

# SeaWatch SW Annual Report 2007



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Wynn, R.B. and Brereton, T.M. (2008) SeaWatch SW Annual Report 2007. National Oceanography Centre, Southampton, 112 pp.

### **Executive summary**

SeaWatch SW is a new volunteer-based project, designed to collect important baseline data for key migratory marine species in UK waters from 2007 onwards. The priority is the **critically endangered Balearic Shearwater**, but other migratory seabirds as well as **Basking Sharks, Ocean Sunfish and cetaceans** are also the focus of effort-based monitoring off southwest England.

A total of **834 Balearic Shearwater records** were reported to SeaWatch SW and/or *Birdguides* from the UK and Ireland in 2007, relating to a maximum of **5153** birds. However, this figure includes significant duplication, as some birds remained in one area for several days or were recorded passing multiple watchpoints, but it does provide a useful index that can be compared with future years.

Small numbers of Balearic Shearwaters lingered off southwest England in January, then very few were reported until late May when the first returning birds were noted. Numbers then built up through June and July as birds pushed northwards, before **peaking in August and September**. There was a major exodus from UK waters in late September, and almost all reports from October onwards were again from southwest England.

**About two-thirds of Balearic Shearwater records in 2007 came from southwest England**, but a few penetrated north to Scotland and a couple of records were even received from Orkney. During June and July an important gathering of moulting birds remained in the **Portland Bill** area for several weeks, peaking at **117** on 8 July. These birds began to disperse westwards in late July and early August, with the peak count away from Portland being **123** passing Gwennap Head, Cornwall on 3-4 Aug.



*Balearic Shearwater off the Needles, Isle of Wight (Kris Gillam)*

Effort-based monitoring of Balearic Shearwaters (and other target species) was undertaken at **Gwennap Head** between **15 July and 15 Oct 2007**. Over 40 volunteer observers helped man the watchpoint for **93** consecutive days, with 'dawn-to-dusk' observations totaling almost **1000** hours.

Balearic Shearwaters were seen every day off Gwennap Head during the survey period, with a total of **1361** birds recorded. Most (94%) were seen on **direct westwards passage**, with two-thirds seen during the morning session prior to 1200 hrs. Peak movements all coincided with **low pressure systems** lying over, or to the

west of southern England, highlighting the importance of weather conditions on this species' inshore movements.

Totals of other shearwater species seen during the Gwennap Head survey included **16,000 Manx Shearwaters, 530 Sooty Shearwaters, 40 Cory's Shearwaters and 10 Great Shearwaters**, with nearly all birds flying west. The appearance of Sooty Shearwaters in particular was closely related to low-pressure conditions, with strong southwest winds and poor visibility.

**Arctic Skuas, Great Skuas and Kittiwakes** showed a clear pattern of occurrence during the survey period, with small numbers seen from mid-July to mid-September, then **a marked peak of westwards passage in late September**. In October, all three species were noted lingering offshore for several days, with the skuas regularly stealing food from the Kittiwakes. Up to 20 Arctic Skuas (many in active wing moult), were apparently **roosting overnight** to the east of Gwennap Head, with birds moving west after dawn and returning east in the evening.

**Guillemots and Razorbills** also showed similar overall trends, with small numbers of local breeding in birds present in late July, then few sightings until southwards passage began in late September and early October. It was notable that **Razorbills were ten times more abundant than Guillemots**. A total of **104 Puffins** were also seen, mostly in July, with several records of birds feeding off Gwennap Head.

Gannets and Fulmars were too numerous to count systematically, while other seabird totals included 612 Common Scoters, 766 European Storm-petrels, 255 Sandwich Terns and 346 Common/Arctic Terns. Scarcer seabird species included up to **nine Grey Phalaropes, 20 Pomarine Skuas, two Little Gulls, 16 Mediterranean Gulls, a Black Tern and two Roseate Terns**.

The **Runnelstone reef** was shown to be an important feature off Gwennap Head, often attracting large congregations of feeding gulls, Basking Sharks and cetaceans. Up to **1000 Herring Gulls** were regularly gathered along the reef line, with local fishermen in July reporting that large numbers of **pipefish** were gathered at the surface in this area. However, pipefish are not a particularly attractive prey item for many seabird species, which may explain why only small numbers of shearwaters, auks and other seabirds were attracted to these feeding congregations.

Notable migrant land birds seen by SeaWatch SW observers in the Gwennap Head and Porthgwarra area included Little Egret, Osprey, Hobby, Water Rail, Dotterel, Long-eared Owl, Short-eared Owl, Black Redstart, Dartford Warbler, Yellow-browed Warbler, **Dusky Warbler** and Lapland Bunting. Peregrines and Ravens were regularly recorded, and a **Peregrine was even seen chasing European Storm-petrels** offshore on two occasions.

One of the highlights of the survey was the near-continuous presence of **a pair of Choughs** around the watchpoint from 28 Sept to 15 Oct. These birds often fed within a few metres of the observers, and colour ring observations revealed that they were both offspring of breeding pairs in west Cornwall.

**Six cetacean species** were recorded off Gwennap Head during the effort-based survey, with a single **Fin Whale** on 20 Aug being the obvious highlight. In addition, up to two **Minke Whales** were seen on 19 dates and pods of up to eight Risso's and 20 Bottlenose Dolphins were recorded. Of the commoner species, **peak day counts of Common Dolphins and Harbour Porpoises reached 400 and 20**, respectively.

Minke Whales, Common Dolphins and Harbour Porpoises were regularly recorded throughout the three-month survey period, while Risso's and Bottlenose Dolphins were only present sporadically from late August onwards. There was some evidence for **aggregations of several cetacean species** for short periods off Gwennap Head, with peak day counts of all the above species occurring between 31 Aug and 6 Sept.

A regular **Grey Seal** haul-out was located just to the west of Gwennap Head, with regular counts of up to ten animals and peaks of 21 on 26 Aug and 17 on 10 Oct. Odd individuals were seen hunting up to 1.5 km offshore.

**Basking Sharks were recorded almost daily** off Gwennap Head between 17 July and 2 Oct. The total number of sharks reported was **656**, but this will include significant duplication as some distinctive animals lingered for several days. Peak numbers were seen between mid-August and early September, with a maximum of **72** on 5 Sept corresponding with **an unprecedented count of 460** on the same date nearby off Land's End.

The distribution and timing of Basking Shark surface sightings off Gwennap Head appears to be controlled by a combination of **tide, weather and seafloor topography**. Interesting behavioural observations included ten records of **breaching** and several instances of **apparent courtship behaviour**, including ring-circling and nose-to-tail following.

A probable **Blue Shark** was seen chasing Mackerel at the surface on 21 July. A total of **35 Ocean Sunfish** were seen, with two-thirds of records falling between 15 July and 18 Aug. About 40% of records related to sunfish being **pecked at by Herring Gulls**, presumably to aid in parasite removal. Breaching was noted on two occasions.

Two students successfully completed **Masters projects on Basking Sharks** during 2007, using data from SeaWatch SW, MCS and CWT. Their results provided insights into Basking Shark distribution and behaviour in southwest waters during 2007, and include a useful comparison of national sightings data collected by MCS, regional data from CWT, and local effort-based data collected from Gwennap Head.

The **unusual weather conditions** in 2007 had a major effect on Basking Shark surface sightings off southwest England. The warm settled April led to an **earlier arrival** of sharks in coastal surface waters, but subsequent **failure of the spring plankton bloom** led to few surface sightings in May and June. However, numbers built up again from late July, with **a later than normal peak** in early September.

A number of incidents of **human (boat-based) disturbance** were observed off Gwennap Head during the survey period, mostly involving **recreational activities**. In particular, **continued and prolonged harassment of Basking Sharks** was a major issue, and at least two 'near misses' were also observed. SeaWatch SW is liaising with local Police in an attempt to reduce such incidents in the future. It should be noted that local commercial fishing activities appeared to have little effect on monitored species off the watchpoint.

It was a poor year for migrant butterflies, moths and other insects due to the inclement weather conditions during late spring and summer. However, the effort-based survey at Gwennap Head did record small numbers of migrants, including a Hummingbird Hawk-moth. Colonies of **Small Pearl-bordered Fritillary** and the **nationally scarce Thrift Clearwing** were also located at the watchpoint.



Additional effort-based observations between 15 July and 15 Oct were carried out at **Berry Head** in Devon (71.25 hours) and **Strumble Head** in Pembrokeshire, (354.5 hours). These data helped to put Gwennap Head sightings into a regional context. An important result was that Balearic Shearwaters were seen passing Berry Head and Gwennap Head at roughly the **same hourly rate** when simultaneous observations were made. This indicates that birds were moving at **a regional level** along the coast of southwest England, and were not just circulating off Gwennap Head.

At Strumble Head, the peak day count of 37 Balearic Shearwaters, and the overall hourly rate of 0.7 birds per hour, was the **second highest** since detailed recording began there in 1984, only being beaten by the 2006 figures. Other data from the two 'sister sites' provided useful insights into the **migration routes and timings** of other migratory seabirds.

**Boat-based surveys** in the western English Channel, co-ordinated by Marinelife, were undertaken between June and September 2007. These surveys involved 25 trips covering **850 line-km of the offshore area between Devon and the Isle of Wight**. A notable feature of these surveys was the ability to get exceptionally close views and photographs of many of the target species.

The boat-based surveys located **80 Balearic Shearwaters** offshore, almost all being **moulting adults**. The peak count was 41 in the Portland Bill area on 8 July, associating with large numbers of Manx Shearwaters. The results confirm the importance of the Portland Bill and Lyme Bay area as a **mid-summer moulting area** for Balearic Shearwaters. Most other offshore records referred to single birds in direct flight or scavenging discards around fishing boats.

Other wildlife observed during the offshore survey included over **400 European Storm-petrels** and **90 Great Skuas** (mostly around fishing boats), as well as scarcer species such as Sooty Shearwater, Grey Phalarope, Pomarine Skua and Puffin. In addition, Harbour Porpoises, Basking Sharks and Ocean Sunfish were regularly recorded, but perhaps the most surprising discovery was the presence of up to **19 White-beaked Dolphins** (a mostly cold-water species) in western Lyme Bay on several dates in August and September.

SeaWatch SW and SAHFOS co-ordinated the first **SouthWest Marine Ecosystems (SWME)** meeting, held in Plymouth on 10 Dec 2007. The meeting attracted over 40 invited representatives from both science and conservation organisations in the southwest region. The presentations provided a useful overview of how **climate change is impacting marine life in southwest coastal waters**, with a particular focus on distribution changes and new arrivals. It is hoped that this will become an annual meeting.

SeaWatch SW data are already contributing to various **conservation initiatives**, particularly relating to **RSPB and Birdlife International** monitoring of the **critically endangered Balearic Shearwater** at a pan-European level. At a local level, SeaWatch SW data will be contributing to initial planning workshops for **Marine Protected Areas (MPAs)** in the southwest region.

The SeaWatch SW website had over **12,000** individual hits in 2007, while news items on Balearic Shearwaters appeared in national and regional media, including the **Daily Telegraph**. In addition, the initial results of the project were featured on the **BBC News website** and in several regional newspapers and radio reports.

**Three scientific papers** on Balearic Shearwaters were published in 2007 by the SeaWatch SW team. Two papers by Wynn et al., in ***Biology Letters*** and ***British Birds***, documented the changing status of the species in northeast Atlantic waters, while a paper by Yésou et al. in ***Alauda*** highlighted the importance of future monitoring of the species in French waters.

**SeaWatch SW will be continuing in 2008**, with public sightings and effort-based data on Balearic Shearwaters again being collected at a national and local level. Effort-based surveys will again be carried out at Gwennap Head, the sister sites of Berry Head and Strumble Head, and offshore in the western English Channel. A new **NERC-funded PhD student** will begin work on the project data, supported by a small number of Masters and undergraduate students.

Finally, if you feel inspired after reading this report, and would like to contribute to SeaWatch SW 2008, please visit the project website and/or contact the project co-ordinator for details of how to get involved. The project would simply not be possible without a dedicated team of volunteer observers, and we particularly need a few more experienced seabird observers (familiar with Balearic Shearwaters and other target species), to come forward and volunteer their time to the Gwennap Head survey. Most slots have now been filled, but we still have six days free in early August and 18 days free in late August/early September. Complimentary 'bed and brunch' is provided to core seabird observers at Ardensawah Farm B&B near Porthgwarra; this is a very comfortable place to stay and is only a short distance from the watchpoint. We also welcome keen observers of any experience level to act as marine wildlife observers and supporting observers at the watchpoint. The project website address is shown below. Many thanks again to all those who contributed to SeaWatch SW 2007, and also those who have already pledged to support us in 2008.

<http://www.seawatch-sw.org>



*Choughs over Gwennap Head (Marcus Ward)*

### **Acknowledgements**

SeaWatch SW is primarily a volunteer-based project, and is assisted by a large number of organisations and individuals. First of all, a big thankyou to everyone who submitted Balearic Shearwater records to SeaWatch SW and/or *Birdguides* during 2007. These records are helping inform current and future conservation policy for this critically endangered species. In addition, at least 40 volunteer observers were responsible for data collection at Gwennap Head during the project survey between mid-July and mid-October, as follows:

**Core seabird observers:** Nick Adams, Kevin Bainbridge, Jeremy Barker, Pete Berry, Simon Hartill, Simon Ingram, Graham Jones, Tom McKinney, Marc Moody, Tim Parminter, Kevin Peace, Ken Shaw and Russell Wynn.

**Core marine wildlife observers:** Jonathan Bills, Claire Buckland, Maria Campbell, Trevor Carpenter, David Chanter, Cecile Chauvel, Charlotte Cooke, Kathryn Driscoll, Helen Earwaker, Julie Finlayson, Martin Gillingham, Stephanie Hinder, Rafe Holmes, Dave Hoyle, Paul Johnson, Gareth Lewis, Gavin Morrison, Leire Ordorika, Trevor Osborne, Emma Rathbone and Marianne Wootton.

**Support observers:** Chris Chapleo, Dan and Lesley Jarvis, Sarah Ludwig, Marcus and Zoe Ward, and many others who spent time at the Gwennap Head watchpoint.

We are extremely grateful to all of the above, as without their efforts the data collection would simply not have been possible. We would also like to thank local observers Jean Lawman and John Swann, who contributed a significant amount of their time and expertise to the Gwennap Head survey during 2007. Vikki Gunn assisted with logistics in Cornwall and built and maintained the SeaWatch SW website (<http://www.seawatch-sw.org>). Janet and Michael Semmens at Ardensawah Farm B&B had the important job of keeping the core seabird observers fed and rested, which they performed admirably.

Additional observations were carried out by observers at two sister sites during the SeaWatch SW survey. These data were collated and supplied by Mark Darlaston and Mike Langman (Berry Head) and Graham Rees, Ray Wilkinson and Steve Berry (Strumble Head). Weather data for the SeaWatch SW survey period were supplied by John Chappell (Land's End) and Tim Smyth (Plymouth Marine Laboratory).

We would also like to thank the large number of individuals who contributed advice, data, photos and other support during SeaWatch SW 2007: Sophie Atherton, Angus Bloomfield, Helen Booker, Tom Brereton, Stan Christophers, David Cuenca, Charlotte Curé, Joana Doyle, Dave Flumm, Kris Gillam, Mauvis Gore, Dan, Dave and Lesley Jarvis, David Johns, Simon Josey, Adrian Martin, Miquel McMinn, Claire Mucklow, Andy Paterson, Steve Rogers, Sue Sayer, Jean-Luc Solandt, Russell Slack, Xulio Valeiras and Pierre Yésou. Apologies for any errors or omissions.

Note that acknowledgements for those involved in the Marinelife survey are listed separately under that section.

Finally, we are of course extremely grateful to the following companies and organisations who provided financial and logistical support to SeaWatch SW during 2007:

*Birdguides*

*Cornwall Wildlife Trust (CWT)*

*Cornwall Bird-watching and Preservation Society (CBWPS)*

*Marine Conservation Society (MCS)*

*Marine Information Limited*

*National Oceanography Centre, Southampton (NOCS)*

*Royal Naval Bird-watching Society*

*Royal Society for the Protection of Birds (RSPB)*

*Sir Alistair Hardy Foundation for Ocean Science (SAHFOS)*

*Southwest Optics*

*The Seabird Group*



*Seabird observers at the SeaWatch SW watchpoint at Gwennap Head (Russell Wynn)*

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*SeaWatch SW co-ordinator, Russell Wynn, recording seabirds at Gwennap Head*

## **Introduction to SeaWatch SW**

This report documents the initial results of SeaWatch SW 2007. The primary aim of this project is to collect data on the distribution, abundance and behaviour of Europe's only critically endangered seabird, the Balearic Shearwater *Puffinus mauretanicus*, in UK waters. The project involves collation of all UK and Irish records of this species on an annual basis from 2007 onwards, together with effort-based 'dawn-to-dusk' observations at the strategic watchpoint of Gwennap Head, near Land's End in Cornwall, from 15 July to 15 October. Supporting effort-based data are supplied from sister sites at Berry Head in Devon and Strumble Head in Pembrokeshire, together with boat-based data from the western English Channel collected as part of the Marinelife programme.

In addition to Balearic Shearwaters, the project is also monitoring the distribution and movements of other migratory apex predators in southwest waters, including Basking Sharks *Cetorhinus maximus*, Ocean Sunfish *Mola mola*, and all cetaceans and migratory seabirds. Again, effort-based data from Gwennap Head and elsewhere are being collected for all these target species from 2007 onwards.

The overall scientific aim is to better understand how species at the top of the marine food chain are being affected by climate change, in particular the response to rapid warming of the sea surface and subsequent northwards distribution shifts in prey species such as plankton and fish. In order to achieve this, we first need to collect effort-based data showing how short-term controls such as tide and weather affect these species at a local level. Only then can we start to analyse longer-term trends across larger areas with confidence. The project is co-ordinated from the National Oceanography Centre, Southampton, and is supported by research grants from the Seabird Group and SAHFOS.

SeaWatch SW also has clear conservation applications, particularly regarding protection of Balearic Shearwaters in UK waters and also for current Marine Protected Area (MPA) strategic planning in southwest UK inshore waters. As a consequence, SeaWatch SW is collaborating closely with a number of key conservation organisations including the RSPB, Birdlife International, MCS and Cornwall Wildlife Trust.

This report provides a comprehensive overview of Balearic Shearwater occurrence in UK and Irish waters in 2007, together with initial results of the 93-day effort-based survey at Gwennap Head for all target species. Results of the Marinelife boat-based surveys in the western English Channel provide an important 'offshore' perspective, while the sister sites data provide a fascinating regional control. Further background to the project can also be found on the SeaWatch SW website:

<http://www.seawatch-sw.org>

## **Balearic Shearwaters in UK and Irish waters in 2007**

### **Introduction**

One of the main aims of SeaWatch SW is to act as a central point for recording of Balearic Shearwaters in the UK and Ireland. Throughout 2007 regular appeals for observers to submit their records to the project were made via various natural history websites and mailing lists. Observers were encouraged to send records to the SeaWatch SW co-ordinator directly or to the *Birdguides Bird News Extra* service. The latter includes a fully searchable database allowing records to be easily extracted. It should be noted that the project was not heavily publicised in Ireland due to time limitations.

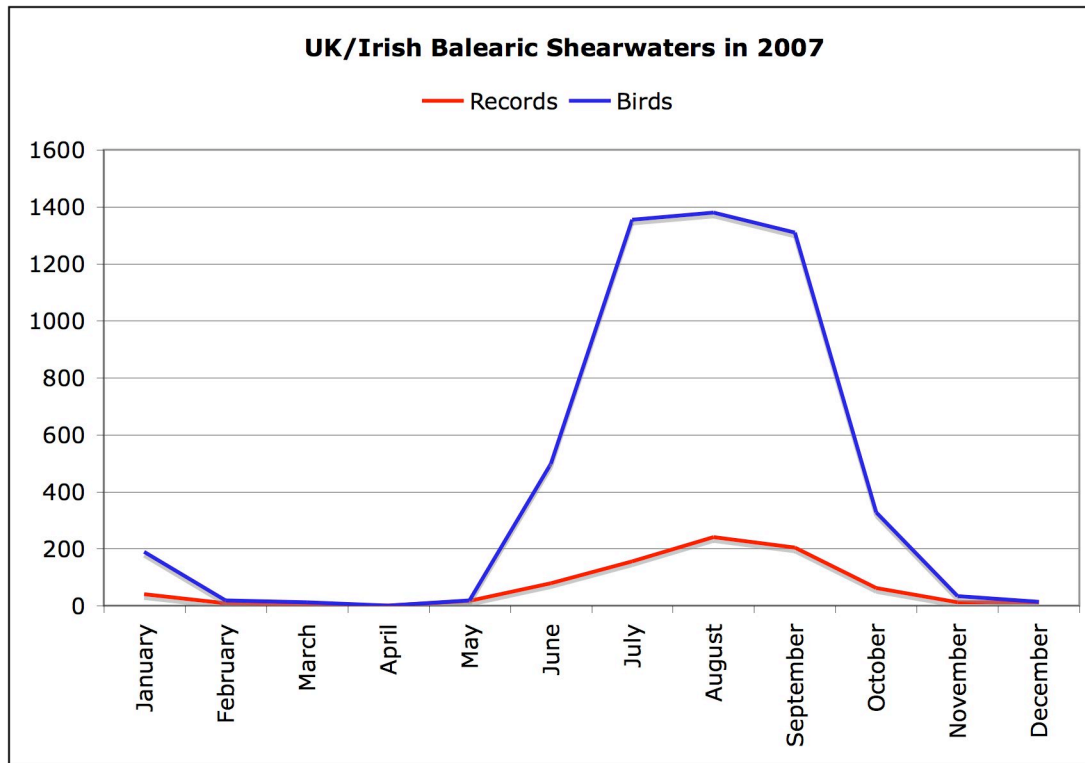
Data obtained from casual (non effort-based) observations are very useful for analysing overall trends in distribution and occurrence, however, it should be noted that a number of factors can lead to significant bias and error in such datasets, e.g. variations in observer effort and weather conditions, and incorrect identification. Despite these limitations, a recent *British Birds* paper by [Wynn and Yésou \(2007\)](#) and a *Biology Letters* article by [Wynn et al. \(2007\)](#) successfully used public sightings data to highlight a marked increase in Balearic Shearwater numbers visiting the UK and Ireland (and elsewhere in northwest Europe) through the mid-1990s, continuing to 2003 at least. The new 2007 dataset shown below is therefore compared with that presented by [Wynn and Yésou \(2007\)](#) and [Wynn et al. \(2007\)](#), which covered the period 1980-2003.

### **Results**

In total, **834** Balearic Shearwater records were received for 2007, relating to a maximum of **5153** birds reported. The number of birds reported will inevitably include significant duplication, for example where large numbers of birds remained in one area for several days, or where the same birds were recorded passing multiple watchpoints during migratory or feeding movements. However, many birds will of course go unrecorded in areas with sparse observer coverage. [Wynn and Yésou \(2007\)](#) and [Wynn et al. \(2007\)](#), using archive data from 1980-2003, found that 2001 was the peak year with 3500 birds reported; the larger numbers reported in 2007 are either due to a continued increase in numbers of birds visiting our waters and/or improved reporting in response to the publicity surrounding the SeaWatch SW project.

The monthly distribution of records and birds is shown below:

January	40 records (189 birds)
February	9 records (18 birds)
March	3 records (11 birds)
April	0 records (0 birds)
May	17 records (19 birds)
June	79 records (498 birds)
July	156 records (1355 birds)
August	241 records (1379 birds)
September	203 records (1309 birds)
October	61 records (328 birds)
November	12 records (33 birds)
December	12 records (14 birds)



*Balearic Shearwaters in the UK and Ireland in 2007.  
Monthly totals of records in red; monthly totals of birds reported in blue.*

These data show a clear trend, with small numbers of birds present in January and then very few through February to May. Significant numbers began to return in June and peak monthly totals were then made from July to September. A rapid departure occurred by early October and very few were subsequently seen in November and December. This overall pattern is similar to that reported by [Wynn and Yésou \(2007\)](#) and [Wynn et al. \(2007\)](#), although the increased occurrence of small numbers of birds in winter off southwest UK is a relatively recent phenomenon.

