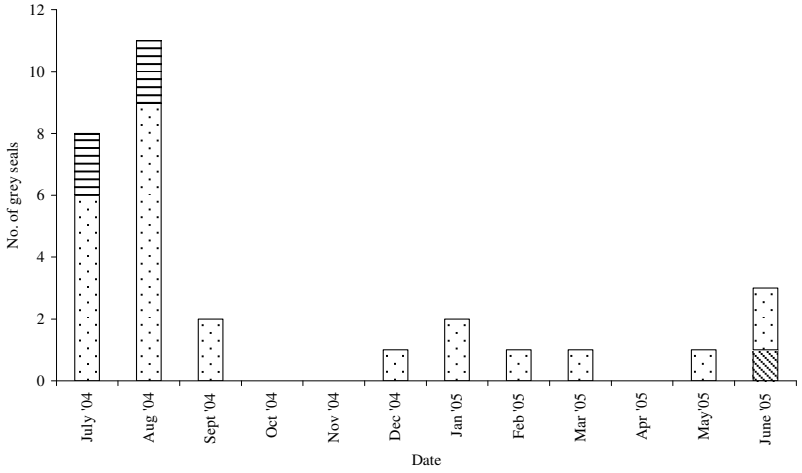

Figure 4. Number of grey seal sightings recorded between July 2004 and June 2005. The animals observed have been separated into estimated age groups: pups ☐, juveniles ▤, adults ⁙ and unknown age. ▨.

3.5. Seal (unknown species) distribution

There were 26 sightings of seal (unknown species) (Appendix 7), which totalled 41 individuals including 23 adults, five juveniles and 15 of unknown age (Figure 5).

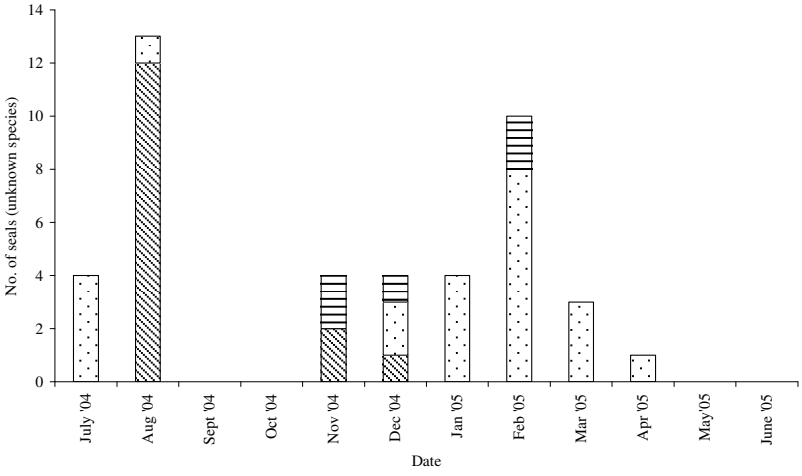

Figure 5. Number of seal (unknown species) sightings recorded between July 2004 and June 2005. The animals observed have been separated into estimated age groups: pups ☐, juveniles ▤, adults ⁙ and unknown age. ▨.

4. Discussion

This is one of the first surveys of its kind on the River Thames and the results, show the presence of at least four of the five species involved in the survey (bottlenose dolphin (*Tursiops truncates*), white-beaked dolphin (*Lagenorhynchus albirostris*), harbour porpoise (*Phocoena phocoena*), common seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*)). White-beaked dolphin were not recorded during this year's survey, and although not shown in this area by recent surveys (Reid *et al*. 2003) have been recorded as strandings in the past (Muir 2001). Of the eight dolphin sightings, four are listed as species unknown, three as bottlenose and one is listed as either a bottlenose or white-beaked. These data show that bottlenose dolphin venture into the mouth of the estuary, near Southend, during spring and summer. However, they are the least represented animals of our four recorded species.

The harbour porpoise is the smallest and the most numerous of cetaceans found in north-western European continental shelf waters (Reid *et al*. 2003). Our data show that harbour porpoise venture further up the estuary than the other cetaceans recorded during the survey and the pod spotted at Vauxhall Bridge during December 2004 indicated that unlike dolphin they remain in and around the estuary all year round. Typically, they can occur singly or in small groups of two to five individuals (Cawardine *et al*. 1998). However, our data included several sightings of 12 and 15 porpoise near Canvey island and Southend. These large pods were recorded in April and May suggesting the possibility that they congregate to breed in the outer estuary.