The spatial distribution of records and birds is shown below:

<b>England</b>	<b>712 records (85.4% of total) and 4712 birds (91.4% of total)</b>
Cleveland	12 records (12 birds)
Cornwall	308 records (2406 birds)
Devon	97 records (507 birds)
Dorset	135 records (1458 birds)
Durham	9 records (13 birds)
East Sussex	8 records (19 birds)
East Yorkshire	24 records (35 birds)
Hampshire	6 records (11 birds)
Isle of Wight	10 records (15 birds)
Kent	23 records (57 birds)
Lincolnshire	2 records (3 birds)
Norfolk	20 records (23 birds)
North Yorkshire	5 records (5 birds)
Northumberland	16 records (20 birds)
Scilly	28 records (109 birds)
Suffolk	2 records (2 birds)
West Sussex	7 records (17 birds)

**Southwest England (Dorset, Devon, Cornwall, Isles of Scilly)**

568 records (68.1%) and 4480 birds (86.9%)

**Southeast England (Hampshire, Isle of Wight, Sussex, Kent)**

54 records (6.5%) and 119 birds (2.3%)

**East England (Essex, Norfolk, Suffolk)**

22 records (2.6%) and 25 birds (0.5%)

**Northeast England (Cleveland, Durham, North/East Yorks, Lincs, Northumbs)**

68 records (8.2%) and 88 birds (1.7%)

**Ireland 32 records (3.8%) and 105 birds (2%)**

Ireland (Antrim)	3 records (4 birds)
Ireland (Clare)	13 records (77 birds)
Ireland (Cork)	7 records (9 birds)
Ireland (Donegal)	1 record (1 bird)
Ireland (Down)	2 records (4 birds)
Ireland (Mayo)	3 records (4 birds)
Ireland (Waterford)	1 record (1 bird)
Northern Ireland	2 records (5 birds)

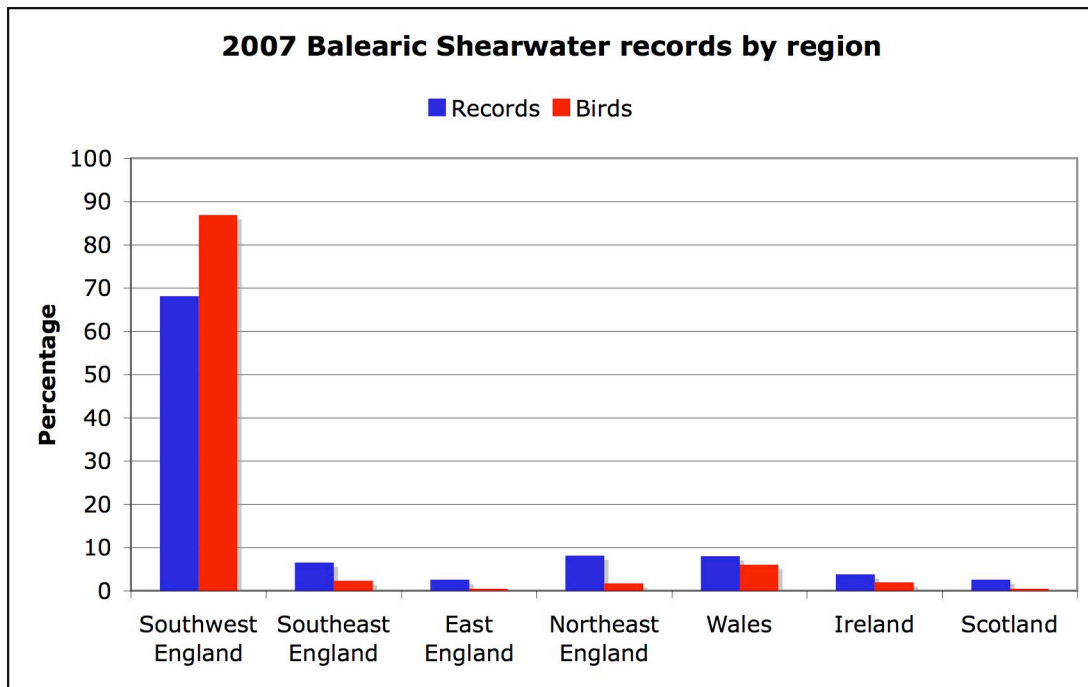
**Scotland 22 records (2.6%) and 25 birds (0.5%)**

Aberdeenshire	5 records (5 birds)
Argyll	4 records (7 birds)
Ayr	2 records (2 birds)
Borders	3 records (3 birds)
Highland	1 record (1 bird)
Lothian	2 records (2 birds)
Orkney	3 records (3 birds)
Outer Hebrides	1 record (1 bird)
Skye	1 record (1 bird)

**Wales 67 records (8%) and 310 birds (6%)**

Anglesey	12 records (18 birds)
Ceredigion	3 records (3 birds)
Conwy	1 record (1 bird)
Glamorgan	1 record (1 bird)
Gwynedd	6 records (8 birds)
Pembrokeshire	44 records (279 birds)



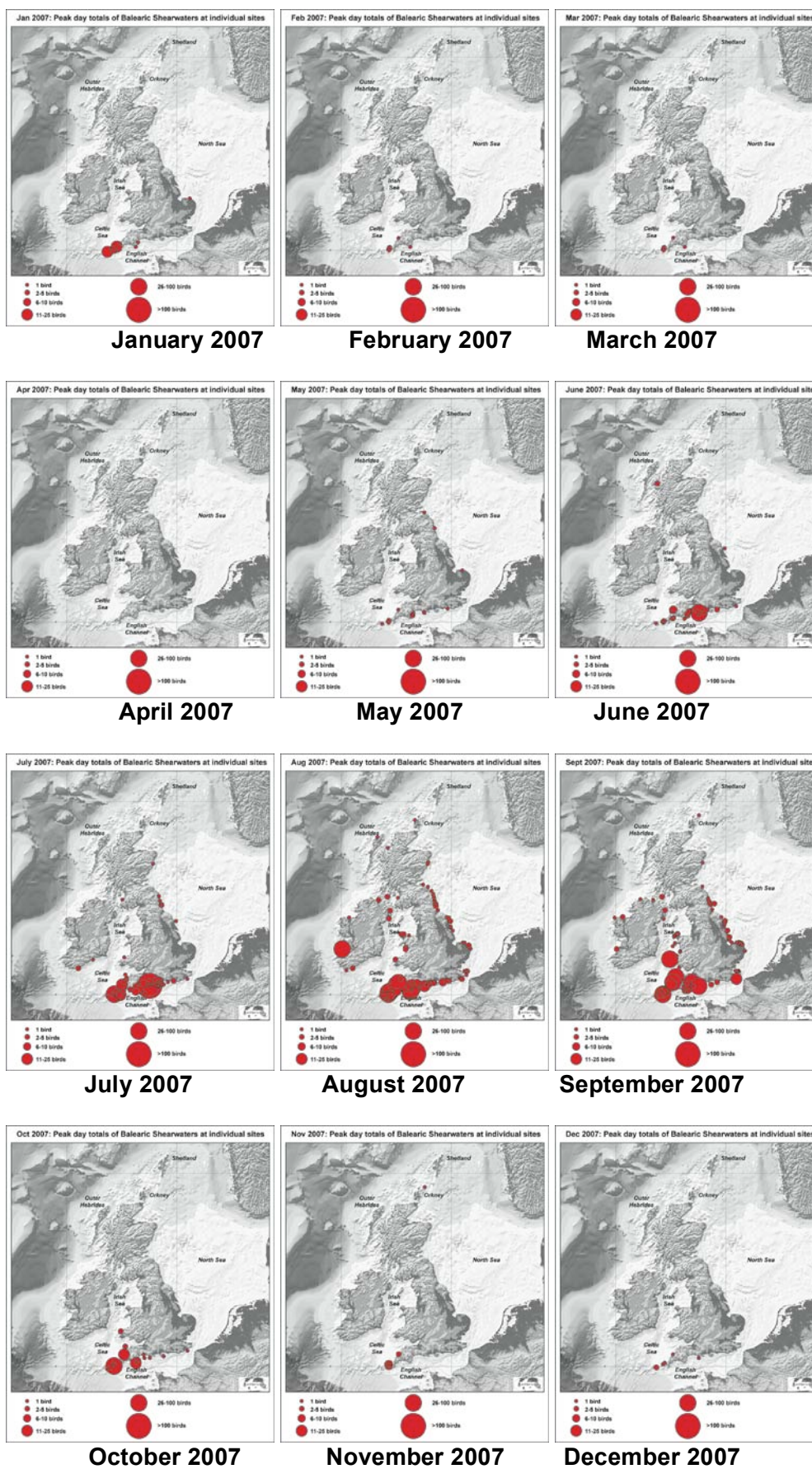


*Balearic Shearwaters in the UK and Ireland in 2007 by region.  
Monthly percentages of records in blue; monthly percentages of birds reported in red.*

These data reveal that southwest England is the best area to see Balearic Shearwaters in the UK and Ireland, with ~70% of total records and ~87% of total birds reported. This compares well with the results of [Wynn and Yésou \(2007\)](#) and [Wynn et al. \(2007\)](#), which showed that between 1980-2003 the number of birds reported in southwest England was about 70% of the overall UK/Ireland total. The higher numbers of birds reported from this region in 2007 is probably a result of a lingering flock off Portland Bill in mid-summer, as well as daily counts between 15 July and 15 October off Gwennap Head, Cornwall as part of the SeaWatch SW survey.

Elsewhere, Wales and northeast England saw the greatest numbers of records (although most records from the latter area were of single birds so the number of birds reported is actually rather low). The paucity of records and birds in Ireland may be a function of poor publicity.

The following maps show the peak day counts of Balearic Shearwaters in the UK and Ireland for each month during 2007, and are followed by monthly summary reports describing the species' distribution and occurrence in detail:

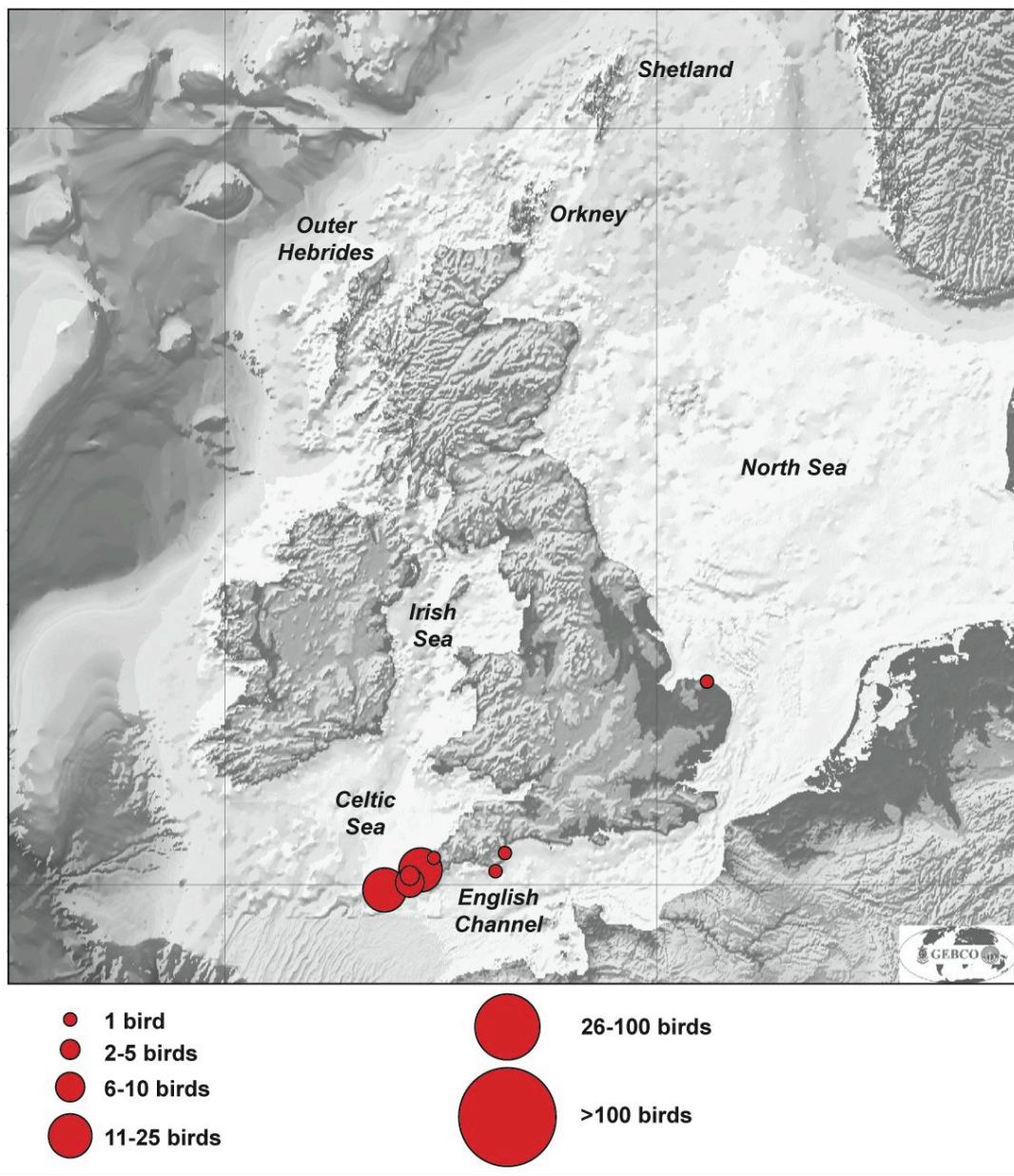


### Balearic Shearwaters in UK/Ireland in January 2007

January 2007 was generally a very mild month, and probably the warmest January in the UK since 1916. Rainfall and sunshine were both above average and it was often windy, with gales on 1st, 11th and 18th. There was a brief colder interlude from 22nd to 26th.

In January 2007, almost all of the 40 Balearic Shearwater reports were from the southwest tip of England, off Cornwall and Scilly. The majority of these records involved birds associating with large feeding flocks of auks, Kittiwakes and Gannets in stormy weather; these mixed feeding flocks sometimes exceeded 1000 birds. Balearic Shearwater hotspots included the coastal waters around St Mary's, Scilly (peaking at 22 on 11th), St Ives Bay, Cornwall (peaking at 20 on 1st), and Porthgwarra, Cornwall (peaking at 10 on 7th).

**Jan 2007: Peak day totals of Balearic Shearwaters at individual sites**



It may be that the stormy weather forced shallow-diving and surface-feeding seabirds into coastal embayments and around islands, e.g. St Ives Bay and the east side of St Mary's, where they could shelter from the relentless strong SW/W winds and feed on available concentrations of pelagic fish, e.g. sprats. However, it could just be that the local pattern of records relates to observer coverage, with observers seeking sheltered spots to watch from in stormy conditions!

Interestingly, only two reports were received after 22nd, when colder settled conditions became dominant for the first time in several weeks. This appeared to coincide with an exodus of Kittiwakes and other seabirds from around Scilly, possibly due to feeding conditions improving in open coastal waters leading to a dispersal of seabird congregations. In addition, it could be that the onset of colder weather triggered southward return migration of some Balearic Shearwaters.

Away from the far southwest of the UK, the only reports were of single birds passing Hopes Nose and Prawle Point, Devon on the 7th and 8th respectively (probably the same individual), and a single passing Sheringham, Norfolk on 4th.

Traditionally, most Balearic Shearwaters in UK waters have been seen between July and October, as part of their regular post-breeding dispersal. Winter records were rather scarce prior to 2003/04, but since then variable numbers have been reported every winter, mostly from southwest England. Large numbers of birds remained in December 2006, e.g. 67 passing St Ives (Cornwall) on Dec 5th and 20 still lingering off St Agnes (Scilly) on 24th, so the numbers reported above are not a huge surprise. Nevertheless it is clear that the southwest tip of England is potentially becoming an important wintering area for Balearic Shearwaters and other seabirds. Initial analysis of the January 2007 data reveals that at least 20-25 Balearic Shearwaters were present for at least two weeks in the region.

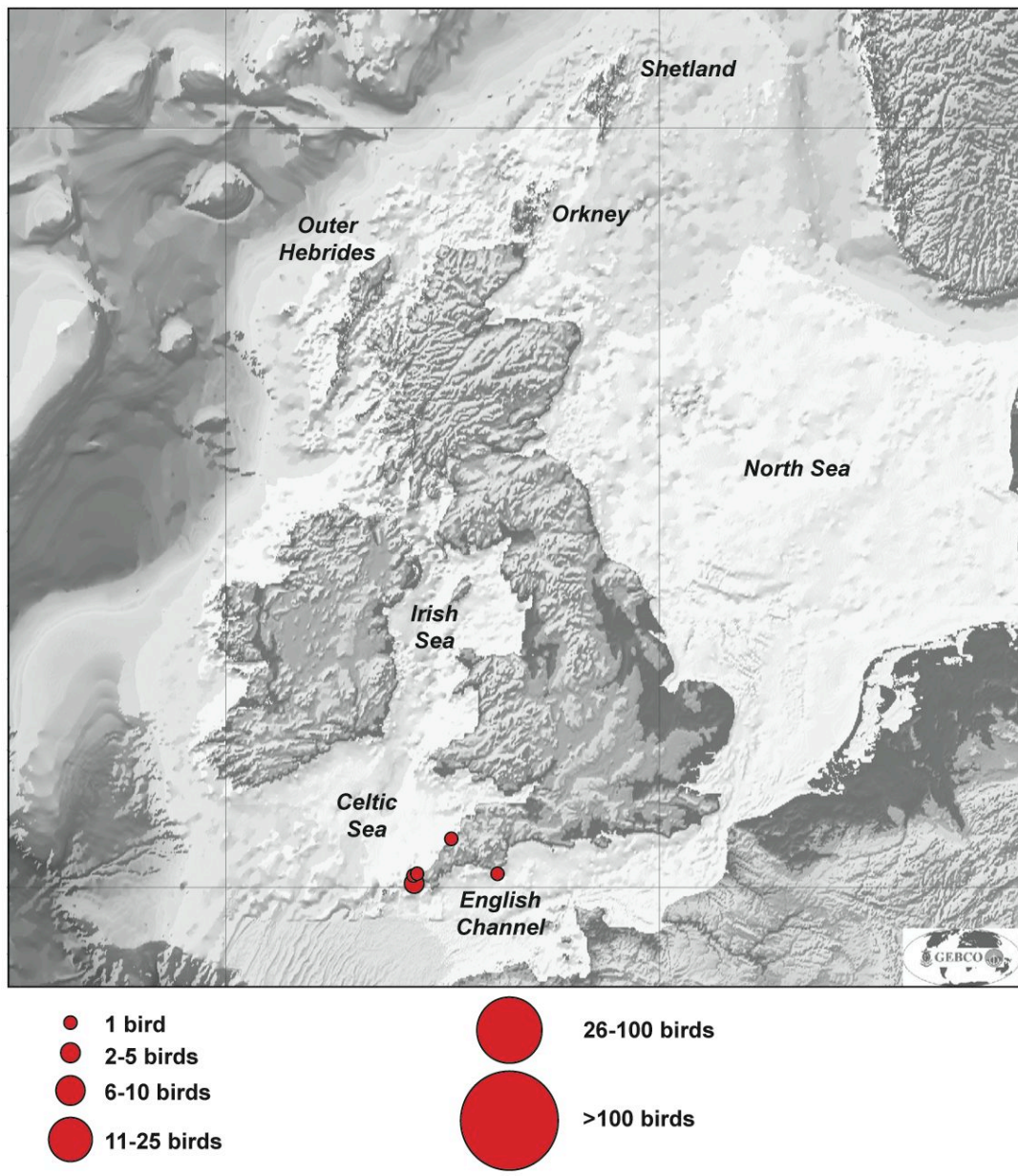
The grounding of the MSC Napoli off Sidmouth, Devon on 21 Jan resulted in a major oil spill along the south Devon and Dorset coast. About 1000 seabirds (mostly Guillemots from local breeding colonies) were recovered from the affected area and taken into care by the RSPCA; the true total of seabirds killed is likely to be much higher. To date, it appears that no Balearic Shearwaters were affected by the oil spill, but the close proximity of this environmental disaster to an area where small numbers were present highlights the potential vulnerability of this critically endangered species to such hazards.

### **Balearic Shearwaters in UK/Ireland in February 2007**

*February 2007 was another generally mild, wet and windy month, with UK temperatures some 2°C above average. Dry, settled conditions dominated during the first week, but soon gave way to a series of Atlantic depressions from 8th onwards. Snow was widespread on 8th-9th but was replaced by rain from 10th.*

Traditionally, very few Balearic Shearwaters are reported in February in UK waters, and this year was no exception. Only nine Balearic Shearwater reports were received for February 2007, all from Cornwall and Devon. Records of single birds passing St Ives and Trevoze Head in stormy weather on 11th may have referred to just one individual, likewise records of single birds passing Prawle Point on 11th and 12th probably also involved just one bird. Two of these reports also include single Manx Shearwaters; another species that is traditionally rare in winter in UK waters.



**Feb 2007: Peak day totals of Balearic Shearwaters at individual sites**

Aside from one passing Trevoise Head on 24th, the remaining Balearic Shearwater records involved multiple birds feeding with flocks of other seabirds, e.g. auks, gulls, Kittiwakes, Fulmars and Gannets. Two birds were off Godrevy Point on 21st, and a group of four birds was off Gwennap Head, Porthgwarra, on 5th and 23rd, with three still present on 25th. Both of these areas also held significant numbers of feeding Balearic Shearwaters in January, suggesting that the February records refer to lingering individuals rather than new arrivals in the area.

The presence of long-staying wintering birds off Gwennap Head is particularly interesting. The observer recording birds at the site this winter has commented that they appear to be feeding over the Runnelstone reef, which is 1.5 km offshore. On 25th a single fishing boat was active in the area, apparently going after Pollack; this fish species is typically associated with rocky reefs and wrecks and feeds on small pelagic fish. It therefore seems likely that congregations of small plankton-feeding pelagic fish are concentrating in this area.



In summary, the importance of certain areas offshore southwest England for wintering Balearic Shearwaters and other seabirds has been reinforced during February. Initial analysis reveals that at least seven Balearic Shearwaters were present for most of February in this region.

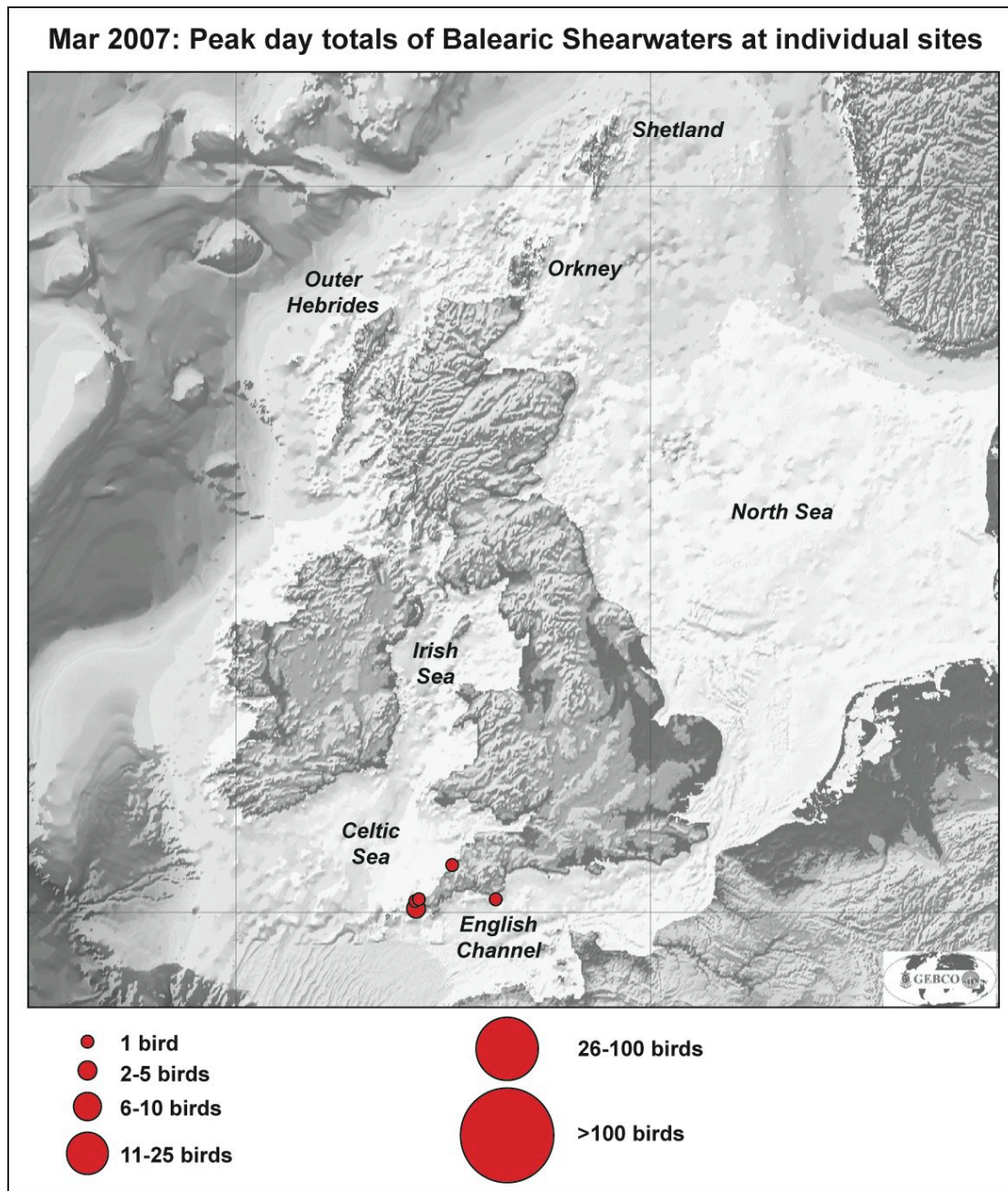
### **Balearic Shearwaters in UK/Ireland in March 2007**

*March 2007 was overall a mild month with average rainfall. The first three weeks were generally unsettled, with occasional strong winds but frequent sunny interludes. The last week was dominated by high pressure with showers and long sunny spells.*

Most Balearic Shearwaters return to the breeding grounds in the Mediterranean Sea during the spring months, and very few remain in northeast Atlantic waters. In March 2007, only three reports were received for the UK, two of which involved birds off Gwennap Head, Porthgwarra. Eight were seen passing there on 8th and two were lingering offshore on 14th. Significant numbers were also present off Gwennap Head in January and February, suggesting that the March reports refer to lingering birds rather than new arrivals. One was also seen passing Trevoze Head on 12th; again this is an area where birds were seen earlier in the year.



*Balearic Shearwater off the Needles, Isle of Wight (Kris Gillam)*



### Balearic Shearwaters in UK/Ireland in April 2007

*April 2007 was exceptionally warm and settled. Initial indications are that it was probably the warmest April since records began, nearly 3°C above the long-term average. Winds were generally light and rainfall was almost entirely absent across much of the UK.*

No Balearic Shearwater records were received to date for April 2007, making it the only month of the year with no records. This period coincides with the birds return to the breeding grounds.

### Balearic Shearwaters in UK/Ireland in May 2007

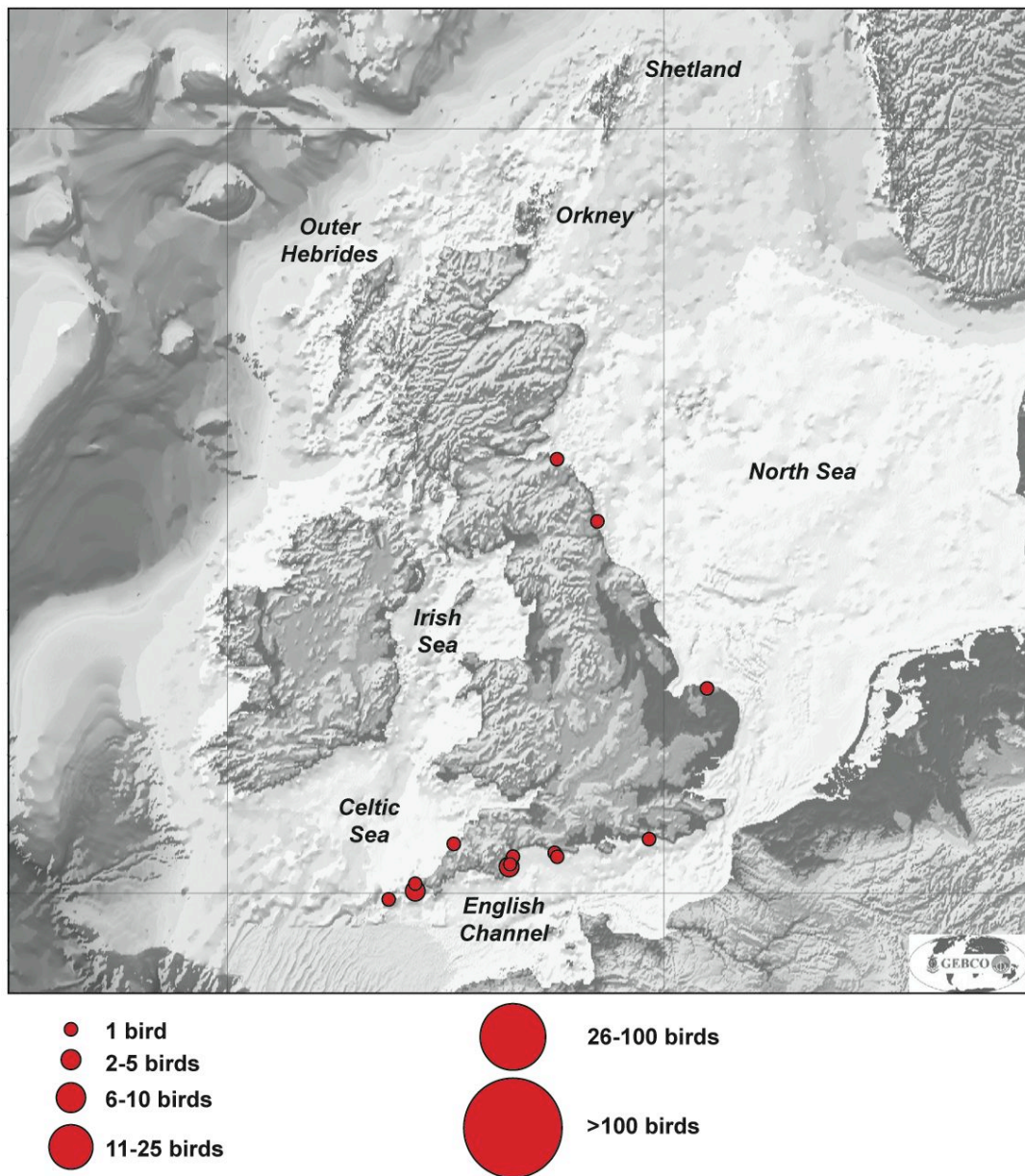
*May 2007 was mild and unsettled, being the wettest May for 40 years but with average sunshine and temperatures about 1°C above average. The month started*



with warm, dry conditions but a series of low-pressure systems crossed the UK from 6th-19th and again from 26th to the month end, with gales in the southwest during the latter period.

After a gap of several weeks (since the last 'winter' record on 14 March), Balearic Shearwaters began returning to UK coastal waters in small numbers during May, with a total of 19 birds reported during the month. The first 'returning' birds were four singles seen in southwest waters between 11th and 13th. A further flurry of new arrivals, involving sightings of one or two birds, was then seen from 20th onwards. Again, all reports were from sites in southwest England, except for three singles along the North Sea coast on 27th (Norfolk, Northumberland and Lothian) and one off Worthing (West Sussex) on 29th.

#### May 2007: Peak day totals of Balearic Shearwaters at individual sites



Most of the Balearic Shearwater records at the end of May were associated with significant movements of Manx Shearwaters and other seabirds during stormy

weather. At least one Balearic Shearwater was reported as showing obvious wing moult, and feeding birds were reported from three sites. These early returning birds are likely to be non-breeding adults or sub-adults, as breeding adults would still be at the colonies on the Balearic Islands during May.

### **Balearic Shearwaters in UK/Ireland in June 2007**

*June 2007 was exceptionally wet and windy, being the wettest June on record. Temperatures were about 1°C above average, but it was the dullest June for almost a decade. The month opened with warm weather and light winds, but thundery showers became more frequent before a deep slow-moving depression crossed the country from 13th-17th. From this point onwards it remained wet and often windy.*

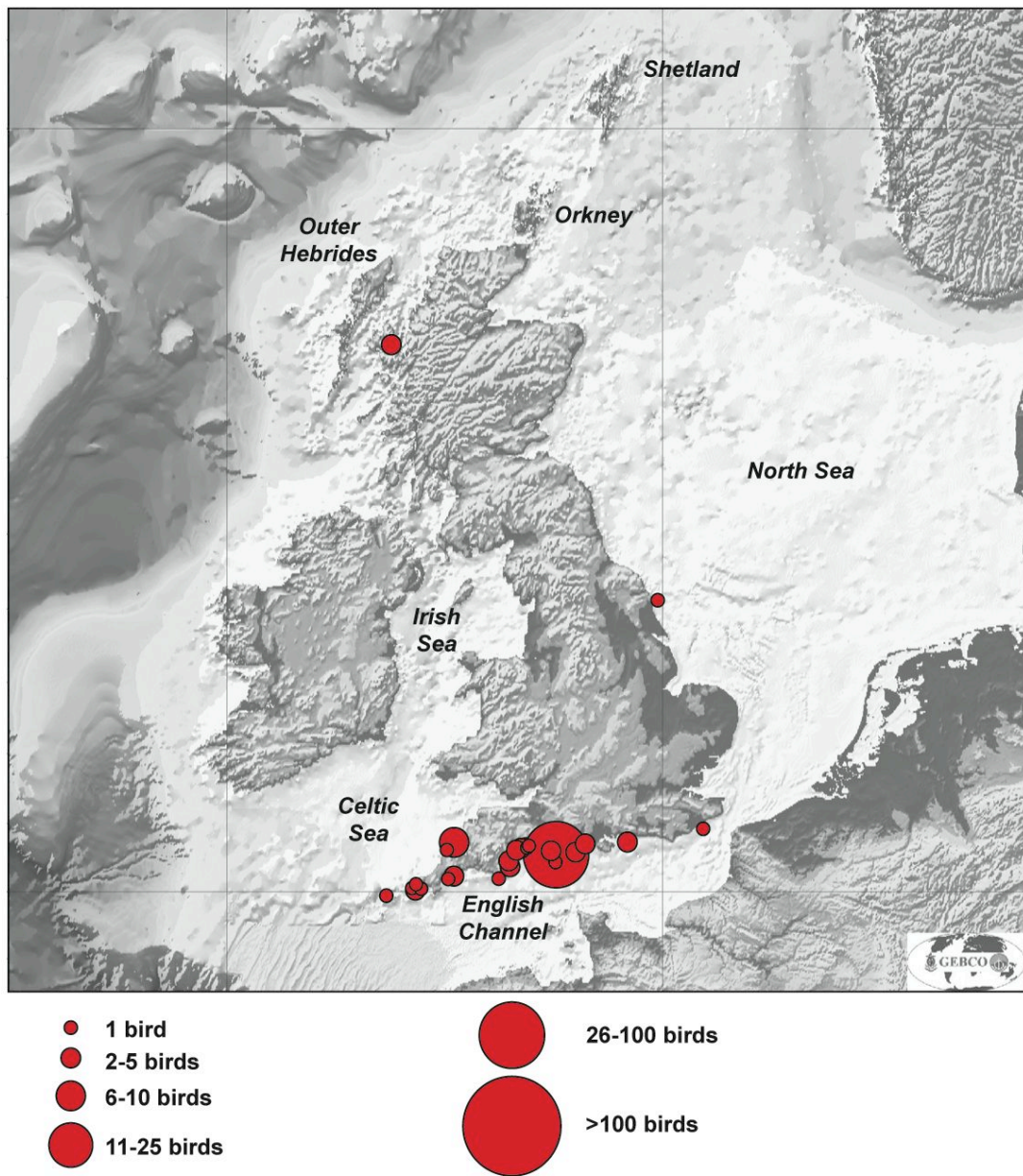
A total of 79 Balearic Shearwater records were received for June, all but five of which were from southwest England. After a report of four off Portland Bill (Dorset) and a single off Cape Cornwall (Cornwall) on 1st, there was a gap before the next record on 10th. From this point onwards records came in almost daily, mostly involving sightings of 1-3 birds passing southwest watchpoints. Clusters of sightings came from the west Cornwall coast and the southeast Devon coast. Records away from the south included two off Portree Harbour (Skye) on 10th and one off Flamborough Head (East Yorkshire), also on 10th. Most reports involved birds passing through during the unseasonably stormy weather, often in association with Manx Shearwaters, European Storm-petrels and small numbers of Arctic and Great Skuas.

The most notable event of the month, however, was a localised gathering of Balearic Shearwaters lingering off Portland Bill. Numbers there gradually built up from 10 on 13th and 20 on 19th, to a peak of about 50 on 22nd-25th, with 30 or so remaining into July. These birds were often associating with Manx Shearwaters, although the latter species showed a more marked variation in numbers, fluctuating between a few tens of birds to a peak of 2100 on 26th. The presence of lingering Balearic Shearwaters for several days indicates a high density of prey in this area (probably small shoaling fish such as sprats). This is supported by frequent observations of birds actively feeding. The fact that no more than seven Balearic Shearwaters were recorded elsewhere in the UK, even at well-watched sites just a few tens of kilometres from Portland Bill, indicates that feeding conditions in this specific area were optimal for this species. In addition, photos on the Portland Bird Observatory website showed that the birds present offshore were in heavy wing moult, and it is likely that once in this condition they are reluctant to move far once they have found a good source of food. Curiously, despite the stormy weather with frequent intervals of strong southwest winds, barely any of these feeding Balearic Shearwaters were displaced eastwards into east Dorset or Hampshire. Most were seen arriving from the east during the morning, so it is possible that they were roosting overnight at a nearby site to the northeast in the relative shelter of Weymouth Bay.

Overall, these results highlight the potential importance of Portland Bill as a summer feeding area for Balearic Shearwaters, with internationally important numbers present there for at least a couple of weeks. It may be that birds arriving from the south head directly to this area, which would explain the lack of large numbers of passage birds elsewhere. Although feeding birds have been recorded lingering off Portland Bill in previous years, the increased conservation concern of Balearic Shearwater means that data collected now are of potentially greater importance, and again highlights the need for detailed collation of records of this species.



### June 2007: Peak day totals of Balearic Shearwaters at individual sites



### Balearic Shearwaters in UK/Ireland in July 2007

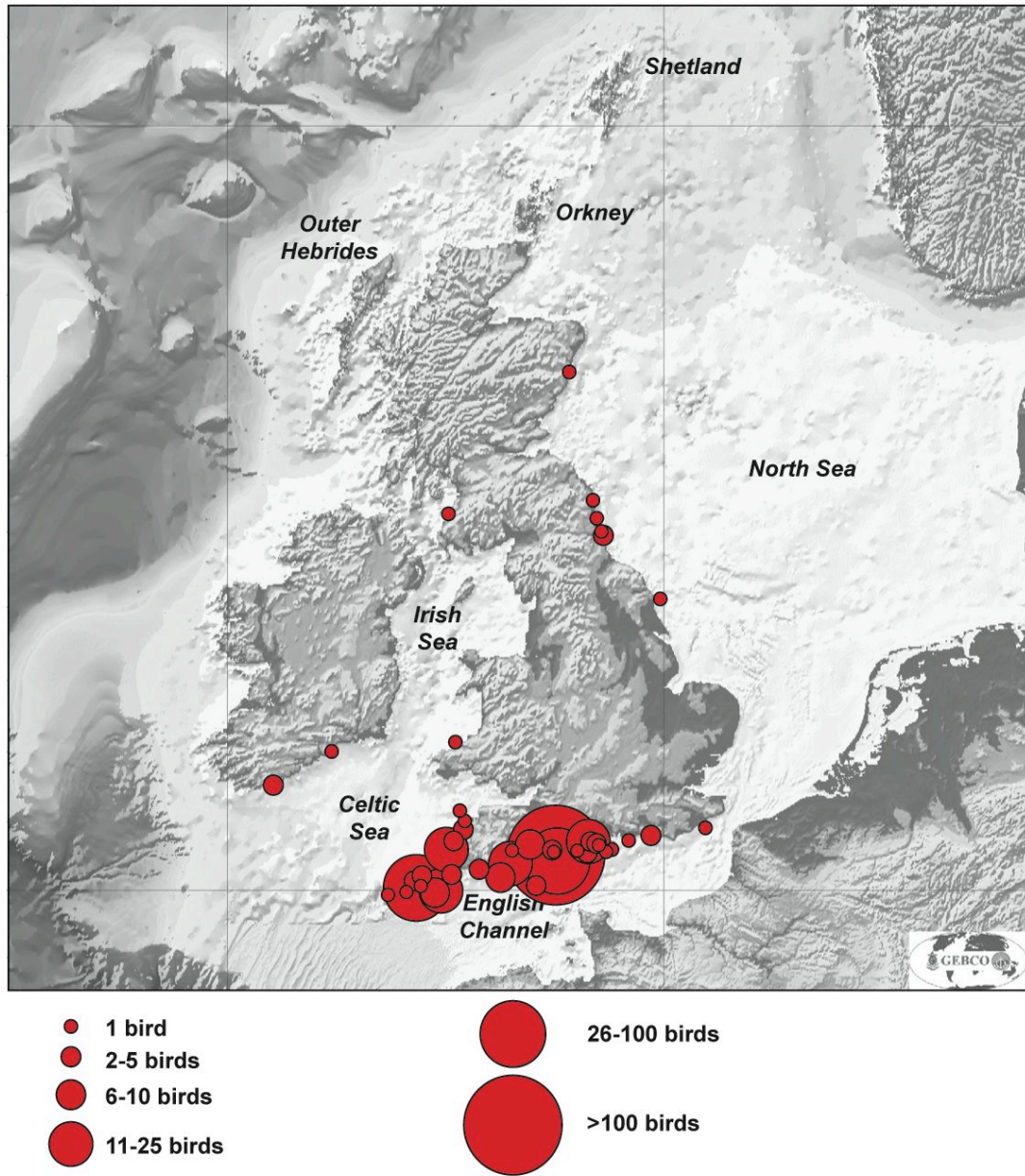
*It was the wettest July in the UK for almost 20 years, and the wettest July in England on record (leading to widespread flooding). The cause was low pressure situated close to, or over the UK for most of the month. It was also frequently windy, although sunshine hours and temperature were about average. The end of the month brought some welcome respite, with high pressure producing dry, sunny conditions.*

Over 150 Balearic Shearwater records were received for July, roughly double the number received for June. The vast majority of records were from southwest England, with the main concentration in Cornwall, Devon and Dorset. Away from this region, scattered records of one or two birds were made in southeast and northeast England, with two records from Scotland and one from Wales. The project was not widely publicised in Ireland, but one or two records were received from the southeast coast.



The lingering flock of moulting birds off Portland Bill (Dorset) remained until mid-July, with almost daily double-figure counts through to 16th. The peak count was an impressive 117 birds on 8th, with 2380 Manx Shearwaters seen the same day. Also, a pelagic trip into Weymouth and Lyme Bay on this date recorded 41 birds. As in June, photos on the Portland Bird Observatory and from the pelagic trip on 8th confirmed the presence of birds in heavy wing moult.

#### July 2007: Peak day totals of Balearic Shearwaters at individual sites



Gwennap Head (Cornwall) was covered continuously from 15th onwards as part of the SeaWatch SW survey, and daily sightings were made there to the end of the month. The peak count was of 41 on 29th, and the 'half-month' total was 274 birds. Of these, the vast majority were moving west, and sporadic simultaneous counts from the project sister site at Berry Head indicated that many were clearly part of regional-scale passage, rather than local feeding movements. Interestingly, relatively few of the birds recorded at Gwennap Head (and elsewhere) from mid-July onwards showed signs of wing moult. This would indicate that birds dispersing from Portland

Bill, and new birds arriving from the south, had already completed their moult, as fresh juvenile birds are not expected to arrive in UK waters until August and September.

During July, significant counts of 10-20 birds were also received from Hengistbury Head (Dorset), Berry Head and Prawle Point (Devon), and Rumps Point and The Lizard (Cornwall).

### **Balearic Shearwaters in UK/Ireland in August 2007**

*August was an average month overall for rainfall and sunshine, but was rather cool compared to recent years. Southern areas saw more settled conditions than northern areas. The first week was generally bright with showers across the UK, but a couple of Atlantic lows brought wet and windy conditions to all areas mid-month. The Azores high regained control from 21st, bringing northerly winds and bright conditions to the south, but it was rather more unsettled in the north.*

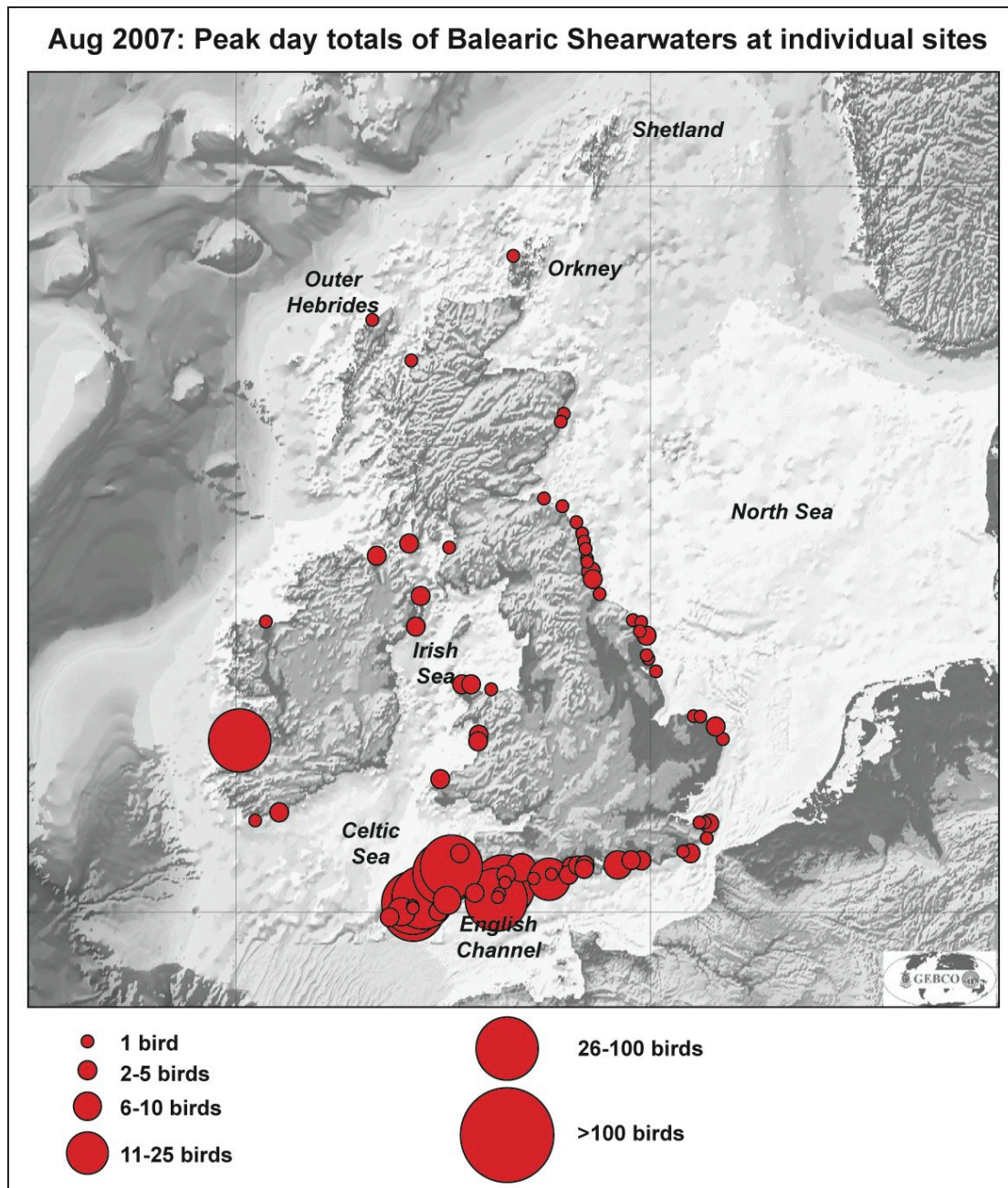
About 240 Balearic Shearwater records were received for August, a significant increase on July. As expected, the largest numbers were seen from headlands in southwest England, but there was a marked increase in records along North Sea coasts and off western UK and Ireland.

During the first week, generally low numbers of birds were seen, although 72 passed the SeaWatch SW watchpoint at Gwennap Head (Cornwall) on 4th. The middle of the month saw 33 off Prawle Point (Devon) and 38 passing Gwennap Head on 12th, with a count of 30 passing Berry Head (Devon) the following day. A switch to strong northwest winds on 15th then produced good numbers off north Cornwall, with 50 off Pendeen, 65 off St Ives and 24 off Trevose Head, and a further 25 off Pendeen on 16th.

A southwest gale on 18th then saw the focus return to the south coast, with 20 passing Berry Head and 29 off Gwennap Head. As the low-pressure system passed and winds swung to the northwest, birds were again pushed into the north Cornwall coast with 20+ off Pendeen, 30 off St Ives and 28 off Rumps Point. A dominance of bright settled conditions across southern England in the last two weeks of the month saw an end to the large numbers, with 37 off Trevose Head and 13 off Pendeen on 31st the only other double-figure counts. However, this probably also represents a reduction in sea-watching effort, as small numbers continued passing westwards off the Gwennap Head watchpoint.

There was evidence for an overall northwards push of birds, with scattered records from Ireland including 44 passing Bridges of Ross (Clare) on 24th-26th. Along North Sea coasts there were numerous reports of one to three birds from east Kent up to Aberdeenshire. Single birds were also seen as far north as Orkney and Lewis (Outer Hebrides).





### Balearic Shearwaters in UK/Ireland in September 2007

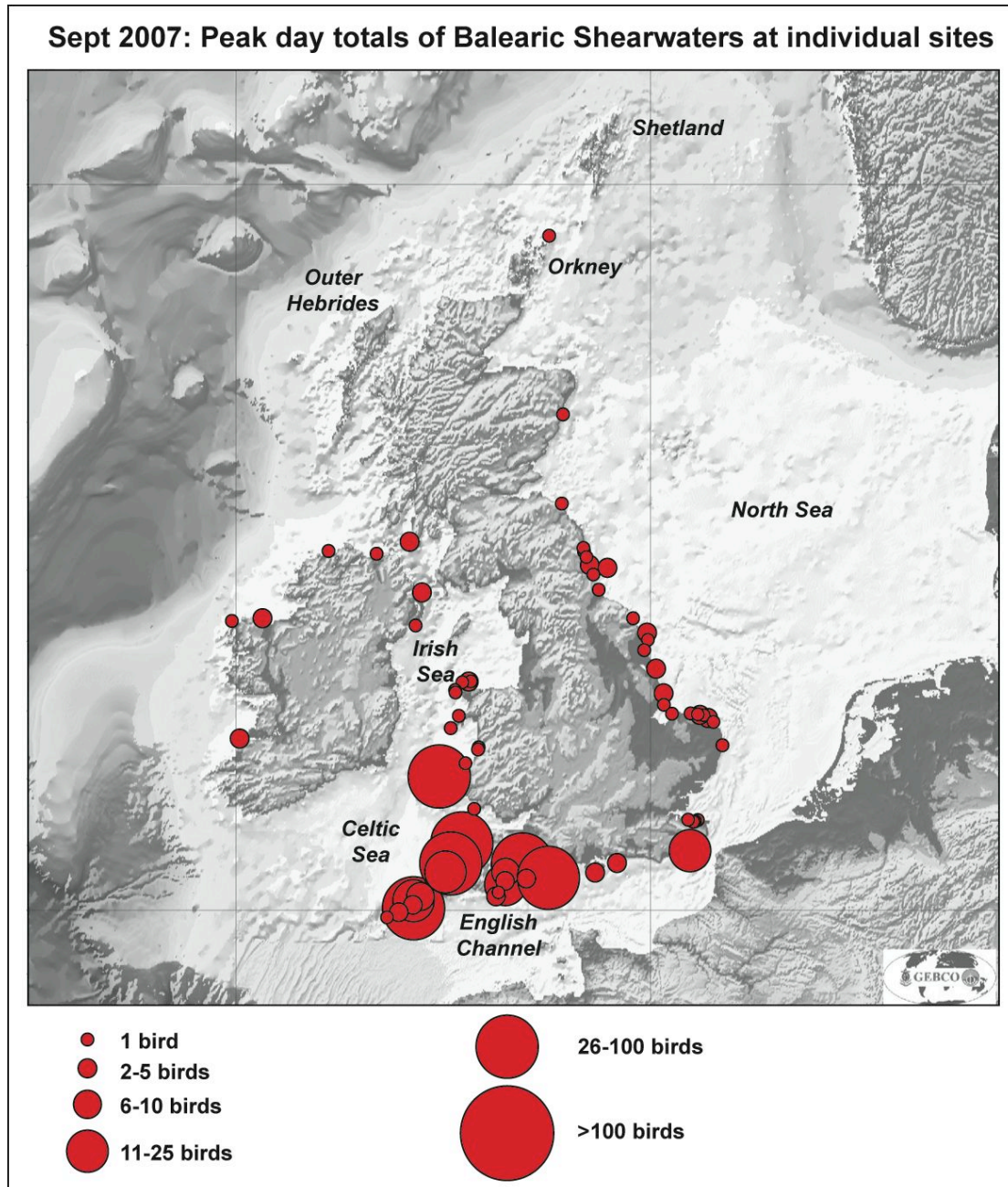
September was overall an average month for temperature and sunshine hours across the UK, but saw lower than average rainfall. High pressure dominated for much of the first half of the month, with occasional weak fronts only temporarily interrupting the dominance of settled conditions. From 19th-24th there was a change to low pressure and strong westerly winds, before pressure built again and winds turned north to northwesterly.

A total of about 200 Balearic Shearwater records was received for September, a decrease from the August total. The largest counts came from southwest England and southwest Wales, but there was again a good scatter of records along North Sea coasts and around Ireland.

The only significant counts in the first two weeks of September were 37 passing Hartland Point (Devon) on 3rd and 40 passing Trevose Head (Cornwall) on 10th.



Elsewhere, regular double-figure counts of up to 20 birds came from the SeaWatch SW watchpoints at Gwennap Head (Cornwall) and Strumble Head (Pembrokeshire).



On Sept 16th a change in the weather saw a total of 20 birds pass Dungeness (Kent), with 37 off Strumble Head the next day. Unsettled conditions on 20th then saw a further influx of birds arriving off central southern England, with 74 passing Portland Bill (Dorset) and 41 passing Seaton (Devon). Further west, just 20 were seen off Berry Head (Devon), 18 off Gwennap Head and 22 off Strumble Head. However, a westwards shift became evident on 24th with Gwennap Head yielding 62 birds, the second highest count of the SeaWatch SW survey. It seems likely that these birds quickly moved away southwards, as numbers rapidly decreased after 25th; Gwennap Head was the only site to subsequently record double figures, peaking at 26 on 29th.

Elsewhere, numerous records of one to four birds came from North Sea coasts between Kent and Aberdeenshire, and a single bird even reached North Ronaldsay

(Orkney) on 13th. Interestingly, no records were received from the west coast of the UK north of Anglesey, but there were several records of one or two birds from northern and western Ireland.

### **Balearic Shearwaters in UK/Ireland in October 2007**

*October was a warm, sunny and dry month overall, with a dominance of high pressure and settled conditions. It was the driest October in the UK since 1985. Occasional short-lived frontal systems crossed the country, mostly moving southeastwards in response to low pressure moving around the top of the Azores high.*

Only 60 Balearic Shearwater records were received for October, suggesting a major withdrawal of birds from UK coasts. All records came from a line southwest of Pembrokeshire and Kent, further emphasising the southerly retreat.

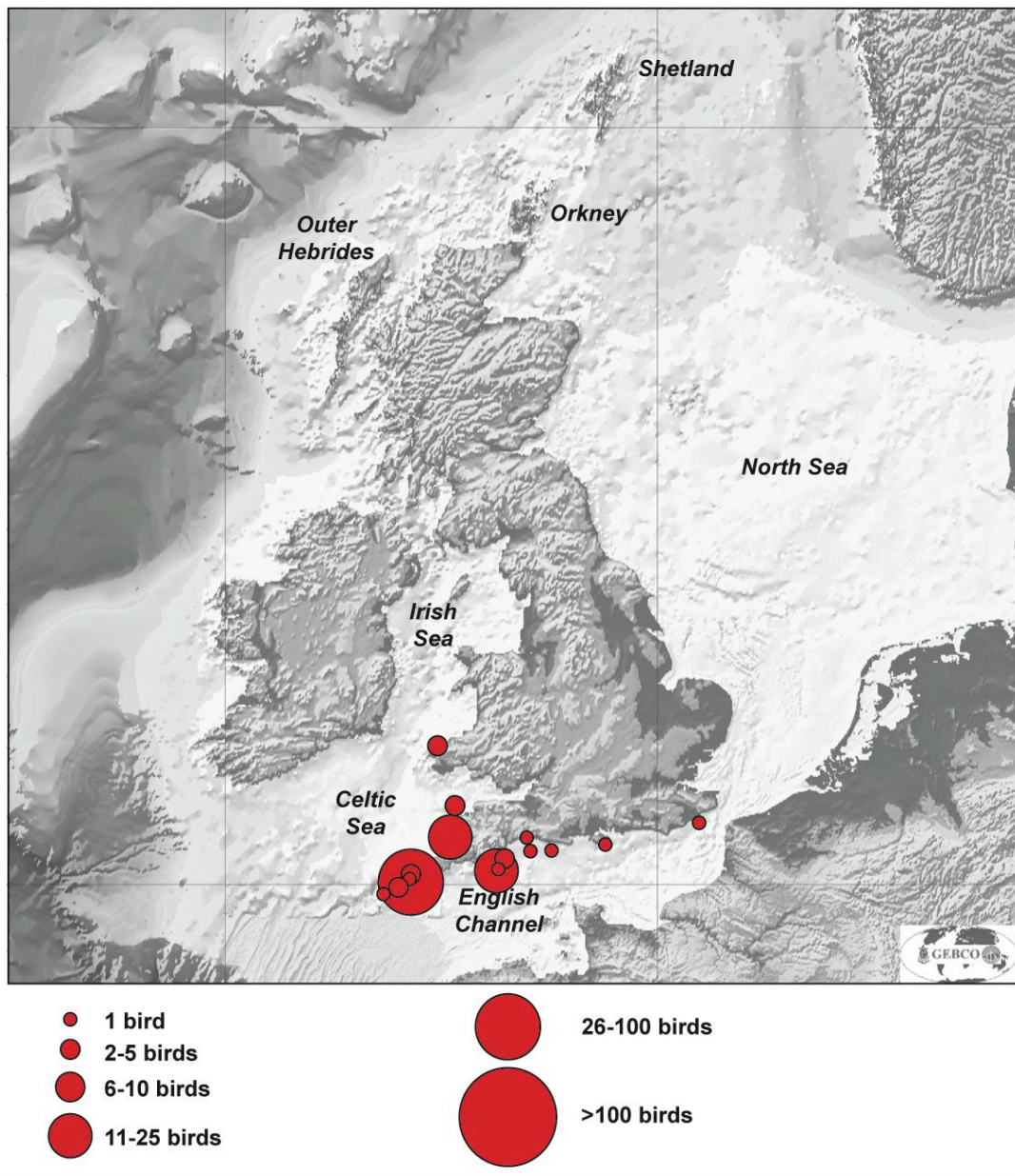
A count of 28 birds passing Gwennap Head (Cornwall) on 13th was the highest of the month, and this site recorded almost daily double-figure counts up to the end of the SeaWatch SW survey on 15th. The only other double-figure counts were 17 passing Trevoze Head (Cornwall) on 12th, 11 passing Prawle Point (Devon) on 20th and 15 passing Trevoze Head on 29th. Away from the far southwest of the UK, the only records received were of one off Dungeness (Kent) on 1st and one off Ventnor (Isle of Wight) on 16th.