The two species of seal in the survey display similar patterns of behaviour, they use the exposed sand banks of the outer estuary to haul out and rest whilst solitary animals have been recorded using the entire tidal stretch of the river. The majority of seals (85%) recorded during this survey were solitary animals. Common seals, in groups of up to seven individuals, were recoded on Blyth Sands and grey seals were sighted in groups of up to five individuals near Ray Gut. Seals are naturally gregarious animals so it is likely that the solitary animals recorded further up the river were feeding and will return to groups on the sand banks. Common seals will travel up to 50 km from their "haul out" and stay away from their haul out sites for up to three days (Marine Mammal Society fact sheet 2002). Grey seals around the UK congregate in autumn for breeding but this survey received no

records of grey seal groups in the autumn months, which may indicate that breeding does not occur within our survey area. However, group sightings for common seal were recorded in August and September, which is the time when this species breeds.

4.1. Use of the survey data

The information generated builds upon the ecological picture of the River Thames and estuary by increasing the knowledge of marine mammal movements, population distribution and potential environmental factors that may have an effect on their behaviour. By involving the general public, these surveys increase levels of public awareness of riverine biodiversity and in turn levels of empathy for their local environment. The data will help inform decisions for the effective management of the natural resources of the river and estuary and will support the species Biodiversity Action Plans and Habitat Action Plans. The results will also provide valuable information for assessing the potential environmental impacts of new developments or activities within the estuary for example, under the Water Framework Directive and review of inshore fisheries there may be changes to available fishing grounds. Increased knowledge of populations and habitat use by seal, dolphin and porpoise will allow these important marine and estuarine species to be taken into consideration during consultations.

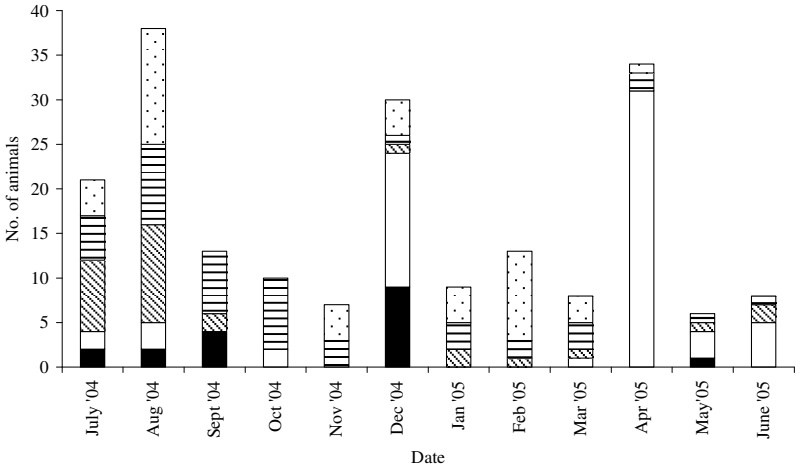

Figure 6. Total marine mammal sightings recorded between July 2004 and June 2005. The observations have been separated into dolphin ■, porpoise □, grey seal ▨, common seal ▤ and seal (unknown species) ⁘.

4.2. Future of the Survey

It is important the ZSL survey is sustained and continuous promoted to allow an accumulation of data sets. The next step for the survey is to review and identify the key river user groups such as rowing clubs and anglers. These groups will be targeted in 2005/2006 to encourage support and community involvement. Ways to increase awareness of the scheme will include media coverage, visits to and presentations for river user groups, leafleting and involvement in community activities such as the Thames River Festival.

4.3. Acknowledgements

We would like to acknowledge the following for their support Thames Estuary Partnership, Port of London Authority, the Essex Police Marine Unit, the Royal Yachting Association, The Metropolitan Police Marine Support Unit, The Port Health Authority, Waterman and Lighterman, Essex Wildlife Trust and Tim Wacher (ZSL) for help with mapping the sightings. Pete Evans at Sea Watch and the Whale and Dolphin Conservation Society provided us with advice and technical help and Acorn Primary School, Notting Hill for their financial support, Richard C. Sabin of the UK Cetacean Strandings Database at the Natural History Museam for providing strandings data. Finally, we would like to thank the many observers, without whom this survey could not be carried out and for those who supplied us with images of their sightings.

5. References

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