It will be interesting to compare the rapid withdrawal of birds this year with future years, to see exactly what triggers the southward migration. In addition, it is clear that constant-effort monitoring off Gwennap Head during the SeaWatch SW survey has yielded good numbers of birds on an almost daily basis, even during early October when few were recorded elsewhere. This is partly because this is a key flyway for birds passing along the coast of southwest UK, but also because it seems to be a key area for birds to linger and feed.



*Balearic Shearwater off the Needles, Isle of Wight (Kris Gillam)*



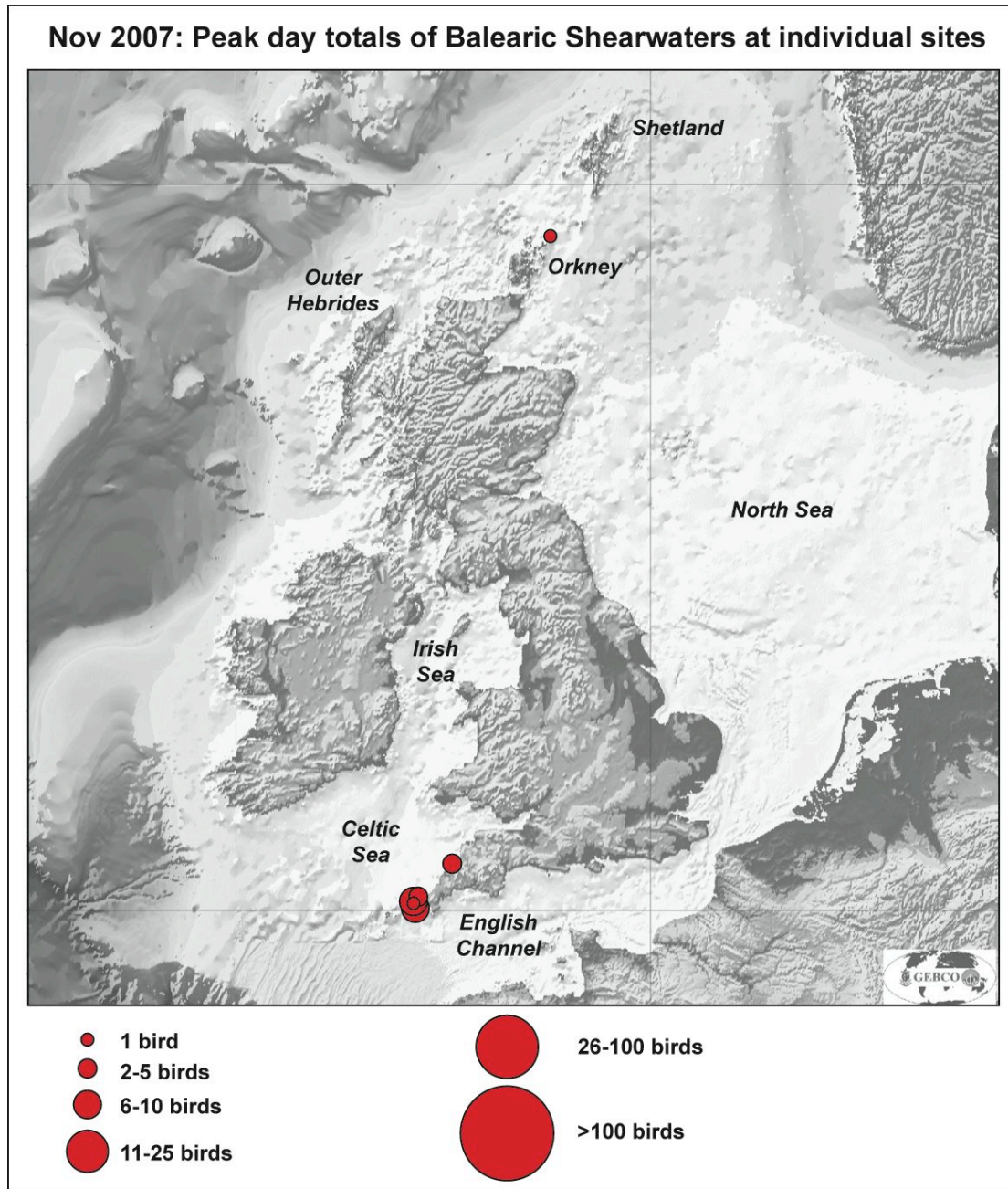
**Oct 2007: Peak day totals of Balearic Shearwaters at individual sites****Balearic Shearwaters in UK/Ireland in November 2007**

*November was overall a warm and relatively dry month with average sunshine, although northern areas were more affected by rain and wind. The start of the month was dominated by settled anticyclonic weather, but Atlantic depressions introduced unsettled conditions from 8th to 14th and 18th to 23rd. It became markedly colder in the last week.*

A total of 11 records were received for November, all but one of which came from Cornwall. The odd record remarkably concerned one off North Ronaldsay (Orkney) on 5th; it is highly unusual for this species to remain this far north so late in the autumn, and it is possible the bird was injured or sick. The Cornish reports referred to 32 individuals, with peak counts of nine off Gwennap Head on 1st and six off Pendeen on 8th. Only three records were received after Nov 11th, including one off



Gwennap Head on 20th that was feeding in association with 300 Gannets and 20 Common Dolphins.



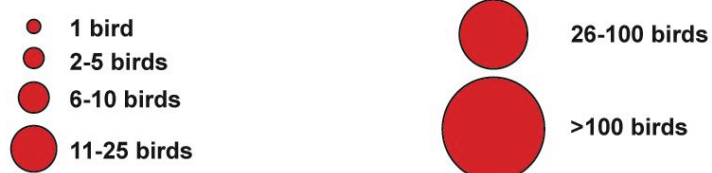
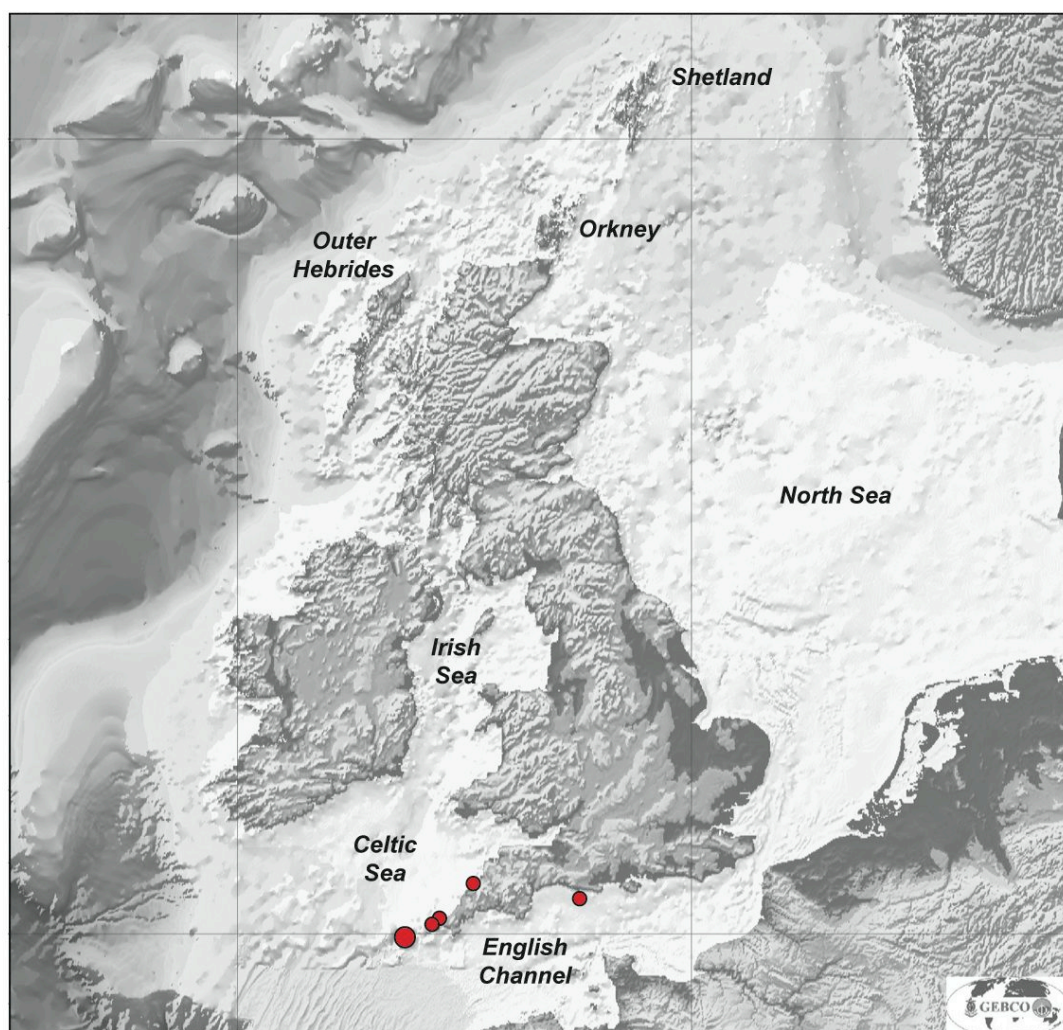
### Balearic Shearwaters in UK/Ireland in December 2007

*Although it was an average month for temperature and rainfall, it was the sunniest December since 2001. The month began with unsettled conditions, particularly on 2nd, when gales were recorded in the south and west. High pressure then dominated from 11th to 21st, with dry, sunny and cold conditions across much of the UK. From 22nd onwards a return to wet and windy weather occurred.*

A total of 12 reports were received for December, all from southwest England. Six records of singles came from Trevoze Head, St Ives and Pendeen (Cornwall), while the peak count was three off Peninnis Head, St Mary's (Scilly) on 4th. Elsewhere,

singles were recorded from Portland Bill (Dorset) on five dates. The only record after 9th was of one off Trevose Head on 28th, this being the last record of 2007.

### Dec 2007: Peak day totals of Balearic Shearwaters at individual sites



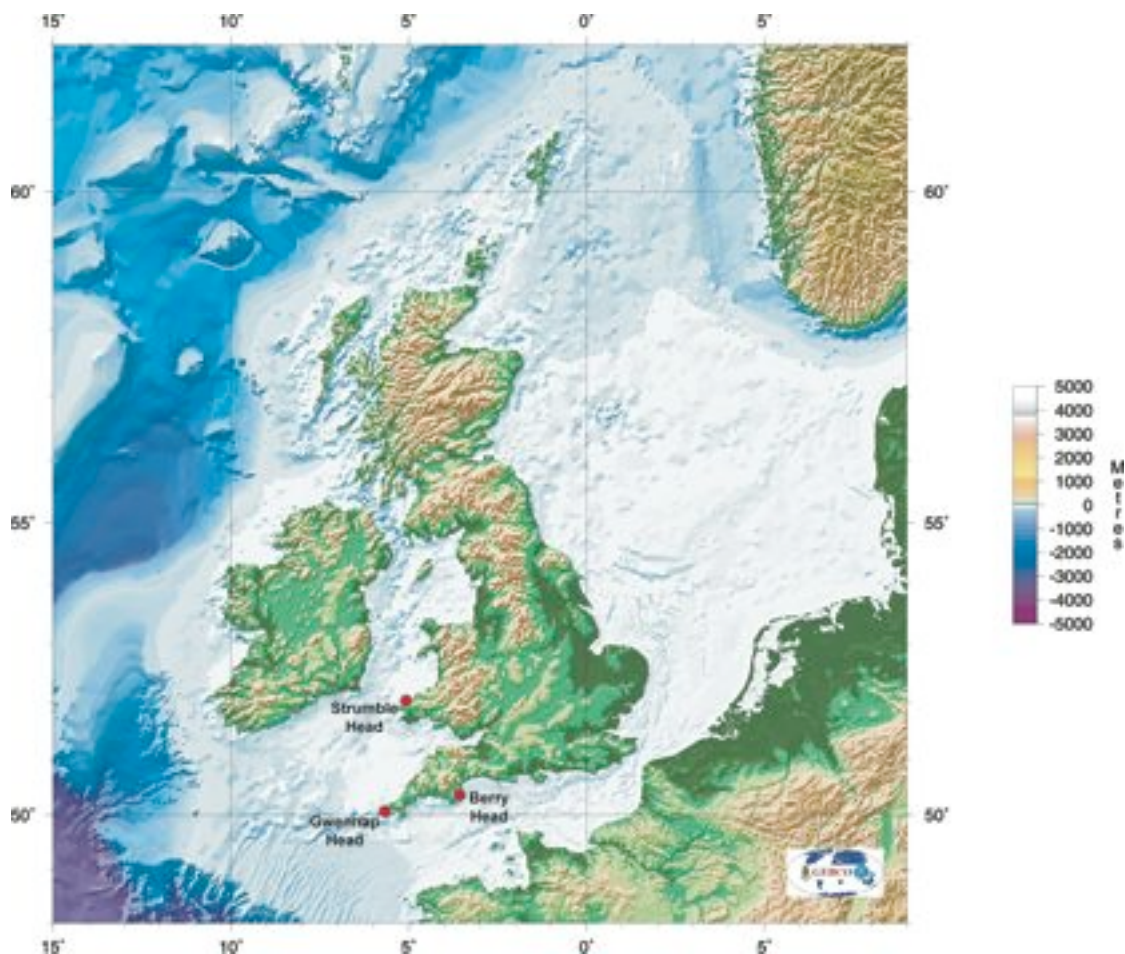


### **The 2007 SeaWatch SW survey at Gwennap Head: Introduction**

It is intended that the SeaWatch SW survey at Gwennap Head will run for five years from 2007-2011, with the possibility of extension beyond this. The watchpoint will be manned continuously from July 15th to October 15th during each survey year.

#### **Survey location**

The watchpoint is located at Gwennap Head, Porthgwarra, Cornwall, at the southwest tip of the UK mainland. Observations are carried out from a rocky spur about 25-30 m above sea level. The watchpoint is 500 m west of the public car park at Porthgwarra Cove, and 1.5 km south of Ardensawah Farm B&B. Offshore of the watchpoint, at 1.5 km range, is the Runnelstone buoy. This marker buoy sits atop the Runnelstone reef, and is a crucial aid for estimating distance of passing animals. The NCI coastguard look-out is situated on the cliff-top about 200 m northwest of Gwennap Head, and is manned daily throughout the survey period.



*GEBCO map of the UK and Ireland showing location of Gwennap Head and sister sites at Berry Head and Strumble Head.*



UK Ordnance Survey map showing the location of Gwennap Head. Note position of Ardensawah Farm B&B (red circle) and the offshore Runnelstone (1.5 km to the south).





*Google Earth image showing Gwennap Head and the location of the SeaWatch SW watchpoint (arrowed)*



*View westwards towards the SeaWatch SW watchpoint at Gwennap Head (Russell Wynn)*

### Survey methods

The SeaWatch SW survey involves continuous 'dawn-to-dusk' observations from Gwennap Head between 15 July and 15 October. Each day is split into two watch sessions, with a two-hour break for lunch:

Session 1: 30 minutes after sunrise to 1200 hrs

Session 2: 1400 hrs to 30 minutes before sunset

As an example, in mid-August in 2007 the watch periods were roughly 0600-1200 hrs and 1400-2000 hrs (i.e. about 12 hours in total). These times will be adhered to in subsequent years for consistency.

During the 2007 survey, a total of **988** hours of observations was carried out at the Gwennap Head watchpoint over **93** consecutive days. There was a fairly even split of effort between the morning and afternoon sessions, with a total of 501.5 hours (50.8%) during the morning sessions and 486.5 hours (49.2%) during the afternoon sessions. The monthly breakdown of observation hours is shown below:

15-31 July	206.5 hours	(av. 12.1 hours per day)
1-15 Aug	181.5 hours	(av. 12.1 hours per day)
16-31 Aug	181.5 hours	(av. 11.3 hours per day)
1-15 Sept	153 hours	(av. 10.2 hours per day)
16-30 Sept	138 hours	(av. 9.2 hours per day)
1-15 Oct	127.5 hours	(av. 8.5 hours per day)
<b>Total</b>	<b>988 hours</b>	<b>(av. 10.6 hours per day)</b>

The watchpoint is manned entirely by volunteer observers. On all dates, an experienced seabird observer was present and was responsible for recording all seabird species passing the watchpoint, including Balearic Shearwaters (note that seabird observers were offered free B&B near to the watchpoint at Ardensawah Farm B&B). Marine wildlife observers, with a range of backgrounds, were present alongside the seabird observers, and recorded all species in the water, e.g. Basking Sharks, Ocean Sunfish and cetaceans. Additional support observers were present on several dates.



*Volunteer observers at the Gwennap Head watchpoint (Russell Wynn)*

Records were made on purpose-built records forms, with separate forms for Balearic Shearwaters, other seabird species, and marine wildlife. Examples of each type of form can be found in the appendix, together with guidelines on required data



for different animal species and for hourly recording of weather and sea conditions.

**Weather conditions**

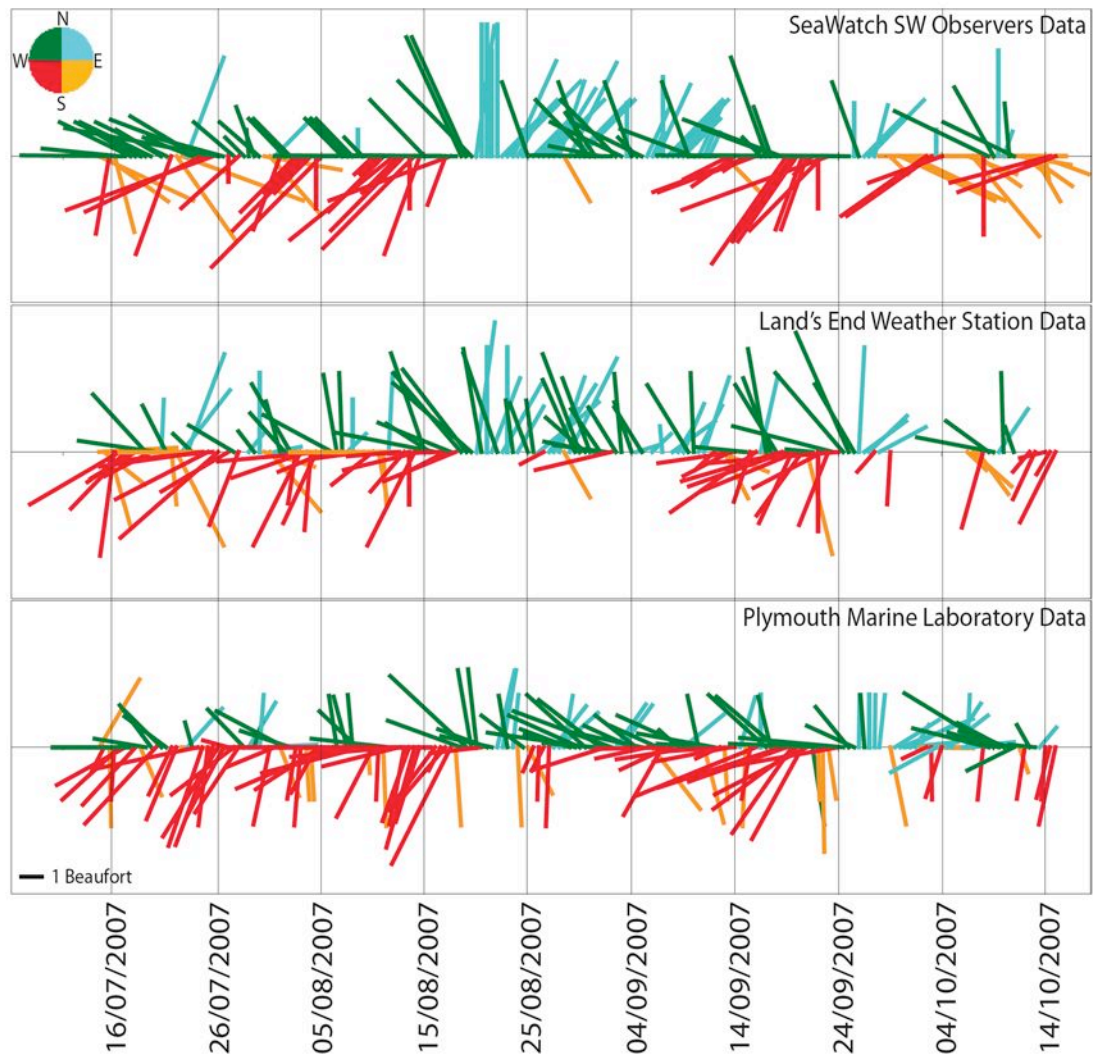
The first two weeks of the Gwennap Head survey, between 15 and 29 July, were dominated by low pressure and unsettled weather conditions. Strong winds were frequent, with directions dominantly between northwest and southwest. It was the wettest July in England since 1936, with slightly below average temperatures and sunshine hours.

At the end of July and beginning of August, high pressure built from the west producing dry sunny weather and lighter winds. It remained generally settled until mid-month, but with brief showery interludes. Winds veered between south and northwest. Wet conditions and strong southwest winds arrived on 14 Aug, followed by northwesterlies and showers. Another low pressure arrived on 18th followed by further showers. Wind directions remained in the northern sector. The final week of August saw settled high-pressure conditions over the region, with warm, sunny weather and light northeasterlies. On average, it was a cool, dry and bright August.

September opened with generally fine and dry weather. High pressure dominated with northwest winds. A couple of frontal systems crossed southern England mid-month, and strong southwesterlies became dominant until 24 Aug. The final week saw the winds switch to northwest and then northeast, and temperatures dropped rapidly. Overall it was a very dry September, with below average temperatures but more sunshine than usual.

The first half of October was dominated by high pressure, with lots of dry weather and a mix of sunny and cloudy conditions. Winds were variable but generally light. It was the driest October since 1985, and was warmer and sunnier than average.

Wind vector diagrams for the survey period are shown below:

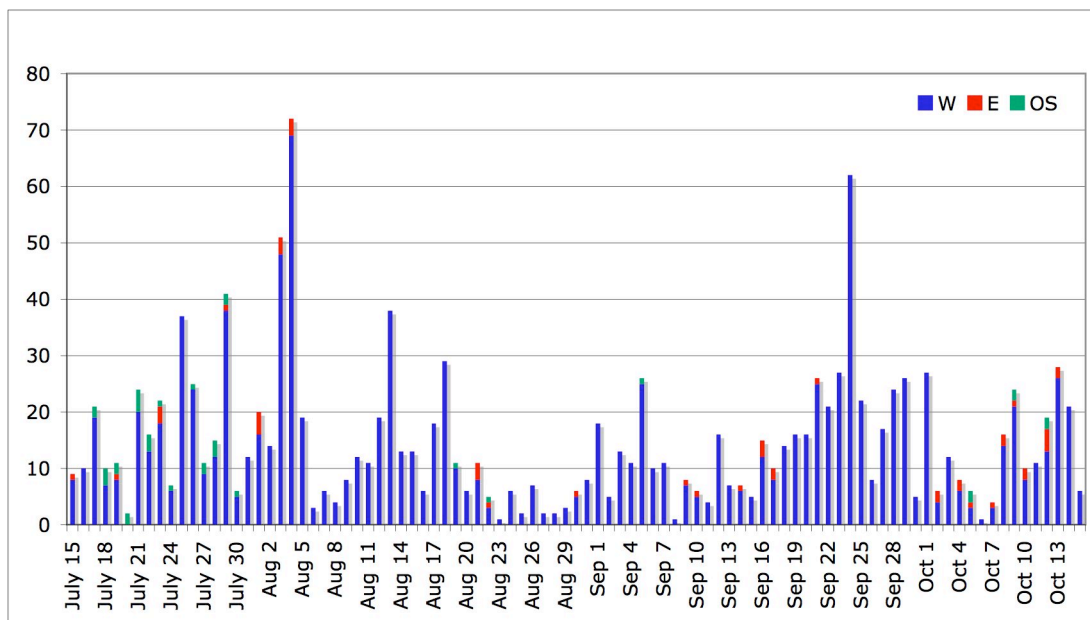


Wind vector diagrams from the SeaWatch SW watchpoint at Gwenap Head (top), Land's End weather station (middle) and Plymouth Marine Laboratory weather station (bottom). Data from Gwennap Head were obtained by SeaWatch SW observers using a compass and estimates of wind speed (based on the Beaufort Scale). Note the overall consistency of the three datasets.

### **The 2007 SeaWatch SW survey at Gwennap Head: Balearic Shearwaters**

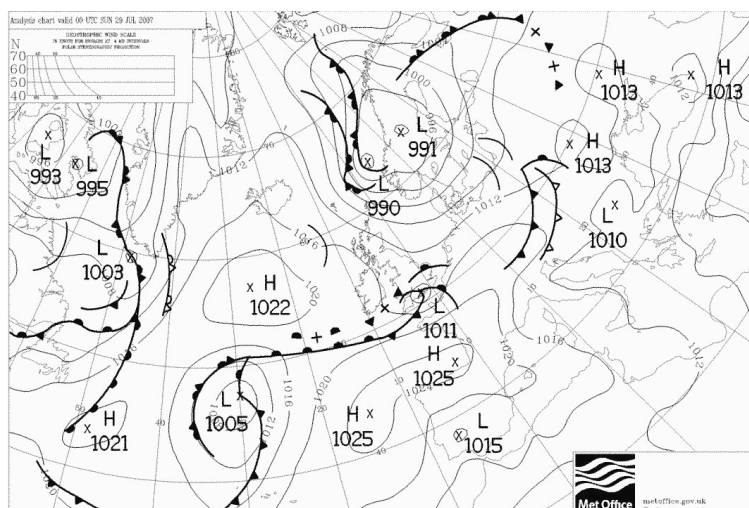
Balearic Shearwater is the primary target species of SeaWatch SW, and during the Gwennap Head survey the species was carefully recorded. Each observation included the time, number of birds, direction, distance offshore and notes on moult stage, plumage tone and behaviour.

Remarkably, Balearic Shearwaters were recorded every day between 15 July and 15 October, meaning they were essentially 'resident' off Gwennap Head for at least a quarter of the year. A maximum total of **1361** birds were recorded, with 1278 (94%) flying west, 47 (3.5%) flying east and 36 (2.5%) lingering/feeding offshore. The actual numbers feeding offshore will have been slightly higher as some of the birds recorded as flying west/east were noted as settling on the sea for short periods before resuming their passage. Nevertheless, it is clear that the vast majority of Balearic Shearwaters recorded off Gwennap Head during the survey period were on direct westwards passage, with most birds seen during morning sessions (e.g. 914 (67%) seen before 1200 hrs and 447 (33%) seen after 1400 hrs).

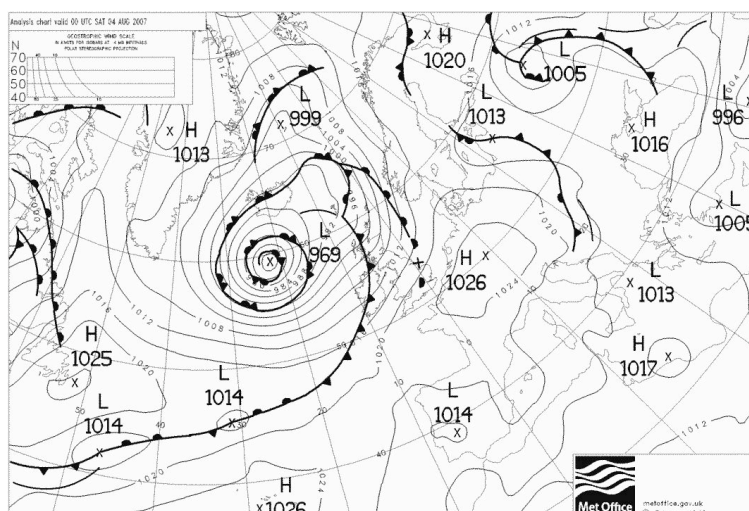


*Day totals of Balearic Shearwater off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore*

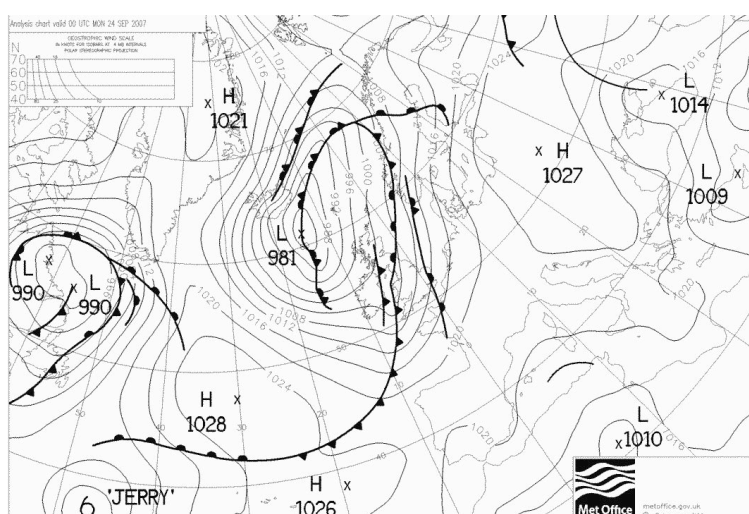
The above graph reveals that most day counts were of <20 birds, with counts of between 20 and 40 on 19 dates. The peak movements were 41 on 29 July, 123 on 3-4 Aug (coinciding with the peak Manx Shearwater movement) and 62 on 24 Sept, with almost all birds moving westwards. The overall build-up of numbers through late July and early August is probably related to westwards dispersal of the moulting flock that was present in the Portland Bill area for much of the early summer. The late September peak may relate to birds departing areas to the north, as the overall UK dataset showed a marked departure from the Irish Sea area by early October. However, it could equally be a food-related movement of birds already in the western English Channel, or a fresh influx of juveniles/post-breeding adults from the south. Weather is clearly an important trigger for significant movements off Gwennap Head, as the following images show that all three peak movements coincided with low pressure over or to the west of southern England, drawing southwest winds over Cornwall.



Weather chart for 29 July 2007 (UK Met Office)



Weather chart for 4 Aug 2007 (UK Met Office)



Weather chart for 24 Sept 2007 (UK Met Office)

It should be noted that the total number of birds seen off Gwennap Head will inevitably include some duplication, with the same birds seen passing the watchpoint more than once. However, special care was taken to prevent double-counting of birds lingering offshore, while data from elsewhere (including the sister site at Berry Head) provides evidence for large-scale movements of birds along the southwest coast, as opposed to small-scale circulation off southwest Cornwall. The lack of birds seen returning south and east off Gwennap Head in September and October, when UK reports indicated a southwards withdrawal from UK waters, is probably due to the coastal geography of southwest England. Birds heading south along the tip of northwest Cornwall probably detach from the coast around Land's End and head directly out to sea in a south or south-easterly direction (interestingly, the peak passage of Razorbills in early October was noted to be following this distant line). Likewise, birds heading west around Gwennap Head and continuing north and west appear to detach from the Cornish coast before reaching Pendeen, as very few are seen moving east at this site. Further effort-based observations in the Land's End area will doubtless shed more light on this pattern of movement.

Many sightings of Balearic Shearwaters were of one or two birds mixed in with small numbers of Manx Shearwaters and, as noted previously, the peak westwards passage of both Balearic and Manx Shearwaters occurred over the same two-day period (3-4 Aug). However, the local pattern of movement of the two species off Gwennap Head was often clearly different. Balearic Shearwaters were mostly observed moving westwards close inshore, usually within 1.5 km range. In contrast, Manx Shearwaters were occasionally seen moving east in large numbers, often at ranges >1.5 km. For example, on the morning of 23 July, in strong southeast winds and heavy rain, large numbers of Manx Shearwaters moved east at 1-2 km range, but almost all of the Balearic Shearwaters continued moving west at <1 km range. On 29 July, a late afternoon movement of Manx Shearwaters to the southeast was observed, but very few Balearic Shearwaters were mixed in. Another anecdotal report on 25 July noted that mixed flocks of Manx and Balearic Shearwaters appeared to be taking a closer line than flocks only containing Manx Shearwaters. These observations all indicate that, although the species are closely related and undertake regional movements in similar weather conditions, their local movements are often very different.

In addition to direct passage, small numbers of birds (typically one to four) were frequently seen investigating the large Herring Gull flock that sporadically gathered along the line of the Runnelstone reef, particularly in July and early August. These birds were often seen plunge-diving, snorkelling and water-running between the Herring Gulls, and sometimes lingered for as long as two hours. They were occasionally harassed by Herring Gulls. Few observations of birds lingering offshore were made when the gull flock was not present. Later in the season, Gannets were also seen fishing around the Runnelstone reef in numbers, and these again appeared to attract Balearic Shearwaters. For example, between 0800-0920 hrs on 9 Oct, several westwards-flying Balearic Shearwaters were seen to head directly for the feeding Gannet flock about a mile offshore near the Runnelstone buoy. The Gannets then gradually dispersed, and all Balearic Shearwaters that subsequently passed westwards were noted to be following a line closer inshore.

Finally, some interaction between Balearic Shearwaters and fishing boats was noted. On 19 July a single bird was seen plunge-diving very close to two small fishing boats towing baited lines on an outrigger – this bird appeared to be actively interacting with the boats, although the exact reason is unclear. On 7 Oct a Balearic Shearwater was seen following a fishing boat surrounded by large gulls, while on 13 Oct one was seen following an angling boat that was gutting fish and disposing of discards (with ~100 large gulls also present).



### **The 2007 SeaWatch SW survey at Gwennap Head: Bird species accounts**

#### **Mute Swan *Cygnus olor***

Two records: An adult moved west with four Gannets on 3 Sept and two flew west on 11 Sept. Both records are likely to refer to birds that had completed their late-summer moult and were returning to winter territories.

#### **Wigeon *Anas penelope***

One record: A flock of three flew east on 1 Oct.

#### **Teal *Anas crecca***

One record: A flock of three flew west on 30 July.

#### **Mallard *Anas platyrhynchos***

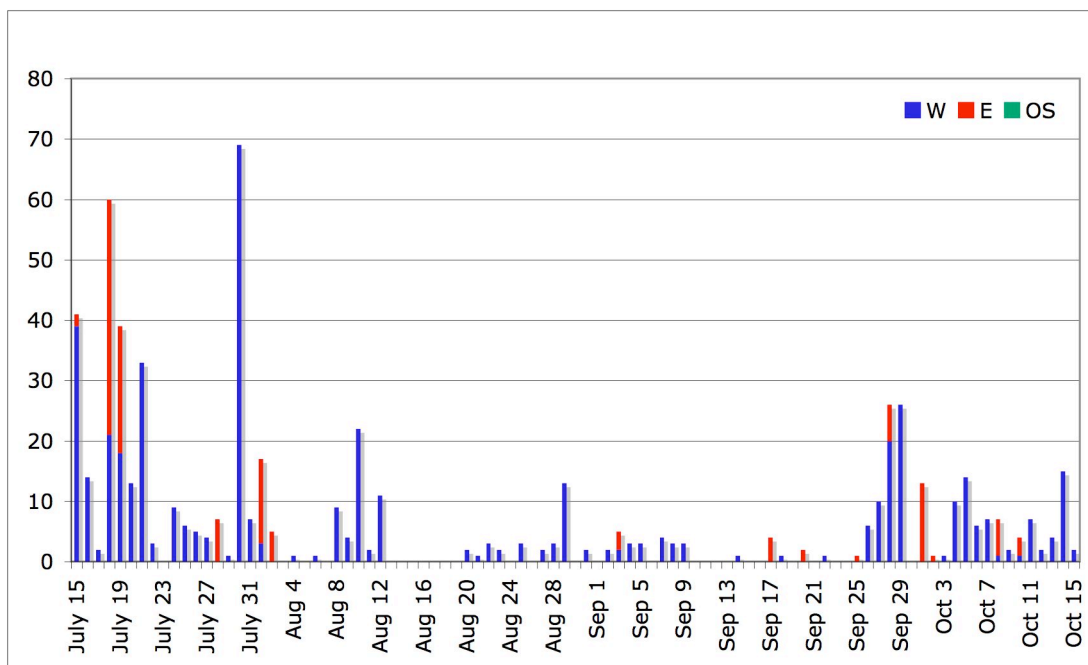
Two records: A flock of seven flew west on 31 July and two flew west on 7 Sept.

#### **Common Scoter *Melanitta nigra***

Target species: recording level 3

A maximum total of 612 birds recorded, with 485 (79%) flying west and 127 (21%) flying east. Recorded on 66 days out of the 93 (71%), with the majority seen in July (94% of days) and October (100% of days). There was a distinct bias towards passage in the morning, with 532 (87%) seen before 1200 hrs and only 80 (13%) seen after 1400 hrs. The peak passage was in July, with a maximum day count of 69 west on 30 July. However, there were also some significant eastwards movements, e.g. on 18-19 July 60 out of 99 were moving east (mostly heading southeast out to sea).

Relatively few were seen during August and most of September, with a small autumn passage commencing in the last week of September. The peak passage during this period was 52 on 28-29 Sept, all but six of which were moving west.



Day totals of Common Scoter off Gwennap Head between 15 July and 15 October 2007.

W = flying west; E = flying east; OS = lingering/feeding offshore

**Red-throated Diver *Gavia stellata***

Two records: Singles flew west on 18 and 21 Sept. These records may refer to the same bird and are relatively early; this species is scarce in southwest England prior to October.

**Black-throated Diver *Gavia arctica***

Three records: Single birds in summer plumage flew west on 25, 26 and 29 Sept. These records may refer to the same bird.

**Great Northern Diver *Gavia immer***

Five records: On 3 Oct one flew east at 1142 hrs and possibly the same bird moved west at 1617 hrs. On 7 Oct one flew high northwest and further singles moved west on 9 and 10 Oct. Between three and five birds are likely to have been involved.

**Fulmar *Fulmarus glacialis***

One pair bred at the Gwennap Head watchpoint, with a single well-grown chick still on the nest on 21 Aug. Fulmars were abundant offshore during most of the survey period, although numbers markedly declined in late September and October. Single dark-morph birds ('Blue' Fulmars) flew west on 31 Aug and 15 Sept.



*Juvenile Fulmar at Gwennap Head (Russell Wynn)*

**Cory's Shearwater *Calonectris diomedea***

Target species: recording level 2

A total of 40 recorded, with one in July, then 19 in August and 20 in September. All but three birds were moving west. The peak passage was 13 west on 20 Sept. All records are listed below:

July 27th: 1W at 1413 hrs  
 Aug 5th: 1W at 1028 hrs  
 Aug 11th: 2 circled around the Runnelstone for 20 minutes then left SW at 1620 hrs.  
 Aug 13th: 1W at 1051 hrs and 1W at 1105 hrs.  
 Aug 14th: 2W at 0850 hrs, 2W at 0943 hrs and 1W at 1010 hrs.  
 Aug 15th: 1W at 0805 hrs and 1W at 1150 hrs.  
 Aug 18th: 1W at 1236 hrs, 1306 hrs and 1318 hrs, 2W at 1330 hrs, 1SW at 1536 hrs.  
 Aug 29th: 1W at 1123 hrs.

Sept 16th: 1E at 1455 hrs.  
 Sept 17th: 1W at 0924 hrs, 1E at 1540 hrs and 1E at 1810 hrs.  
 Sept 19th: 2W at 0824 hrs and 1W at 1123 hrs.  
 Sept 20th: 2W at 0928 hrs, 2W at 0933 hrs, 5W at 1025 hrs and 4W at 1028 hrs.

### Great Shearwater *Puffinus gravis*

Target species: recording level 2

A total of ten recorded flying west on two dates as follows:

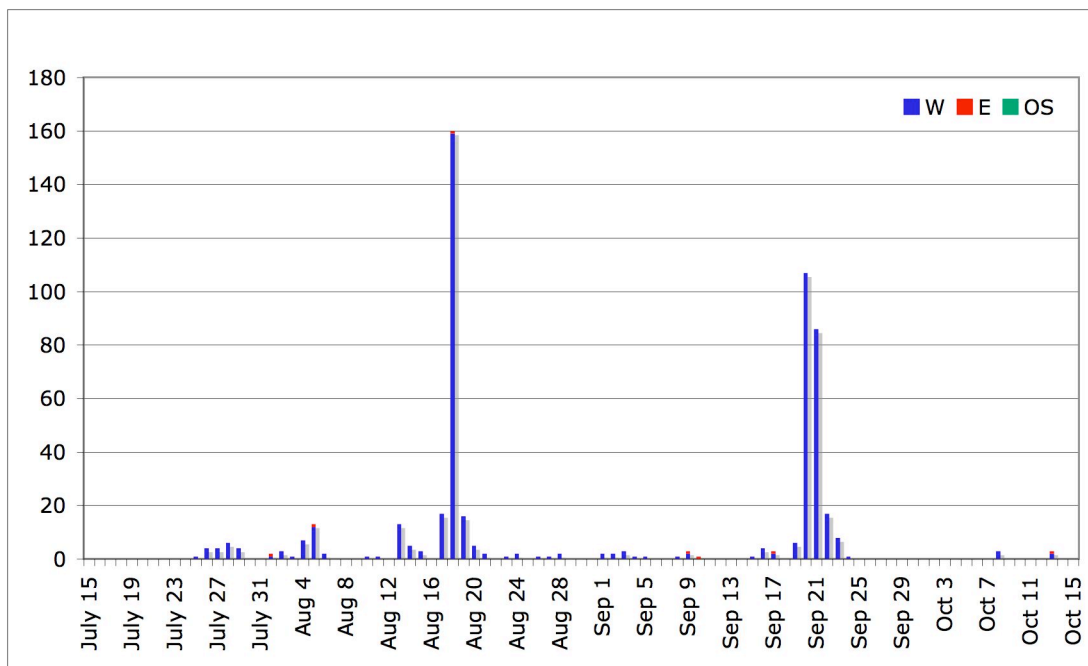
Aug 14th: 1W at 0740 hrs and 2W at 0755 hrs.  
 Sept 16th: 2W at 0744 hrs, 1W at 0827 hrs, 2W at 0836 hrs, 1W at 0845 hrs + 0905 hrs.

Single large shearwaters moving west at 0812 hrs, 0845 hrs and 1505 hrs on the latter date may also have been this species.

### Sooty Shearwater *Puffinus griseus*

Target species: recording level 2

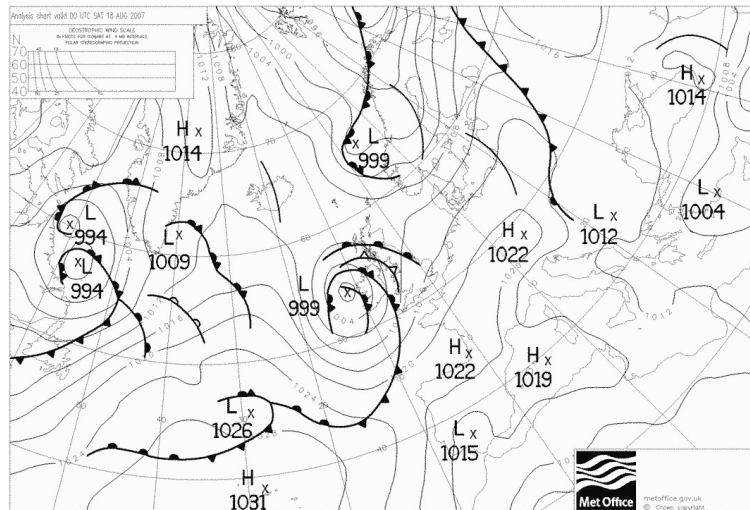
A maximum total of 530 birds recorded, with 523 (99%) flying west and only seven flying east. Recorded on 45 days out of the 93 (48%), with the majority seen in August (68% of days) and September (57% of days). There was a fairly even spread of numbers throughout the day, with 285 (54%) seen before 1200 hrs and 191 (36%) seen after 1400 hrs (note that the other 10% were seen between 1200 and 1400 hrs during two days of heavy passage when observations continued through lunch).



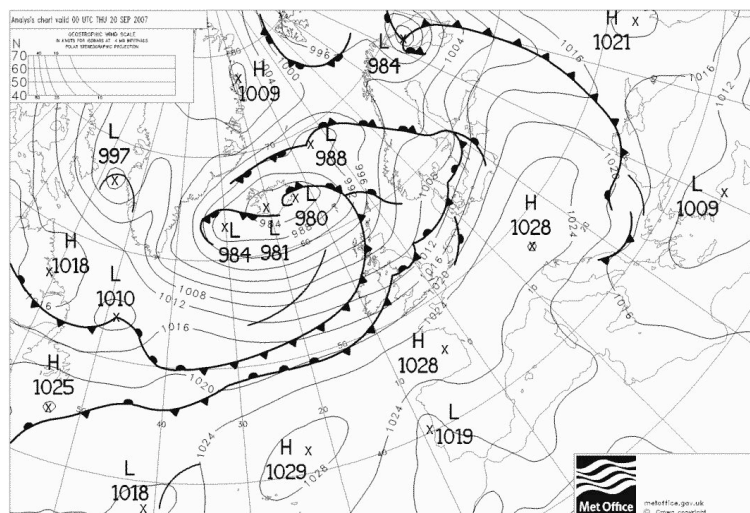
Day totals of Sooty Shearwater off Gwennap Head between 15 July and 15 October 2007.  
 W = flying west; E = flying east; OS = lingering/feeding offshore

The majority of passage occurred in two distinct bursts, on 17-19 Aug and 20-22 Sept, accounting for 403 birds (76% of the overall total). Peak day counts included 160 (all but one flying west) on 18 Aug and 107 west on 20 Sept. These two days accounted for 50% of the overall total. Analysis of weather patterns for these two dates shows a similar pattern (see below), with low pressure dominating the northeast Atlantic region and a strong south to southwest airflow over southwest UK

accompanied by frontal systems and rain. Of interest, bird number 158 flying west at 1937 hrs on 18 Aug was seen in apparent display flight



Weather chart for 18 Aug 2007 (UK Met Office)



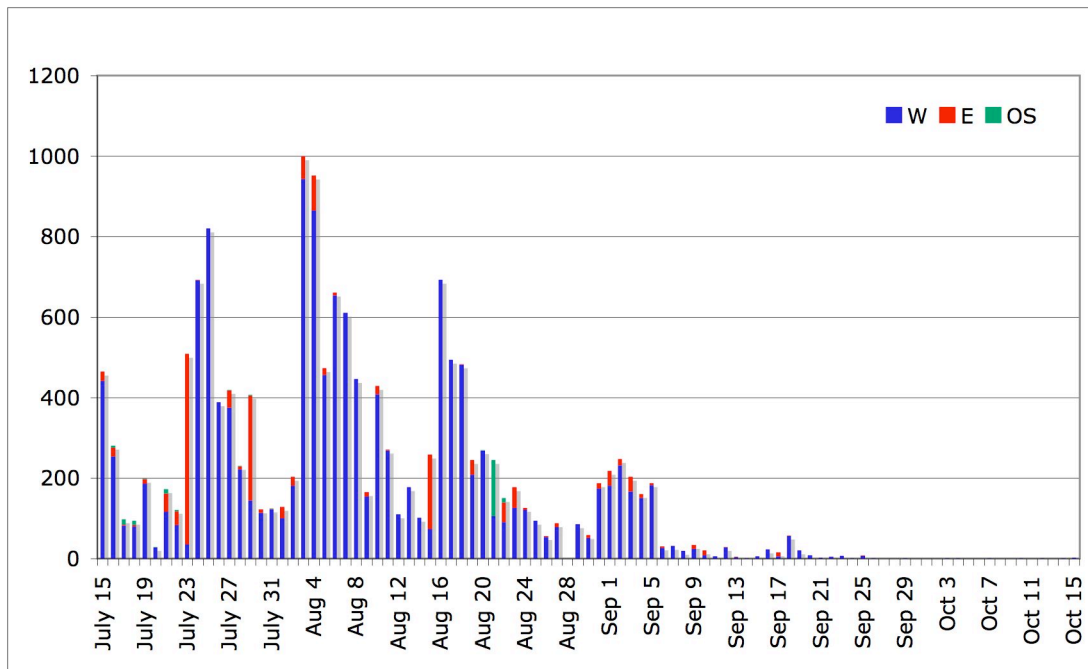
Weather chart for 20 Sept 2007 (UK Met Office)

### Manx Shearwater *Puffinus puffinus*

Target species: recording level 3

A maximum total of 16,001 birds recorded, with 14,101 (88%) flying west, 1695 (11%) flying east and 205 (1%) lingering/feeding offshore. Recorded daily up to 26 Sept, after which very few were seen, e.g. only noted on 47% of days in October. The majority were seen during the morning sessions, with 10,276 (64%) seen before 1200 hrs and 5725 (36%) seen after 1400 hrs. The peak movement was on 3-4 Aug when 1952 (1809 west and 143 east) were recorded.





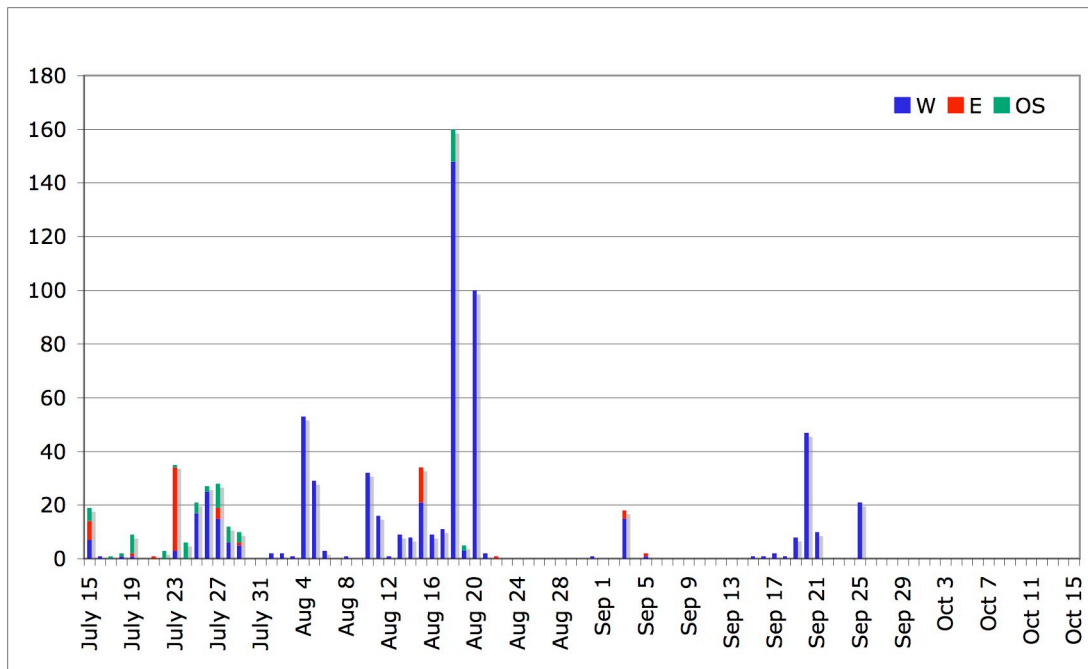
Day totals of Manx Shearwater off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph shows the early August peak and then a gradual decline through the remainder of August and early September, coincident with the onset of southwards migration. Notable records included a bird in wing moult on 25 July, while one on 4 Aug had an unusually white face, recalling Little Shearwater *Puffinus baroli*.

### European Storm-petrel *Hydrobates pelagicus*

Target species: recording level 3

A maximum total of 766 birds recorded, with 640 (84%) flying west, 63 (8%) flying east and 63 (8%) lingering/feeding offshore. Recorded on 45 days out of the 93 (48%), with the majority seen in July (82% of days) and August (68% of days). The vast majority were seen during the morning, with 620 (81%) before 1200 hrs and 146 (19%) after 1400 hrs. The peak day total was 160 (148 west and 12 offshore) on 18 Aug, with 100 flying west two days later on 20 Aug. These movements were associated with strong southwest winds, heavy rain and poor visibility, and presumably involved birds re-orienting westwards after being pushed into Mounts Bay. Also of note was a marked eastwards passage on the morning of 23 July, during strong southeast winds and heavy rain.



Day totals of European Storm-petrel off Gwennap Head between 15 July and 15 Oct 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph reveals that the majority of birds seen feeding offshore were in July, with most of these around the Runnelstone reef about 1.5 km offshore. It also highlights the scarcity of reports between 20 Aug and 20 Sept, during a prolonged period of settled weather with offshore winds and good visibility.

### Gannet *Morus bassanus*

Gannets were abundant throughout the survey period, with many thousands seen on days of heavy seabird passage. Although it was not practical to monitor this species in detail, sample counts were occasionally made on 'quiet' days, e.g. 4594 west and 723 east over a five-day period from 30 Sept to 6 Oct. Passage was dominantly westwards, with a variable eastward component and occasional groups loafing on the sea or feeding offshore, e.g. 100+ feeding near the Runnelstone with auks and Balearic Shearwaters on 9 Oct.

Interesting records included one seen catching and swallowing a 30 cm-long Garfish on 18 July, and one accidentally hooked by a commercial fisherman offshore on 4 Sept but released apparently unharmed.

### Cormorant *Phalacrocorax carbo*

Target species: recording level 3

Relatively scarce, with peak numbers in July and October and a maximum total of 41 birds seen during the survey. Most were moving along the coast or feeding offshore, although small numbers of migrants were also seen leaving southwards. All records are summarised below:

15-31 July: 14 (5W, 5E, 3S and 1 offshore).  
 1-15 Aug: 2E on 6 Aug.  
 16-31 Aug: 1 offshore from 21-23 Aug.  
 1-15 Sept: 2W on 13 Sept.  
 16-30 Sept: 1E on 26 Sept.  
 1-15 Oct: 21 (4W, 3SW, 4E, 5SE and 5 offshore).

**Shag *Phalacrocorax aristotelis***

Regularly seen offshore throughout the survey period, with peak counts relating to birds feeding offshore and/or day-roosting on rocks either side of Gwennap Head, e.g. 50 on 31 July, 26 on 21 Aug and 31 on 10 Oct.



*Shags day-roosting at Gwennap Head (Russell Wynn)*

**Little Egret *Egretta garzetta***

One record: A single flew west offshore on 26 July.

**Grey Heron *Ardea cinerea***

A fairly even spread of records referring to 12 birds, with all moving west except for three in off the sea in early October. The most interesting observation was of a juvenile moving high SW on 21 July that attempted to land on the sea offshore before continuing westwards. All records are summarised below:

15-31 July:	1W on 21 July.
1-15 Aug:	1W on 12 Aug.
16-31 Aug:	2W on 16 Aug and 1W on 30 Aug.
1-15 Sept:	No records.
16-30 Sept:	2 (singles W on 17 and 27 Sept).
1-15 Oct:	5 (1N on 2 Oct, 2N on 4 Oct and singles W on 7 and 8 Oct).

**Sparrowhawk *Accipiter nisus***

Two records: A single flew west on 26 Aug and two were seen on 8 Oct.

**Buzzard *Buteo buteo***

Up to three were regularly seen around Porthgwarra Valley, with occasional wanderers over Gwennap Head. Notable records included two on the evening of 17 July observed 'looking' out to sea for several minutes before returning west, while on 15 Oct a single moved E/NE and two first-winter birds again 'looked' south before drifting westwards.

**Osprey *Pandion haliaetus***

One record: A single bird flew high and slow westwards about 2 km offshore at 0750 hrs on 12 Aug.

**Kestrel *Falco tinnunculus***

Five records: Singles flew in off the sea on 19 July, 9 Sept and 10 Oct, and singles flew south on 21 Aug and 14 Oct (although the latter returned northwards).





*Kestrel over Gwennap Head (Trevor Carpenter)*

**Merlin *Falco columbarius***

Seven records of single birds were made between 21 Sept and 15 Oct. Birds were observed both arriving in off the sea and departing southwards.

**Hobby *Falco subbuteo***

One record: A first-summer was seen hunting dragonflies over Porthgwarra Valley for several hours on 24 July.

**Peregrine *Falco peregrinus***

Regularly recorded around Gwennap Head, with some evidence for local breeding. In July an immature was seen on four dates; on 19 July it took a Feral Pigeon but was later dispossessed by a Raven, and on 29 July it was twice seen (unsuccessfully) attacking European Storm-petrels over the sea for up to ten minutes at a time. In the first three weeks of August an adult female, an immature male and a juvenile were recorded, the latter offshore chasing small waders. On 22 Aug a moulting adult female was present with one or two juveniles; the female was yellow colour-ringed on the left leg (letters H8?) and a metal BTO ring on the right leg. Juvenile birds were again seen on 25 and 27 Aug and an adult male on 31 Aug. There were no records during September and the only October record was an adult female on 7 and 8 Oct.



*Peregrine Falcon at Gwennap Head (Marcus Ward)*

**Water Rail *Rallus aquaticus***

One record: A single was heard next to a pond in Porthgwarra Valley on 10 Oct.

**Oystercatcher *Haematopus ostralegus***

Regularly recorded in small numbers throughout the survey period. Peak counts for each fortnight are listed below:

15-31 July:	6E on 29 July.
1-15 Aug:	2E on 8 Aug.
16-31 Aug:	10 (6E+ 4 not specified) on 27 Aug.
1-15 Sept:	3W on 13 Sept.
16-30 Sept:	3 (2E + 1W on 17 Sept).
1-15 Oct:	13W on 3 Oct.

**Ringed Plover *Charadrius hiaticula***

A total of 14 recorded between 20 and 26 Aug, mostly flying through on direct passage. The only other record was of a single on 10 Oct.

**Dotterel *Charadrius morinellus***

Two records: Two were seen near the coastal path west of Gwennap Head on 29 Sept, while a single flew over Gwennap Head on 4 Oct and appeared to land in fields to the north.

**Golden Plover *Pluvialis apricaria***

Three records: A group of three flew west on 19 Sept and a flock of up to 19 birds was seen flying overhead on 7 and 8 Oct.

**Grey Plover *Pluvialis squatarola***

One record: Two flew west on 10 Sept.

**Sanderling *Calidris alba***

Three records: A single flew west on 20 Aug, four were seen on 27 Aug and four flew east on 3 Sept.

**Dunlin *Calidris alpina***

A total of 23 birds recorded: Three singles were seen in July, followed by five moving west on 22 Aug, three on 27 Aug and 11 flying west on 3 Sept. A further single moved west on 19 Sept.

**Snipe *Gallinago gallinago***

Three records: Two flew east on 28 Sept, three arrived in off the sea on 2 Oct and two flew over on 8 Oct.

**Bar-tailed Godwit *Limosa lapponica***

One record: A flock of about 50 birds flew east on 3 Sept.

**Whimbrel *Numenius phaeopus***

A total of 38 recorded between mid-July and early September, peaking in late August. Of note was one roosting overnight on the cliffs on 21 Aug and still present the following morning. All records are summarised below:

15-31 July: 6 (4W + 2S).  
1-15 Aug: 2 (1W + 1 not specified).  
16-31 Aug: 17 (13W + 4 not specified).  
1-15 Sept: 13W on 5 Sept.  
16-30 Sept: No records.  
1-15 Oct: No records.

**Curlew *Numenius arquata***

A total of 20 recorded fairly evenly between mid-July and late September, mostly referring to single birds flying west. All records are summarised below:

15-31 July: 3 (2W + 1 not specified).  
1-15 Aug: 4 (4W).  
16-31 Aug: 4 (3W + 1 not specified).  
1-15 Sept: 3 (3W).  
16-30 Sept: 6 (5W + 1E).  
1-15 Oct: No records.

**Common Sandpiper *Actitis hypoleucos***

A minimum of three birds was recorded, with singles on six dates between 15 and 31 July, one on 18 Aug, and one flying west on 6 Sept. The July sightings involved one or more birds on the rocks at the base of Gwennap Head.

**Green Sandpiper *Tringa ochropus***

Two records: One on 24 Aug and one flying west on 12 Sept.

**Greenshank *Tringa nebularia***

Two records: One flying south on 16 Aug and two (including one flying west) on 23 Aug.

**Redshank *Tringa totanus***

One record: One flew west on 24 Aug.



**Turnstone *Arenaria interpres***

A total of 70 recorded, mostly relating to birds flying west on direct passage. The peak movement was on 3 and 4 Sept, when 33 flew west. All records are summarised below:

15-31 July: 14 (13E + 1W).  
1-15 Aug: No records.  
16-31 Aug: 8 (5NW + 1E + 2 not specified).  
1-15 Sept: 43 (43W).  
16-30 Sept: 2 (2W).  
1-15 Oct: 3 (3E).

**Grey Phalarope *Phalaropus fulicarius***

Target species: recording level 2

Four records referring to up to nine birds in late September: On 24 Sept a group of four was seen sitting on the sea at 1720 hrs, on 25 Sept two moved southwest at 1410 hrs, and on 26 Sept a single moved west at 0813 hrs and two flew southwest at 1635 hrs. All birds were more than 1 km offshore.

**Pomarine Skua *Stercorarius pomarinus***

Target species: recording level 2

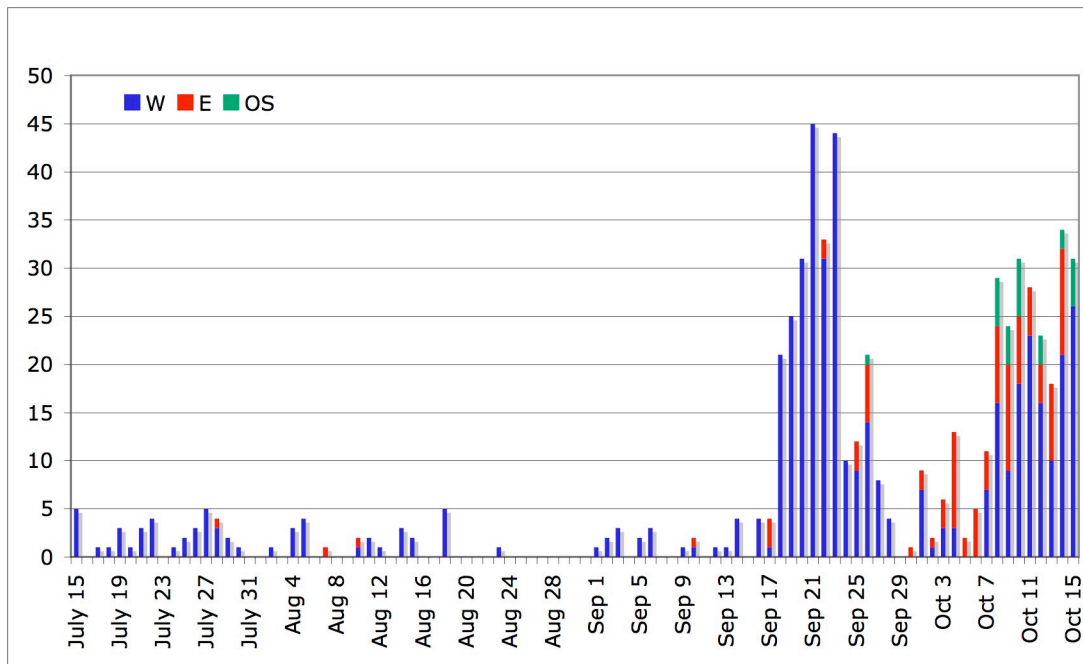
A total of up to 20 was recorded, almost all in August and September, and almost all moving westwards. The first sighting was a first-summer on 30 July, briefly seen attacking large gulls before continuing westwards. A pale adult was then seen on 4 Aug, followed by a sub-adult on 5 Aug and two dark adults on 8 Aug. Another single was seen on 15 Aug and a pale adult on 18 Aug.

A pale adult was seen daily from 18 to 21 Sept, and it is possible that just one lingering bird was involved. On 23 Sept up to six were seen (an immature and at least two pale adults), although some duplication is likely. Finally, a pale adult was seen on 25 Sept and an immature moved east on 26 Sept.

**Arctic Skua *Stercorarius parasiticus***

Target species: recording level 3

A maximum total of 610 birds recorded, with 484 (79%) flying west, 100 (16%) flying east and 26 (4%) lingering/feeding offshore. Recorded on 64 days out of the 93 (69%), with the greatest regularity in July (82% of days) and October (100% of days). Slightly more were seen during the morning, with 354 (58%) before 1200 hrs and 256 (42%) after 1400 hrs. The peak day total was 45 flying west on 21 Sept, with a further 44 flying west on 23 Sept.



Day totals of Arctic Skua off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

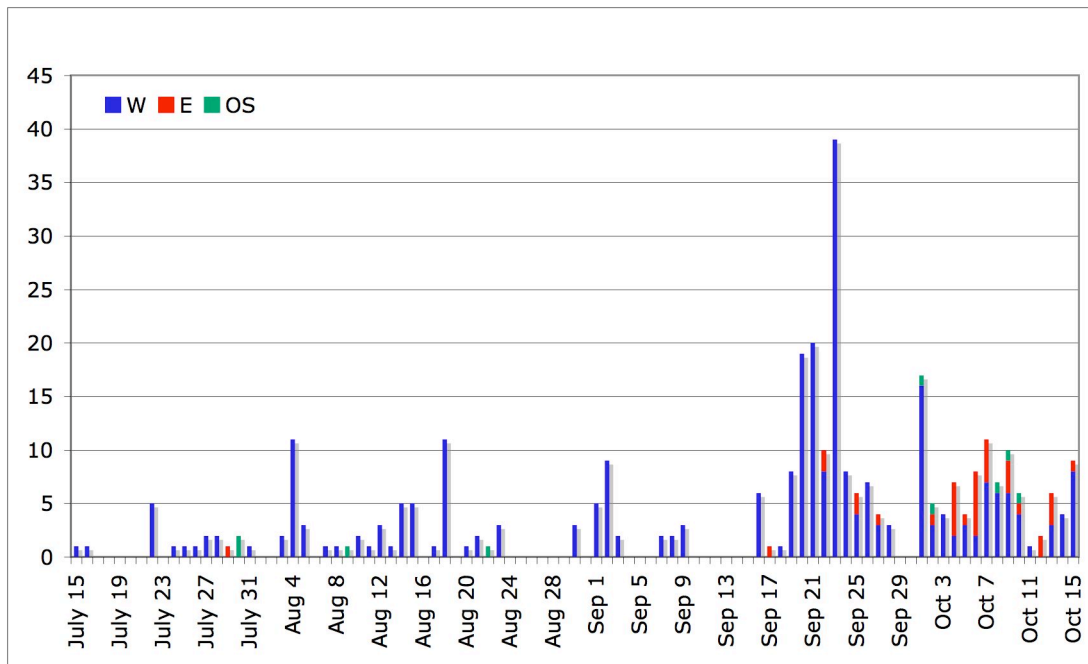
The above graph shows a clear pattern, with low numbers of non-breeding birds present from mid-July to mid-September, and a clear peak of migrating birds passing westwards in late September. During October there was an interesting build-up of 20-30 birds that appeared to be lingering in the area, as shown by the high proportion moving east or lingering offshore. Many of these birds were seen attacking Kittiwakes, (which were also lingering offshore at this time), and most were adults in winter plumage or undergoing active wing moult. Analysis of the data reveals that during October there appeared to be a reversal in the direction of movement during the day. For example, of 155 Arctic Skuas seen up to 1200 hrs between 1-15 Oct, 121 (78%) moved west, 23 (15%) moved east and 11 (7%) were lingering offshore. Of 111 seen after 1400 hrs, 58 (52%) moved east, 39 (35%) moved west and 14 (13%) were lingering offshore. Of those birds moving east, just over half did so in the last hour of the survey period, between 1700 and 1800 hrs. It therefore seems likely that the adult birds present in October were exploiting the large numbers of Kittiwakes present in the area; these birds were roosting in Mounts Bay and heading west to feed each morning before returning east in the late afternoon. This could be related to the fact that many were undergoing active moult and may therefore have been delaying their onward migration southwards until this moult was completed.

Other notable records included one on 28 July attacking Herring Gulls around the Runnelstone; the gulls responded by regurgitating several pipefish but these were ignored by the skua, presumably due to their low nutritional value.

### **Great Skua *Stercorarius skua***

Target species: recording level 3

A maximum total of 332 birds recorded, with 289 (87%) flying west, 34 (10%) flying east and nine (3%) lingering/feeding offshore. Recorded on 64 days out of the 93 (69%), with the greatest regularity in October (100% of days). Sightings were fairly evenly spread through the day, with 191 (58%) before 1200 hrs and 141 (42%) after 1400 hrs. The peak day total was 39 moving west on 23 Sept (*cf.* Arctic Skua).



Day totals of Great Skua off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

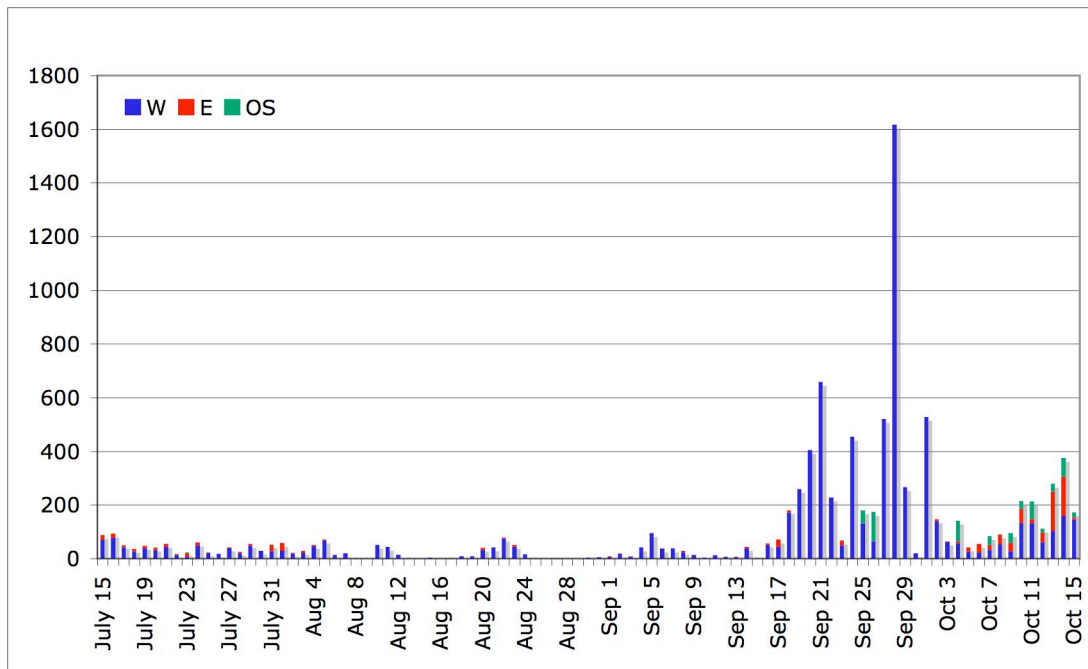
The above graph shows a roughly similar overall pattern to Arctic Skua, with low numbers of non-breeding birds seen from mid-July to mid-September, and then a large peak in late September relating to autumn migration. As with Arctic Skua, between 5-10 birds appeared to be lingering offshore during October, and there was some indication that at least some of these birds were undertaking post- and pre-roost movements in the morning and afternoon. Of 60 seen prior to 1200 hrs between 1-15 Oct, 48 (80%) were moving west, 11 (18%) were moving east and just one was lingering offshore. After 1400 hrs 41 were seen, of which 21 (51%) were moving west, 16 (39%) were moving east and four (10%) were lingering offshore. Although a greater proportion of birds was moving east in the afternoon, there was no clear peak of eastward-moving birds in the last hour of the survey period as shown by Arctic Skua.

### **Kittiwake *Rissa tridactyla***

Target species: recording level 3

A maximum total of 9578 birds recorded, with 8159 (85%) flying west, 868 (9%) flying east and 551 (6%) lingering/feeding offshore. Recorded continuously throughout the survey period, apart from six days between 9-29 Aug. Most birds were seen during the morning period, with 6159 (64%) before 1200 hrs and 3419 (36%) after 1400 hrs. The peak day total was 1617 moving west on 28 Sept.





Day totals of Kittiwake off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph shows a similar overall pattern to Arctic and Great Skua, with small numbers of local breeding birds between mid-July and mid-September, and then a marked peak in late September representing autumn migration. In October up to 200 birds appeared to be 'resident' in the area, as shown by the significant proportion moving east or lingering offshore. There are also indications for post- and pre-roost movements in the morning and afternoon. Of 1456 seen prior to 1200 hrs between 1-15 Oct, 1307 (90%) were moving west, 98 (7%) were moving east and 51 were (3%) lingering offshore. After 1400 hrs 1167 were seen, of which 463 (40%) were moving east, 375 (32%) were moving west and 329 (28%) were lingering offshore. However, some of the early afternoon movements to the east during this period may also have been due to birds re-orienting to a day-roost off Hella Point (a few hundred metres east of Gwennap Head) after drifting westwards on the tide.

#### **Black-headed Gull *Chroicocephalus ribundus***

This species is not a target species and was therefore only patchily recorded. The general impression is that Black-headed Gulls are relatively scarce off Gwennap Head, with sporadic records of small numbers of birds, mostly moving westwards.

#### **Little Gull *Hydrocoloeus minutus***

Target species: recording level 3

Two records: Single first-winter birds flew west on 5 and 22 Sept.

#### **Mediterranean Gull *Larus melanocephalus***

Target species: recording level 3

A maximum of 16 was recorded, although there may be some duplication due to birds moving to and fro along the coast. Between 15 July and 20 Aug a series of records of juvenile birds involved up to nine individuals. Of these, six were moving west, two flew east and one lingered offshore. There was then a gap of a month before an adult bird moved east on 24 and 25 Sept (probably only one individual), while in October up to six birds of varying ages were seen between 1st and 13th, with up to two adults, two second-winters and two first-winters.

**Common Gull *Larus canus***

Surprisingly rare, with only odd individuals recorded, mostly flying westwards.

**Lesser Black-backed Gull *Larus fuscus***

The only noteworthy records were on 8 and 9 Oct, when 29 presumed migrants left high southwards.

**Herring Gull *Larus argentatus***

*Juvenile Herring Gull at Gwennap Head (Russell Wynn)*

This species was very common offshore throughout the survey period. Despite not being recorded in detail, several interesting observations were made. Between 15 July and 22 Aug, birds were observed catching brown pipefish on seven dates. This generally occurred in rough weather, with individuals or small groups of gulls sitting on floating mats of ribbon weed and plucking out the pipefish. The pipefish were observed to be brown, thin and up to 20-30 cm long.

During the same period, up to ~1000 Herring Gulls (with a few Lesser and Great Black-backed Gulls) were seen flocking over the Runnelstone reef, with reports from local fishermen indicating that they were feeding on large aggregations of pipefish. These flocks typically attracted small numbers of Gannets, European Storm-petrels, Manx and Balearic Shearwaters, as well as marauding Great and Arctic Skuas. Even when Herring Gulls occasionally regurgitated pipefish in response to skua attacks, the skuas ignored the prize; presumably Herring Gulls are the only species that finds pipefish palatable!

Several Herring Gulls were also observed pecking at Ocean Sunfish, but see that species for further details. Interestingly, on 24 July, several were seen pecking at a large white polystyrene slab in the water, presumably mistaking it for a sunfish!

On 19 July a recently fledged juvenile was seen waterlogged on the sea, and was subsequently attacked by a pair of Great Black-backed Gulls. However, the unfortunate victim managed to make it to the shore and safety, although its ultimate fate was unknown.

On 6 Oct two juveniles were seen trapped in a net with baited lines; one of the birds was partially submerged with half-open wings. Fortunately a nearby fisherman was able to release both birds, with the submerged bird having to be cut out of the net. Both of the gulls subsequently flew off apparently unharmed.

Finally, a distant 'white-winged' gull flying east at 1021 hrs on 6 Sept was thought most likely to be a leucistic Herring Gull based on size and structure.

### **Great Black-backed Gull *Larus marinus***

Regularly seen around the Gwennap Head watchpoint, with notable records including one seen eating a dead wrasse on 18 July and one on 22 Aug eating a small flatfish.

### **Black Tern *Chlidonias niger***

One record: Two singles, possibly referring to just one bird, were seen moving east in poor weather on 23 July.

### **Sandwich Tern *Sterna sandvicensis***

A total of 255 recorded, with the majority moving west between mid-July and mid-September. Peak day counts included 25W on 11 Aug and 41W on 12 Sept. Interestingly, the proportion of birds moving west appeared to decrease as the season progressed, with 95% moving west from 15-31 July, 100% in August, 86% from 1-15 Sept, 56% from 16-30 Sept and just 21% from 1-15 Oct. This may indicate that birds in September and October are lingering in the area (*cf.* Kittiwake). All records are summarised below:

15-31 July:	64 (61W + 3E).
1-15 Aug:	66 (66W).
16-31 Aug:	24 (24W).
1-15 Sept:	66 (57W + 9E).
16-30 Sept:	16 (9W + 7E).
1-15 Oct:	19 (4W + 15E).

### **Common Tern *Sterna hirundo***

This species, and Arctic Tern, are variably recorded depending on observer experience and the views obtained. Some records are listed to species level, while others are grouped as Common/Arctic (or 'Commic') Tern. A total of 89 were recorded as Common Tern during the 2007 survey, with the main passage of 46W between 20-24 Aug, peaking at 21W on 23 Aug. See also Common/Arctic Tern. All records are summarised below:

15-31 July:	No records.
1-15 Aug:	No records.
16-31 Aug:	61 (57W + 4).
1-15 Sept:	17 (17W).
16-30 Sept:	7 (7W).
1-15 Oct:	4 (3E + 1W).

### **Arctic Tern *Sterna paradisaea***

A total of 67 were identified to species level, with a clear peak in late September. However, the largest day total was 12W on 30 July. Almost all were flying west. See also Common/Arctic Tern. All records are summarised below:

15-31 July:	3 (13W).
1-15 Aug:	10 (10W).
16-31 Aug:	5 (5W).
1-15 Sept:	3 (3W).



16-30 Sept: 46 (43W + 3E).  
 1-15 Oct: No records.

### Common/Arctic Tern *Sterna hirundo/paradisaea*.

A total of 192 birds were not identified to species level and were listed as either Common or Arctic Tern. Most birds (87%) were moving westwards. The majority were seen during July and August, with the main passage of 44W from 20-24 Aug and a day peak of 22W on 23 Aug. Given that this coincided with peak numbers of Common Terns, it seems likely that many of these birds were also that species. All records are summarised below:

15-31 July: 50 (36W + 9E + 5 offshore).  
 1-15 Aug: 42 (38W + 4E).  
 16-31 Aug: 62 (61W + 1 offshore).  
 1-15 Sept: 13 (10W + 3E).  
 16-30 Sept: 20 (18W and 2E).  
 1-15 Oct: 5 (4W + 1 offshore).

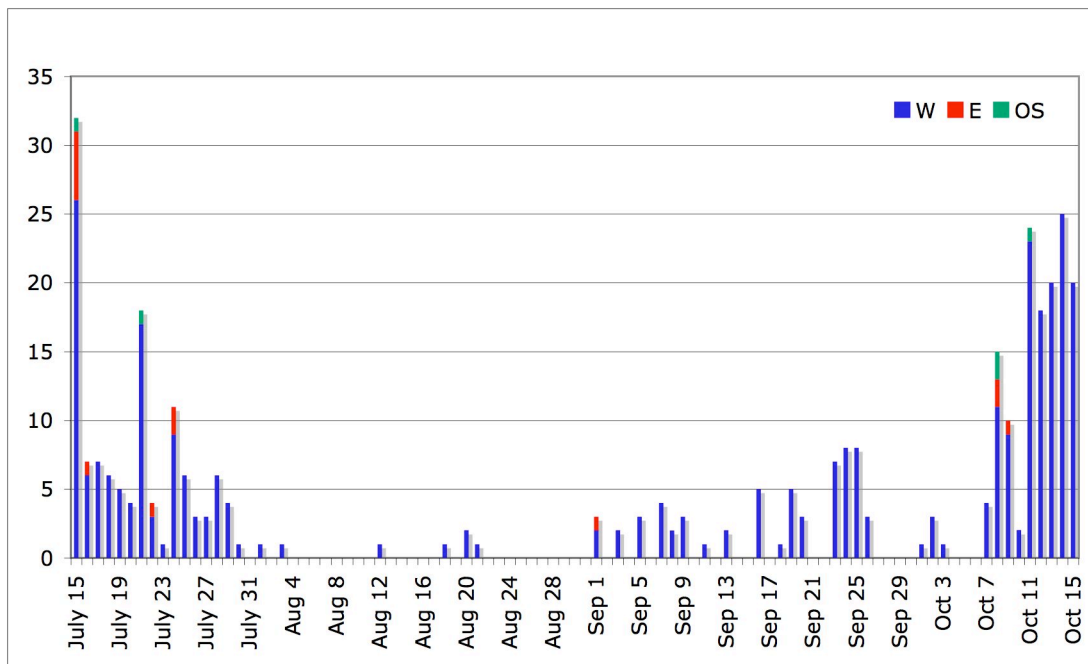
### Roseate Tern *Sterna dougallii*

One record: Two adults were seen flying west at 1655 hrs in poor weather on 28 July.

### Guillemot *Uria aalge*

Target species: recording level 3

A maximum total of 328 birds recorded, with 310 (95%) flying west, 13 (4%) flying east and just five (1%) seen offshore. The majority were seen in July (88% of days) and October (80% of days); relatively few were seen in August (19% of days) with a gradual increase in autumn migrants in September (53% of days). Most birds were recorded during the morning period, with 231 (70%) before 1200 hrs and 97 (30%) after 1400 hrs. The peak day total was 32 (26W) on 15 July.



Day totals of Guillemot off Gwennap Head between 15 July and 15 October 2007.

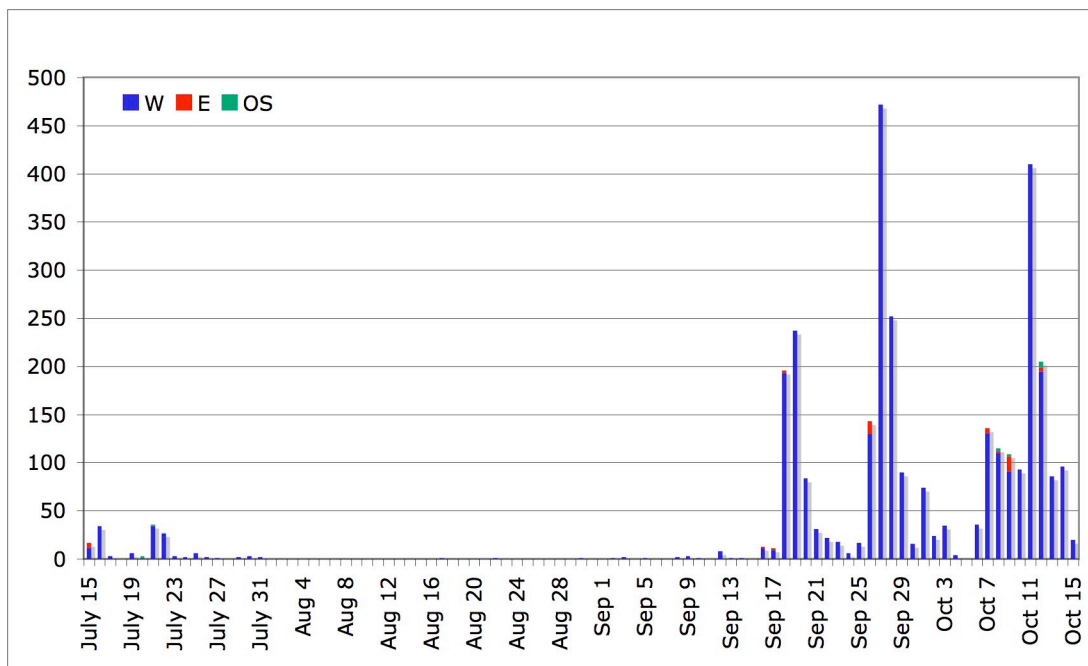
W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph shows a clear pattern, with a gradual decrease in numbers of local breeding birds through July and very few seen in August when most birds move offshore. Small numbers of autumn migrants were recorded through September and numbers then sharply increased in mid-October as passage peaked. Of note was a juvenile seen on the sea on 15 July, presumably from a local breeding colony.

### **Razorbill *Alca torda***

Target species: recording level 3

A maximum total of 3221 birds recorded, with 3153 (98%) flying west, 52 (1.5%) flying east and just 16 (0.5%) seen offshore. The species was most regularly recorded in July (88% of days) and October (93% of days). As with the previous species, relatively few were seen in August (10% of days), with a gradual return of small numbers in September (80% of days). Most birds were recorded during the morning period, with 1910 (59%) before 1200 hrs and 1311 (41%) after 1400 hrs. The peak day total was 472W on 27 Sept.



Day totals of Razorbill off Gwennap Head between 15 July and 15 October 2007.

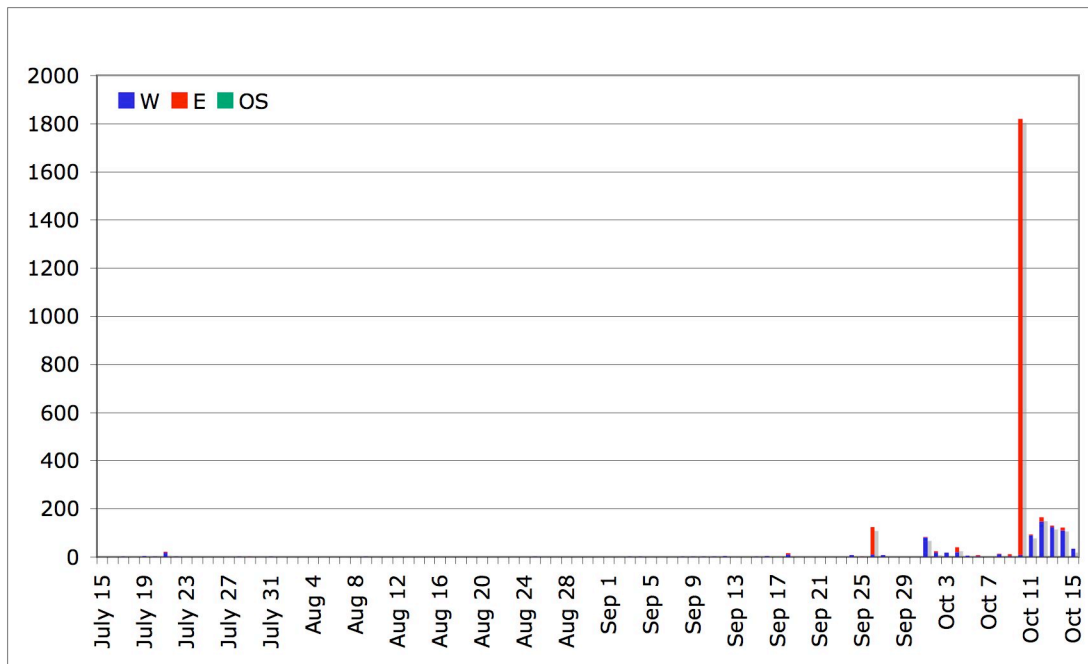
W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph shows a similar pattern to Guillemot, with small numbers of local breeding birds present through July, including an adult and a juvenile seen swimming offshore on 20-20 July. Very few were recorded in August and early September, and numbers then sharply increased in mid-September as autumn migration got underway.

### **Guillemot/Razorbill *Uria aalge/Alca torda***

Records of distant auks are often impossible to identify to species level, and are recorded here as Guillemot/Razorbill. A maximum total of 2828 birds were recorded, with the vast majority on 10 Oct when 1820 were seen distantly heading southeast out to sea in flocks of up to 30 birds. Unsurprisingly, the overall pattern was similar to Guillemot and Razorbill, with records on 84% of days in July, then just 23% of days in August, increasing to 77% of days in September and 100% of days in October. The majority were seen during the morning, with 2475 (88%) before 1200 hrs and

353 (12%) after 1400 hrs. Excluding the exceptional passage on 10 Oct, most birds (80%) were flying west.

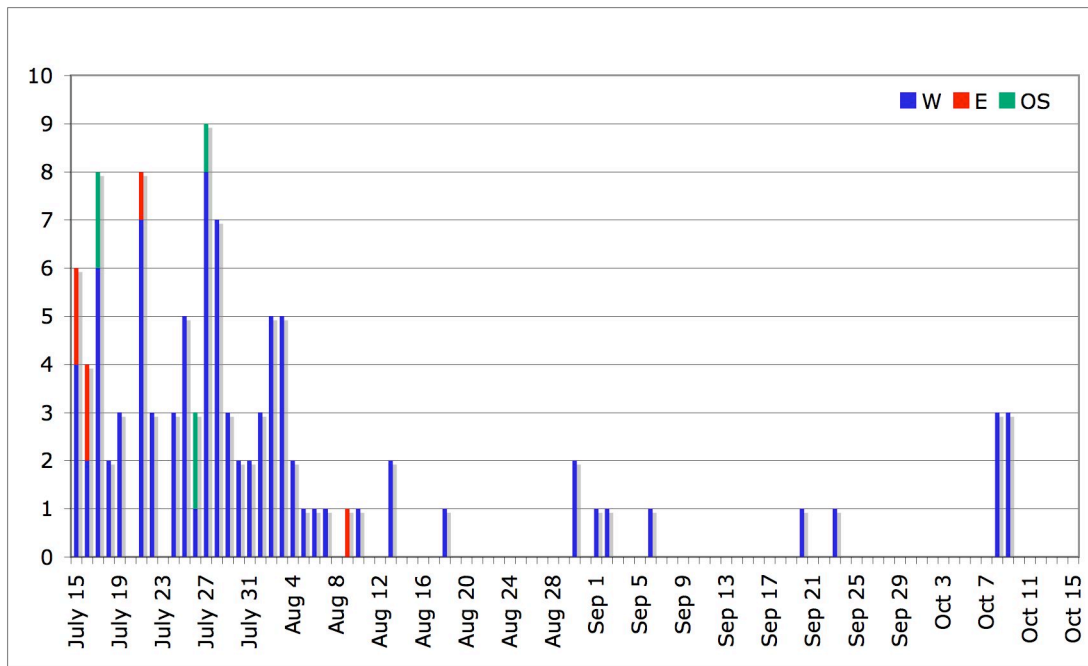


Day totals of Guillemot/Razorbill off Gwennap Head between 15 July and 15 October 2007.  
W = flying west; E = flying east; OS = lingering/feeding offshore

### **Puffin *Fratercula arctica***

Target species: recording level 2

A maximum total of 104 birds recorded, with 93 (89%) flying west, six (6%) flying east and five (5%) seen sitting offshore. The species was most regularly recorded in July (88% of days), becoming progressively scarcer through August (39% of days), September (17% of days) and October (13% of days). Most birds were seen during the morning, with 64 (62%) before 1200 hrs and 40 (38%) after 1400 hrs. The peak day total was nine on 27 July.



Day totals of Puffin off Gwennap Head between 15 July and 15 October 2007.

W = flying west; E = flying east; OS = lingering/feeding offshore

The above graph shows the main concentration of records in July, representing feeding movements of local breeding birds (mostly from colonies on the Isles of Scilly). Small numbers of birds were seen sitting offshore of Gwennap Head during July, indicating that this may be an important feeding area. The marked reduction in numbers in early August is similar to that shown by Guillemot and Razorbill, and is a result of most birds heading into deeper waters offshore for the autumn and winter. Interestingly, very few Puffins were seen in late September and early October, which was the main period of passage for the other auk species.

#### **Feral Pigeon *Columba livia***

Small numbers present throughout the survey period on and around the cliffs at Gwennap Head.

#### **Stock Dove *Columba oenas***

Three records, presumably referring to autumn migrants: Two arrived in off the sea on 5 Oct, three were seen on 10 Oct, and another two flew in off the sea on 14 Oct.

#### **Collared Dove *Streptopelia decaocto***

One record: One seen around the cliffs on 4 Oct was presumably a migrant.

#### **Cuckoo *Cuculus canorus***

One record: A late juvenile lingered in Porthgwarra Valley from 28 Sept to 7 Oct at least.

#### **Long-eared Owl *Asio otus***

One record: One arrived in off the sea on 28 Aug and landed on rocks at the base of the cliff.



**Short-eared Owl *Asio flammeus***

Three records: One arrived in off the sea and left northwards on 6 Oct, three were flushed at dawn from bracken in Porthgwarra Valley on 7 Oct, and was seen hunting there on 9 Oct.

**Swift *Apus apus***

Small numbers were recorded during the poor weather in July, presumably trying to escape southwards to find better conditions for feeding. Most were lingering around the cliff top, with a peak of 25-30 present from 19-21 July. However, some were also seen leaving southwards at this time, e.g. 9S on 20-21 July. The only record after this date was one on 19-20 Aug.

**Kingfisher *Alcedo atthis***

One record: On 26 Aug one was seen flying along the base of the cliffs.

**Green Woodpecker *Picus viridis***

One record: A juvenile spent several minutes perched on a granite outcrop at the Gwennap Head watchpoint on 20 July. This was probably a young bird undergoing post-fledging dispersal.

**Great Spotted Woodpecker *Dendrocopus major***

Four records: Singles were seen on 29 Sept and 7, 8 and 10 Oct. These refer to birds flying over Gwennap Head or Porthgwarra Valley.

**Skylark *Alauda arvensis***

A total of 270 recorded flying over Gwennap Head between 5 and 15 Oct. The peak movement was on 11 Oct when 115 were seen. The direction of movement was variable, with most birds moving between north and east, but also some seen heading south out to sea.

**Sand Martin *Riparia riparia***

Two records: At least six were feeding over Gwennap Head on 18 July and four moved west on 11 Sept.

**Swallow *Hirundo rustica***

Regularly recorded throughout the survey period, with a clear peak in September and early October. There was some evidence for early emigration, with a total of 12 seen between 1-15 July, most of which were heading south out to sea. These are likely to have been failed breeders affected by the poor summer weather. Very few were seen during August but, as autumn migration gathered pace, peak counts included 86S/W on 6 Sept, 150N on 26 Sept and 85 over on 7 Oct.

**House Martin *Delichon urbicum***

Two records: Four flew over on 22 Aug and at least 40 were present on 7 Oct.

**Tree Pipit *Anthus trivialis***

A total of 28 recorded during autumn passage between 22 Aug and 29 Sept, with a concentrated passage of 19 between 26 and 29 Sept. The peak counts were four on 22 Aug (which landed on the cliff top at Gwennap Head) and 12 on 28 Sept.

**Meadow Pipit *Anthus pratensis***

Regularly recorded throughout the survey period, with a peak in late September and early October. Three early birds were seen flying overhead and 'looking' out to sea on 21 July, but there were no further records until 12 moved west on 25 Aug. Subsequently, peak counts included 200+ on 13 Sept, a total of 575 between 26 and

28 Sept, and a total of 410 on 7-8 Oct. Many of these birds on autumn passage were seen arriving in off the sea, but large numbers were occasionally grounded on and around Gwennap Head.

**Rock Pipit *Anthus petrosus***

One pair bred at the Gwennap Head watchpoint, with an adult seen feeding a newly-fledged juvenile on 18 July.



*Rock Pipit at Gwennap Head (Russell Wynn)*

**Yellow Wagtail *Motacilla flava***

Four records: An early autumn migrant flew over on 31 July, followed by 3W on 25 Aug, one arriving in off the sea on 27 Sept and one on 7 Oct.

**Grey Wagtail *Motacilla cinerea***

After one on 22 Aug, small numbers were regularly recorded between 24 Sept and 15 Oct. It is likely that one or two birds were resident around Gwennap Head during this period, with a peak count of at least four on 7-8 Oct.

**Pied/White Wagtail *Motacilla alba***

Up to six were seen between 20-24 Aug, but the main passage occurred between mid-September and mid-October. Peak counts included 30 on 7 Oct and 93 on 12 Oct, mostly involving birds flying overhead in various directions.

**Robin *Erithacus rubecula***

Although not specifically recorded, small numbers appeared to arrive on the cliffs in late September and early October and took up residence in small coves adjacent to Gwennap Head. It is likely that these birds are continental visitors arriving for the winter.

**Black Redstart *Phoenicurus ochruros***

One record: A female or immature bird was seen on the cliffs at Gwennap Head on 14 Oct.

**Stonechat *Saxicola torquatus***

Two birds were regularly seen throughout the survey period.

**Wheatear *Oenanthe oenanthe***

Regularly recorded between 23 Aug and 15 Oct. Up to six were seen on several dates in late August and September, with a clear peak of 37 on 28 Sept. Up to seven were again seen almost daily in October, with a peak of 20 on 7 Oct.

**Song Thrush *Turdus philomelos***

Small numbers recorded on autumn passage in early October, e.g. two on 11 Oct.

**Redwing *Turdus iliacus***

The first autumn record was one on 29 Sept, and numbers subsequently peaked at 25 on 11 Oct.

**Mistle Thrush *Turdus viscivorus***

One record: Six were seen flying over Gwennap Head on 11 Oct.

**Sedge Warbler *Acrocephalus schoenobaenus***

One record: Two were seen in Porthgwarra Valley on 28 Sept.

**Blackcap *Sylvia atricapilla***

Three records: Two were in Porthgwarra Valley on 27 Sept, with four the following day and one on 14 Oct.

**Whitethroat *Sylvia communis***

Two records: Two were in Porthgwarra Valley on 28 Sept, with one seen there the following day.

**Dartford Warbler *Sylvia undata***

Three records: Sightings of one in Porthgwarra Valley on 28-29 Sept and 8 Oct, may have referred to the same bird.

**Yellow-browed Warbler *Phylloscopus inornatus***

One record: One was heard calling from dense vegetation in Porthgwarra Valley on 7 Oct. Reports received by *Birdguides* indicate that up to two were present in the area from 3-11 Oct at least.

**Dusky Warbler *Phylloscopus fuscatus***

One record: One was seen in Porthgwarra Valley on 10 Oct. It was first found and reported to *Birdguides* the previous day.

**Chiffchaff *Phylloscopus collybita***

Small numbers seen in Porthgwarra Valley during October, peaking at five on 7 Oct.

**Willow Warbler *Phylloscopus trochilus***

Although birds were present from late July onwards in Porthgwarra Valley, the only specific record for this species was of one amongst the rocks at Gwennap Head on 21 Aug.

**Goldcrest *Regulus regulus***

Two records: Two were seen in Porthgwarra Valley on 26 Sept and 10 Oct.

**Great Tit *Parus major***

The only specific record was a juvenile on the cliff top at Gwennap Head on 18 July. This probably relates to a bird undertaking post-fledging dispersal.

**Magpie *Pica pica***

Two records, both relating to possible migrants: A high-flying bird was seen over Gwennap Head on 11 Oct, with four high-flying birds looking south out to sea before returning north on 15 Oct.

**Chough *Pyrrhocorax pyrrhocorax***

One was seen on 20 Sept, and then a pair was resident on and around Gwennap Head from 28 Sept to 15 Oct. These birds often gave stunning views as they fed within a few metres of the project observers. Colour ring observations confirmed that the same two birds were involved: Bird 1 on the left leg had orange over metal BTO and on the right leg red over red; bird 2 on the left leg had blue over orange and on the right leg yellow over metal BTO. The RSPB confirmed that bird 1 is a male from a 2004 brood on the Lizard, and that bird 2 is a female from a 2006 brood elsewhere in Cornwall.



*Chough at Gwennap Head (Marcus Ward)*

**Raven *Corvus corax***

Up to four were regularly recorded around Gwennap Head throughout the survey period.

**Starling *Sturnus vulgaris***

One record: A total of 45 migrants flew in off the sea on 11 Oct.

**Chaffinch *Fringilla coelebs***

There was a clear influx associated with early morning visible migration at Gwennap Head in October, with peak counts of 72 on 5 Oct, 116 on 7 Oct, 120 on 11 Oct and 138 on 12 Oct.

**Greenfinch *Carduelis chloris***

Small numbers were seen on visible migration, e.g. three on both 11 and 12 Oct.

**Goldfinch *Carduelis carduelis***

Regularly recorded on visible migration in late September and October. Peak counts included 20 on 26 Sept, 81N/NE on 5-6 Oct, 38 on 8 Oct and 65 on 11 Oct.



**Siskin *Carduelis spinus***

Regularly recorded on visible migration in late September and October. Peak counts included 33NE on 5 Oct, 57 on 7 Oct and a total of 105 on 11-12 Oct.

**Linnet *Carduelis cannabina***

Regularly recorded on visible migration in late September and October, with concentrations of 410 from 5-8 Oct and 160 on 11-14 Oct. The peak count was 185NE on 5 Oct.

**Lesser Redpoll *Carduelis cabaret***

One record: One flew north on 5 Oct, a day of heavy finch passage.

**Lapland Bunting *Calcarius lapponicus***

Two records: Singles were seen on 29 Sept and 7 Oct. These may refer to one individual, as a Lapland Bunting was also reported to *Birdguides* at Gwennap Head on several dates between 1 and 11 Oct.

**Reed Bunting *Emberiza schoeniclus***

A total of nine was recorded on visible migration from 5-12 Oct, peaking at four on 11 Oct.



*Marcus Ward at Gwennap Head with 'Limpy' the Herring Gull in the background  
(Russell Wynn)*

In addition to the above, the following records of rare/scarce birds in the Porthgwarra area were reported to *Birdguides* by observers not associated with the SeaWatch SW project:

**Dotterel:** One on the moor behind Gwennap Head on 28 Aug.

**Sabine's Gull:** One west off Gwennap Head on 16 Sept.

**Wryneck:** One in Porthgwarra Valley on 6 Sept, with probably the same bird nearby on 7 Sept.

**Richard's Pipit:** One over and around Gwennap Head from 11-14 Oct.

**Tawny Pipit:** Up to three along the coast path near Gwennap Head on 5 Sept, one of which was with two White Wagtails.

**Ring Ouzel:** Two in Porthgwarra Valley on 30 Sept.

**Firecrest:** Singles in Porthgwarra Valley on 3 and 10 Oct.

**Ortolan Bunting:** One on the north side of Porthgwarra Valley from 12-15 Sept.

**Demoiselle Crane:** An escaped bird, bearing a red ring, was seen to the north of Porthgwarra Valley on 1 Oct.

## **The 2007 SeaWatch SW survey at Gwennap Head: Marine wildlife accounts**

### **Fin Whale *Balaenoptera physalus***

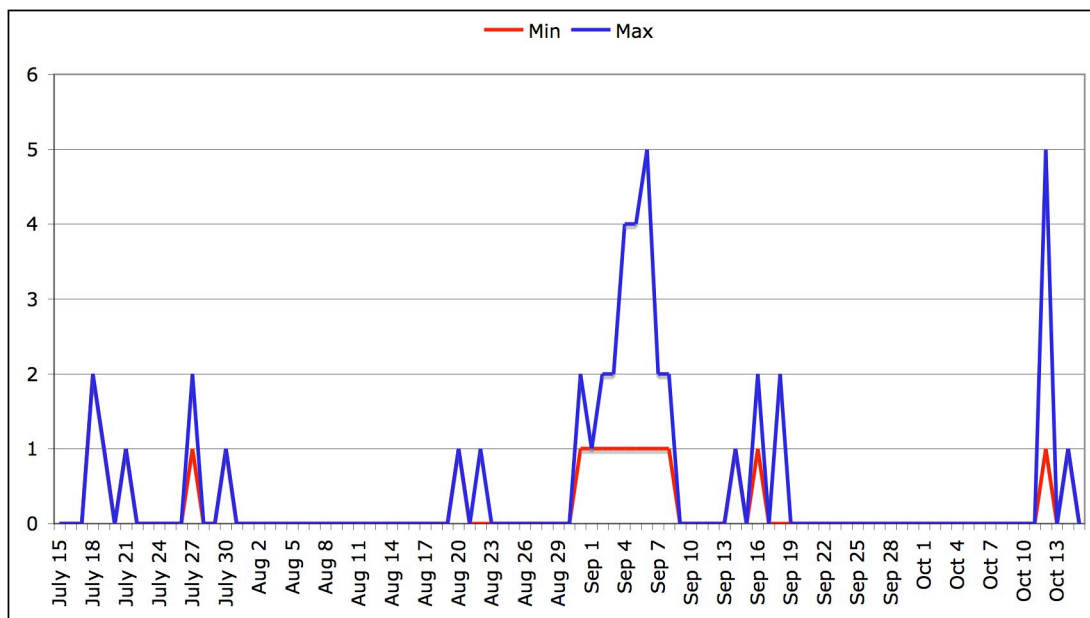
Target species: recording level 1

One record: One was seen about 4 km to the southeast at 0940 hrs on 20 Aug. This animal was seen at the surface several times, giving vertical blows up to 5-6 m high. At one point it appeared to be lunge-feeding at the surface. It gradually moved offshore to the southeast.

### **Minke Whale *Balaenoptera acutorostrata***

Target species: recording level 1

Recorded on 19 dates, with a total of 44 individual sightings. Establishing exactly how many animals are involved is difficult; consecutive sightings on one date, or over several dates, may only have referred to a single lingering individual. On a couple of occasions it was clear that two animals were present, for example on 18 July one was seen moving east at ~2 km range at 1641 hrs, and another was seen heading west at ~4 km range in the same field of view a minute later.



*Day totals of Minke Whale off Gwennap Head between 15 July and 15 October 2007.*

*Min = minimum number recorded; Max = maximum number recorded.*

The above graph reveals that sightings were sporadic throughout the survey period, with up to two animals seen between 18-30 July, a gap before a single on 20-22 Aug, and then daily sightings of up to five from 31 Aug to 8 Sept. One or two were then seen from 14-18 Sept before a further gap of several weeks. Finally, between one and five were seen on 12 Oct, with one again on 14 Oct. The apparent peak of sightings in early September compares well with observations made as part of the regular Portsmouth to Bilbao ferry crossings by the Biscay Dolphin Research Programme (BDRP); between July and October their peak 'autumn' count of 10+ animals was made during the 6-8 Sept crossing.

All sightings off Gwennap Head were made at distances >1.5 km, with a concentration of sightings in the vicinity of the Runnelstone reef, often involving lingering animals that were presumably feeding. In calm weather, sightings were made at distances up to 10 km. However, Minke Whales can be surprisingly

inconspicuous as they show little or no blow and only briefly appear at the surface; as a consequence most sightings were made in sea states of two or less.



*Minke Whale passing the Runnelstone buoy at 1.5 km range (Russell Wynn)*

Interesting observations involved a distant breaching animal on 16 Sept (not 100% confirmed as Minke Whale), one seen spy-hopping on 12 Oct, and probably the same animal seen five times while moving west on the same date, with a regular dive duration of about five minutes. There are some indications for interactions with Common Dolphins, for example one seen heading east on 12 Oct at 6-8 km range was noted as being 'in association' with Common Dolphins.

### **Risso's Dolphin *Grampus griseus***

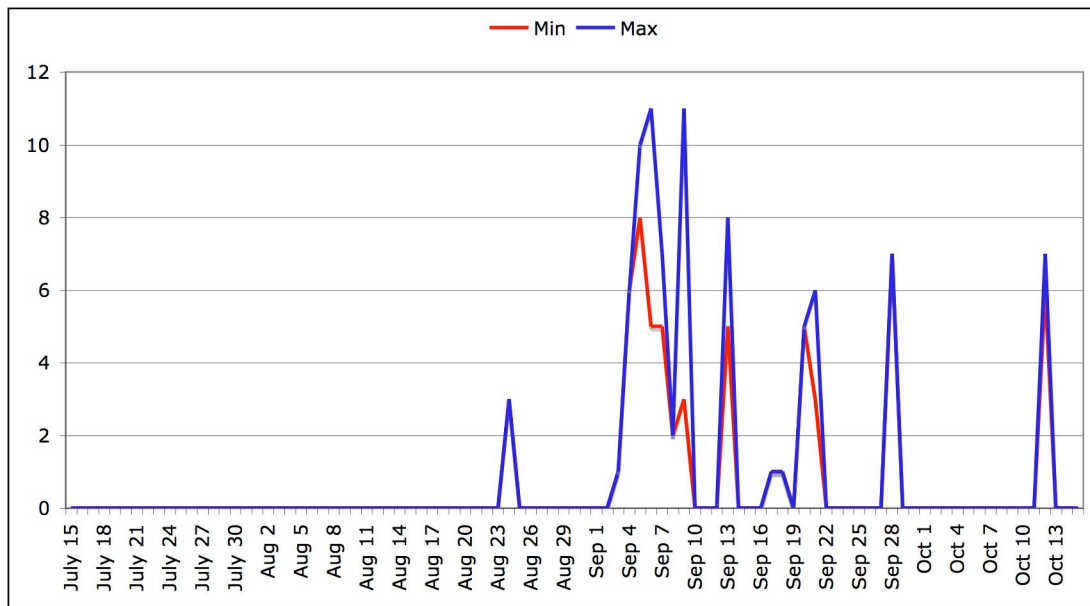
Target species: recording level 1

Recorded on 15 dates between 24 Aug and 12 Oct, with a minimum of eight (seen in one pod) and an absolute maximum of 61-86 animals involved. The latter figures assume that separate sightings on the same day, or on consecutive days, involved different animals, and will obviously be an over-estimate of the true numbers. Most sightings involved animals at >1.5 km range, but one or two sightings were at distances of 0.5-1 km.



*Risso's Dolphin off Gwennap Head (Jeremy Barker)*





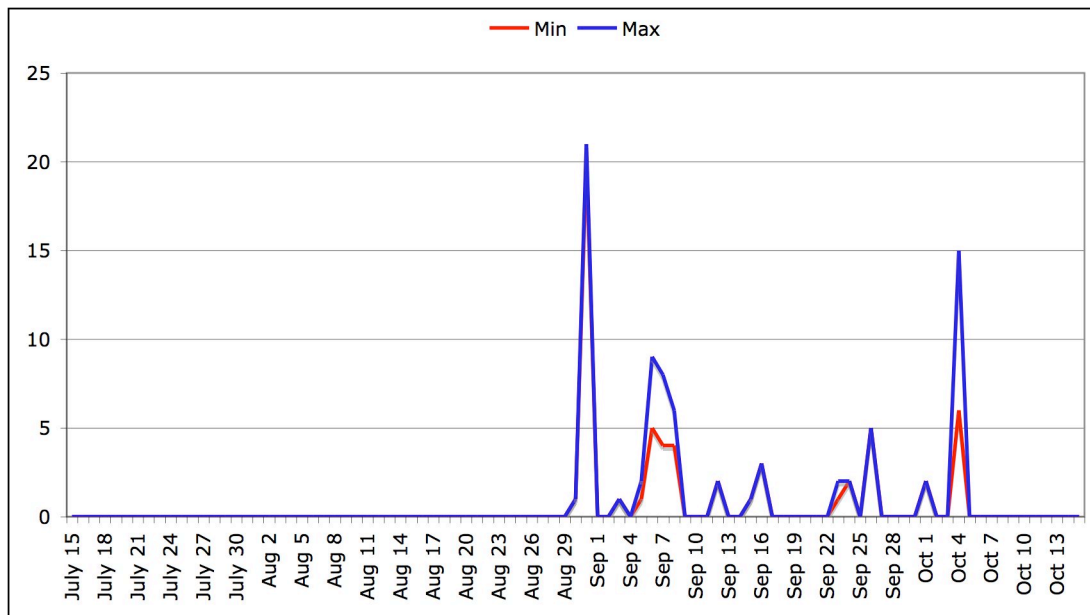
Day totals of Risso's Dolphin off Gwennap Head between 15 July and 15 October 2007.  
Min = minimum number recorded; Max = maximum number recorded.

The above graph shows the paucity of sightings through July and August, with the only record being three around the Runnelstone buoy for 45 minutes on 24 Aug before heading slowly east. There was then a concentration of sightings in September, with daily records between 3 and 9 Sept. The peak autumn count made by the BDRP was slightly earlier, with 14 seen on the 26-28 July crossing. Notable records off Gwennap Head during the autumn period included a pod of at least six feeding with 20+ Common Dolphins on 4 Sept, and 8-10 (possibly the same pod) moving northwest early the following morning. On 7 Sept a group of four included two adult-calf pairs, while another adult-calf pair was seen on 9 Sept. Between 13 and 21 Sept there were sporadic reports of up to eight animals, with no single pod exceeding five. On 28 Sept a pod of seven was seen slowly moving west and occasionally logging at the surface, while what may have been the same pod of 6-7 animals was seen distantly offshore from 1130-1225 hrs on 12 Oct, again logging and tail thrashing at the surface.

### **Bottlenose Dolphin *Tursiops truncatus***

Target species: recording level 1

Recorded on 15 dates between 30 Aug and 4 Oct, with a minimum of about 20 seen in one pod and an absolute maximum of 58-80 animals involved. The latter figures assume that separate sightings on the same day, or on consecutive days, involved different animals, and will doubtless be an over-estimate of the true numbers. Most sightings involved animals at >1.5 km range, but one or two sightings were at distances of 1 km.



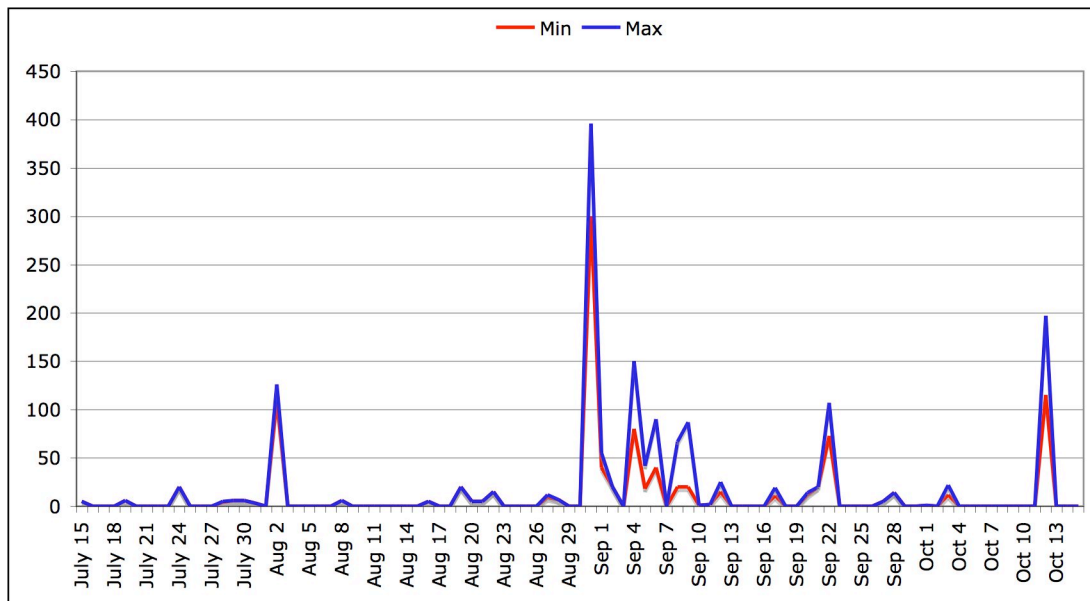
*Day totals of Bottlenose Dolphin off Gwennap Head between 15 July and 15 October 2007.  
Min = minimum number recorded; Max = maximum number recorded.*

The above graph confirms the lack of records prior to 30 Aug, with one seen on that date and then a group of 20 the following day feeding and moving west at about 1.5 km range (in association with large numbers of Common Dolphins). Almost daily sightings were made between 3 and 8 Sept, including pods of 4-5 animals on 6 and 7 Sept. Sporadic reports of one or two animals were made between 12 and 24 Sept, including one on 15 Sept seen circling and following a divers boat near the Runnelstone buoy from 1055-1120 hrs (this may have been the infamous 'Georges', a renowned lone Bottlenose Dolphin regularly seen interacting with divers and other water users in southern England and elsewhere). On 26 Sept a pod of five, including one juvenile, were seen around a fishing boat over the Runnelstone reef. After two on 1 Oct the final record was of one or two pods, totalling between 6-15 animals, moving offshore on 4 Oct. The peak BDRP autumn count was 91 on the 10-12 Aug crossing.

### **Common Dolphin *Delphinus delphis***

Target species: recording level 1

Recorded on 36 dates throughout the survey period. Estimating the total number of animals involved is extremely difficult for such a mobile species, but the peak day count was ~400 on 31 Aug and the maximum overall total was in the region of 1050-1600 animals. The latter figures assume that separate sightings on the same day, or on consecutive days, involved different animals. Most sightings were of pods of 5-30 animals at >1.5 km range, although some referred to pods several kilometres offshore.



*Day totals of Common Dolphin off Gwennap Head between 15 July and 15 October 2007.*

*Min = minimum number recorded; Max = maximum number recorded.*

The above graph shows that relatively low numbers were seen during most of July and August, the exception being 110+ offshore in three pods on 2 Aug. A group of between 5-6 animals was recorded on numerous dates between 15 July and 22 Aug, often feeding offshore in the same area for an hour or more, and it is tempting to assume that just one pod was involved. For example, on 20-22 Aug a pod of at least five animals was seen feeding about 3-4 km to the east of Gwennap Head, always in the late afternoon or evening between 1700-1930 hrs. Of note was a pod of ten seen briefly gathered around a Basking Shark on 22 Aug before loafing offshore, with a flock of 70 Gannets circling overhead (note that circling Gannets were seen over most pods of Common Dolphins and were a useful visual cue for observers, especially for distant pods).

A major influx on 31 Aug included three pods, totalling at least 90 animals, moving rapidly west early in the morning, at one point seen alongside a Minke Whale near the Runnelstone buoy. By mid-morning a feeding aggregation of about 300 animals, divided into about eight pods, was seen 1-2 km offshore while moving steadily west. Moderate numbers were then seen almost daily up to 9 Sept, peaking at 80-150 on 4 Sept. Of note was a group of about 20 seen at 4 km range on 6 Sept that appeared to be tightly circling, presumably around a trapped fish shoal. Similar behaviour was noted from another (or the same) pod of 20 animals at 2 km range on 9 Sept.

Low numbers were then seen until 22 Sept, when up to 107 were recorded in pods of up to 22 animals. Up to three juveniles (noted as being roughly half the size of the adults) were present in some of the pods. In October the only significant reports were of 12-22 animals on 3 Oct and another major influx of between 115 and 200 animals on 12 Oct. Interestingly, no other sightings were made between 4 and 15 Oct, despite viewing conditions often being excellent, highlighting the mobile nature of this species. The BDRP peak autumn count was 592 on the 14-17 Sept crossing, a few days after the Gwennap Head peak.

### **Dolphin sp.**

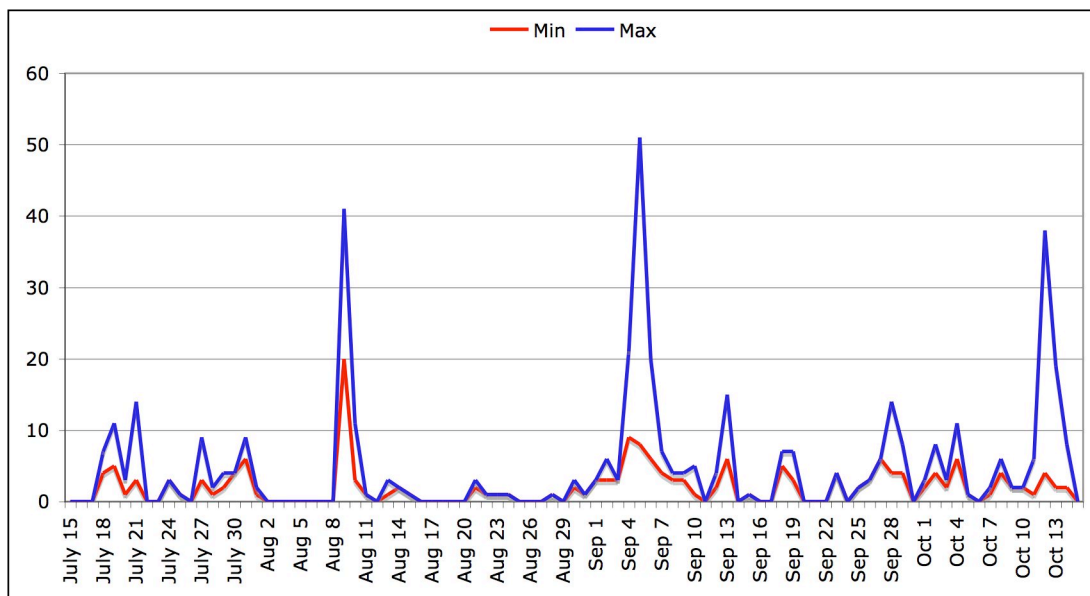
Several groups of dolphins were not identifiable, due to poor visibility and/or brief/distant views. Unidentified dolphins were seen on 18 dates, with most referring to distant groups of presumed Common Dolphins accompanied by circling Gannets. Most records were of small numbers of animals, but on 20 July several tens of

probable Common Dolphins were seen 4-5 km offshore, and on 11 Oct a pod of about 200 probable Common Dolphins was seen heading west at 5 km range with ~100 Gannets overhead. The following day a further 50-80 animals were also mostly thought to be Common Dolphins, and occurred at the same time as a major influx of that species.

### Harbour Porpoise *Phocoena phocoena*

Target species: recording level 1

Recorded on 59 days out of the 92, making it the most regularly encountered cetacean. The total number of animals seen was between 187 and 443, but this is undoubtedly an over-estimate as many animals were probably lingering in the area and therefore recorded on multiple dates. The largest group was a feeding gathering of about 20 animals converging on a fish shoal; most sightings involved individuals or 'mother-and-calf' pairs. This is an inconspicuous species that is much easier to see in calm weather; occasionally Gannets were recorded circling overhead, while the only interesting behaviour involved one or two records of breaching.



Day totals of Harbour Porpoise off Gwennap Head between 15 July and 15 October 2007.  
Min = minimum number recorded; Max = maximum number recorded.

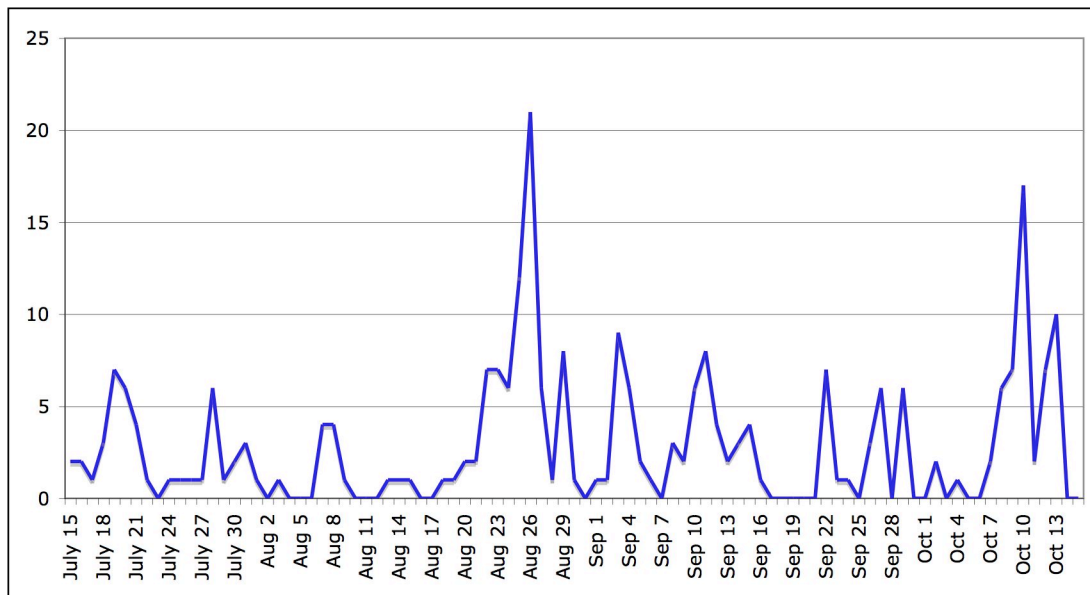
The above graph shows that up to 10-15 animals were present offshore for much of the survey period, although the species was apparently absent for a few days at a time, e.g. between 2 and 8 Aug. Most notable are three apparent influxes: the first involved between 20 and 41 animals on 9 Aug (at a similar time to the BDRP peak autumn count of 153 between 10-12 Aug), the second occurred between 4 and 6 Sept and involved a maximum of 20-51 animals, and the third occurred on 12-13 Oct and involved a maximum of 19-38 animals. The influxes in early September and mid-October corresponded with influxes of other cetacean species, and may correspond to temporary feeding aggregations.

### Grey Seal *Halichoerus grypus*

Target species: recording level 3

Present in small numbers throughout the survey period, with odd individuals seen fishing around the base of Gwennap Head and occasionally further offshore, and a regular haulout on rocks ~500 m to the west.





*Day totals of Grey Seal off Gwennap Head between 15 July and 15 October 2007.*

The above graph shows that up to 5-10 animals were regularly seen at the haulout, with two marked influxes. On 26 Aug a peak of 21 was seen, and on 10 Oct a total of 17 were seen, with 10 still on 13 Oct. The late August influx may have involved animals forced out of a nearby cave or other loafing area by human disturbance, but equally could represent animals seeking out likely colonies prior to the breeding season. The October influx almost certainly relates to animals returning to the coast for breeding, as influxes are seen at other Cornish sites at this time.

Notable records included one seen hunting a Mackerel shoal at the surface on 29 July, occasional individuals hunting around the Runnelstone reef 1.5 km offshore, and one dead animal floating offshore on 21 Sept that was used as convenient perch by a Great Black-backed Gull.

### **Basking Shark *Cetorhinus maximus***

Target species: recording level 1

This species was recorded between 17 July and 2 Oct, with sightings made on 71% of days within the overall survey period. The total number of sharks reported was **656**, but this total will involve significant duplication as some animals were doubtless recorded on multiple dates. It should be noted that Basking Sharks spend a significant amount of time out of sight beneath the surface, and that their surfacing behaviour can vary over short time-scales in response to changing environmental conditions and/or distribution of their zooplankton prey. Therefore, the data presented here only capture the surface occurrence of Basking Sharks during daylight hours offshore of the Gwennap Head watchpoint.

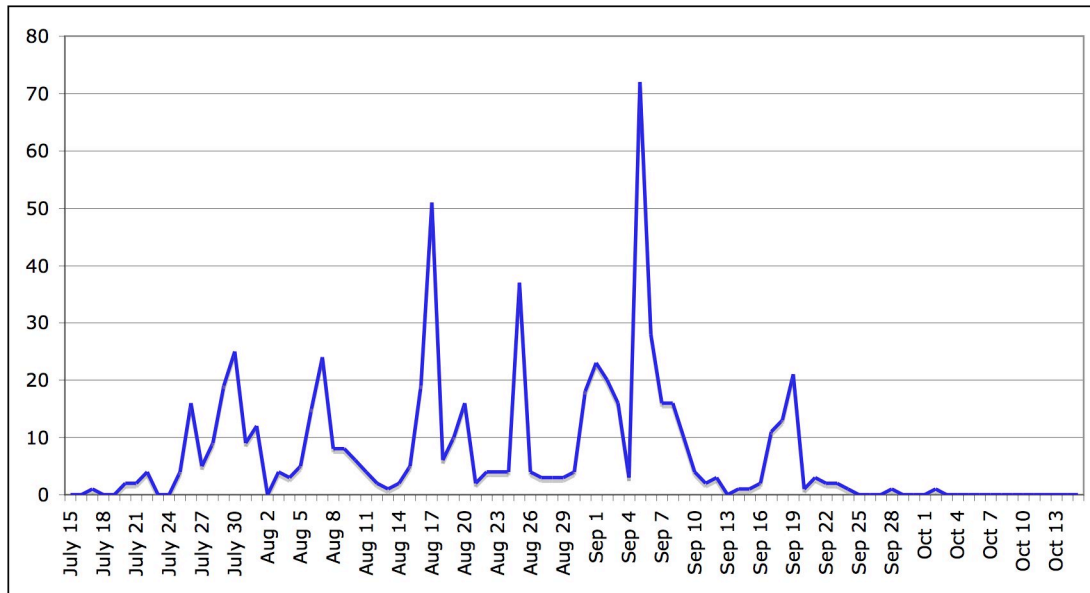


*Basking Shark feeding off Gwennap Head (Peter Hinder)*

Most Basking Sharks were seen feeding along the tidal front associated with the NE-SW oriented Runnelstone reef. The timing of sharks feeding at the surface in this area appeared to show some relation to tidal state, and further work is in progress to investigate this further. Certain weather conditions also led to development of fronts in areas away from the Runnelstone reef, and these attracted concentrations of feeding sharks. For example, on 26 July a group of 16 Basking Sharks was feeding ~400 m off Gwennap Head, along a front that was clearly dividing two different coloured water masses. The closest Basking Sharks approached to within 20-40 m of the shore, but most were seen at distances >500 m.

Interesting behaviour included breaching and apparent courtship behaviour. Breaching was observed on about ten occasions, with the shark partially or completely leaving the water and crashing down on its flank. Breaching occurred both amongst (apparently) lone sharks and large groups, e.g. three breaches were seen on 17 Aug when 51 sharks were present at the surface. The exact purpose of breaching is still unknown, but may be a method of dislodging parasites or displaying strength and aggression to potential rivals and/or mates. Other apparent courtship behaviour included ring-circling (observed on 7 Aug involving 6-7 sharks following each other in tight circles before dispersing re-grouping and repeating), and frequent instances of nose-to-tail following by two or more sharks. Basking Sharks were generally ignored by seabirds in the area, with only occasional records of Gannets and European Storm-petrels feeding overhead; however, this is likely to be coincidental and simply a result of sharks feeding in areas rich in zooplankton and the fish that prey upon them.

Analysis of Basking Shark size during the survey was not possible due to the large numbers of animals involved. The largest animals were 10 m or more in length, but relatively few were seen <3-4 m in length.



*Day totals of Basking Shark off Gwennap Head between 15 July and 15 October 2007.*

The above graph shows the peak counts of Basking Sharks visible at the same time during any given day, and reveals an irregular overall trend in surface sightings. Relatively low numbers were seen at the start of the survey in mid-July, increasing to a peak between mid-August and early September, before rapidly decreasing through mid-September. Only two Basking Sharks were seen after 24 Sept, with the last being a single on 2 Oct. Overprinted on this overall trend is a marked short-term variability on the scale of hours and days, with ongoing work indicating that this is likely driven by changing weather and tidal conditions.

The peak day count of 72 on 5 Sept corresponded with an unprecedented influx of 460 seen simultaneously off Land's End, a short distance to the west (160 were also seen off here on 4 Sept). The effort-based surface sightings off Gwennap Head therefore provided independent support for the scale of this influx, and the observers on this date did note that most animals were west of the watchpoint and therefore nearer to Land's End. An interesting record on this date concerned a Basking Shark apparently chasing passing Common Dolphins on two occasions.

Relatively few sharks were seen after 5 Sept, indicating an abrupt retreat into deeper waters further offshore and/or a marked change in surfacing behaviour. Overall these results highlight the irregular occurrence of Basking Sharks off Gwennap Head, with the overall pattern likely relating to seasonal oceanographic variability, and the short-term heterogeneity likely relating to local tide/weather effects and their influence on zooplankton prey distribution.

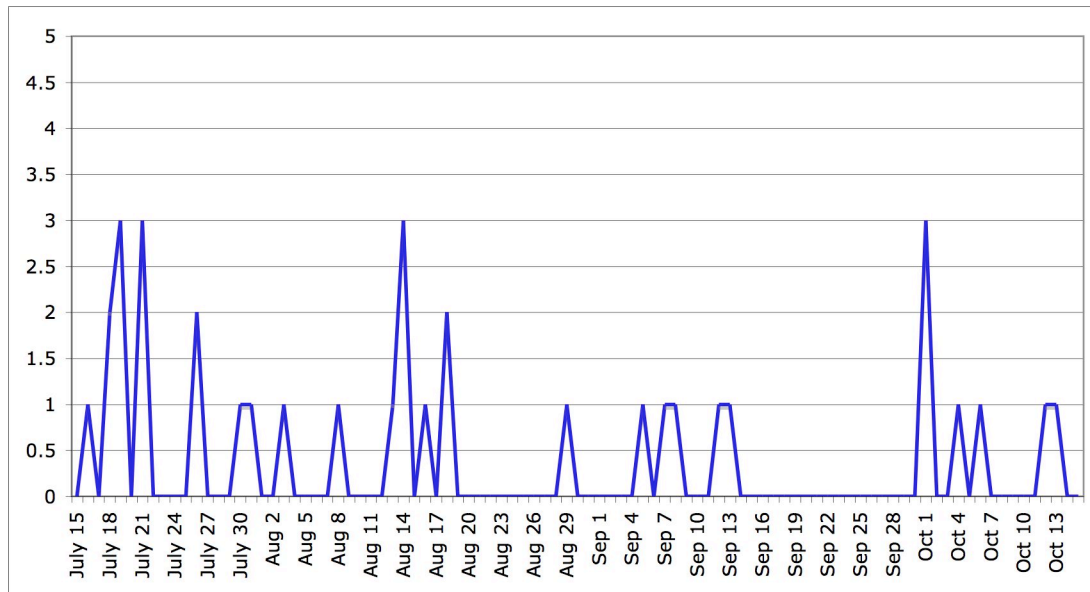
### **Blue Shark *Prionace glauca***

One record: A small, slender shark was seen twice at 50 m range at 0545 hrs and again at about 0800 hrs on 21 July. On both occasions it was seen thrashing at the surface and jumping clear of the water while pursuing Mackerel. The shark showed a dark grey, slim body and was 1.5-2 m long; the behaviour and appearance strongly suggest that this was a Blue Shark.

### **Ocean Sunfish *Mola mola***

Target species: recording level 1

Regularly recorded throughout the survey period, with all sightings referring to lone individuals. A maximum total of 35 were seen, although this may involve a small amount of duplication where multiple sightings were made on one date.



Day totals of Ocean Sunfish off Gwennap Head between 15 July and 15 October 2007.

The above graph shows that the majority of sightings were made between 15 July and 18 Aug, with 63% of total sightings within this period. After one on 29 Aug there was then a series of five sightings between 5 and 13 Sept, and then a gap until a further seven sightings were made between 1 and 13 Oct.

Most sightings were of relatively small sunfish, <1 m in diameter, seen at ranges of 50-1500 m. A surprising total of 40% of records referred to sunfish lying horizontally in the water and being attended and/or pecked at by (mostly juvenile or immature) Herring Gulls; this is thought to be a mutually advantageous relationship whereby the sunfish is relieved of irritating parasites, and the gulls get an easy meal. This behaviour appears to be relatively common, but may be proportionately 'over-recorded' as sunfish are generally easier to see when lying horizontally, and observers are often alerted to their presence by loafing gulls.

Breaching behaviour was noted twice: on 18 July one was seen breaching four times and on 21 July one was seen and heard breaching three times. On 26 July one was approached by a Basking Shark, at which point the sunfish flapped several times and then dived, while on 31 July one was seen to ignore a fishing boat passing only 40 m away.

### Grey Mullet sp.

On 16 July several hundred were seen in a long line about 40 m offshore, apparently surface-feeding on zooplankton. On 15 Oct about 50 were seen ~50 m offshore. These were presumably Thick-lipped Grey Mullet *Chelon labrosus*.



### **Masters projects on Basking Sharks and Ocean Sunfish**

Two Masters project students, based at the National Oceanography Centre, Southampton, in winter 2007/08, investigated Basking Shark and Ocean Sunfish occurrence off southwest England, and utilized data collected as part of SeaWatch SW. Short summaries of their results are reproduced below:

#### **Occurrence of Basking Sharks in southwest England: a project using effort-based sightings off Gwennap Head.**

*Leire Ordorika Pagazaurtunua*

The first aim of this project was to analyse UK-wide data held by the Marine Conservation Society as part of the Basking Shark Watch project (BSW). Between 1998-2006, a total of 27,014 Basking Shark reports were received, with 68% coming from southwest England, 21% from Scotland and 8% from the Isle of Man. The peak year for reports was 2006, with 7611. The regional distribution of reports changed through the period, with Scotland and the Isle of Man becoming increasingly important, probably due to increased recording effort in these areas. In southwest England, between 400 and 5000 sharks were reported annually, with most seen between May and August. Data collected by Cornwall and Devon Wildlife Trusts as part of their Seaquest SW project showed good correspondence to that collected by BSW, indicating good communication of datasets between these organizations.

Data from BSW in 2007 revealed larger than average numbers of Basking Sharks off southwest England in April, then below average numbers from May to July, before a return to much higher than average numbers in August and September. This 'unusual' pattern is likely related to the extreme weather conditions in 2007, with a very warm, settled April followed by an unsettled summer and relatively calm autumn. There was certainly a marked failure of the spring phytoplankton bloom off southwest England in 2007, and this will have affected the abundance and distribution of the sharks' zooplankton prey.

Data collected from Gwennap Head as part of SeaWatch SW mirrored the regional pattern, with increasing numbers through late July and August, peaking in early September before a rapid decline. Weekly totals of sharks appeared to show some relationship with sea surface temperature, although more work is required to confirm this. More evident was a relationship between tidal state and the first appearance of Basking Sharks at the surface each day, and this will be studied further during the 2008 survey. Intriguingly, there was no relationship between tidal state and the peak count of sharks each day.

#### **Occurrence and behaviour of Basking Sharks and Ocean Sunfish in coastal waters of southwest England**

*Rafe Holmes*

This project analysed data from the Marine Conservation Society (Basking Shark Watch – BSW) and the Cornwall and Devon Wildlife Trusts (Seaquest SW) to first establish the commonest behaviour observed by the two studied species in southwest waters. For Basking Sharks, only about 20% of public sightings reports in the Seaquest SW database referred to specific behaviour. Of these, active feeding (with the mouth seen as open) accounted for 373 reports (85%), with 54 cases (12%) of breaching, 12 (3%) of apparent courtship behaviour and five (1%) involving interactions with other species. Proportionately higher levels of breaching occurred at group sizes of 11-50, with slightly more occurring early in the season (May-June) than would be expected from occurrence patterns alone. Apparent courtship

behaviour was most common in groups of 11-50 sharks. Reports of behaviour were compared to regional plankton and temperature trends, but no relationship was observed (probably due to the coarse resolution of regional plankton and temperature data).

For Ocean Sunfish, about 23% of public sightings reports in the Seaquest SW database referred to specific behaviour. Of these, sunfish 'basking' on their sides accounted for 85 reports (36%), while interaction with gulls accounted for 75 reports (32%) and breaching accounted for 51 reports (22%). There were also 22 reports of congregations (9%) and two of feeding (1%). The vast majority of sunfish were seen individually, with groups of more than three or four being extremely rare. Most reports came from the north Cornwall coast, with moderate numbers off west and southwest Cornwall, but relatively few further east off south Devon. The peak season for sunfish sightings was between mid-June and mid-September. Relationships between sea temperature, jellyfish and sunfish abundance were elusive, again probably due to mismatches in data quality and resolution.

Effort-based data collected as part of SeaWatch SW recorded a much higher proportion of behavioural reports than public sightings data for both species, probably as a result of the observers at Gwennap Head being better prepared to recognise and record various types of behaviour. Effort-based data showed that sea state and visibility has a marked effect on number of sightings of both Basking Sharks and Ocean Sunfish, which will undoubtedly lead to bias in public sightings data. This study also proposed a relationship between tidal state and the appearance of sharks at the surface off Gwennap Head, with ebb tides apparently being favoured.



*Masters students, Rafe Holmes and Leire Ordorika at the Gwennap Head watchpoint (Russell Wynn)*

**The 2007 SeaWatch SW survey at Gwennap Head: Insect species accounts****Thrift Clearwing *Synansphecchia muscaeformis***

A small colony of this Nationally Scarce species is apparently present at the Gwennap Head watchpoint, with singles seen flying by day and nectaring on Thrift on 17 and 18 July.

**Hummingbird Hawk-moth *Macroglossum stellatarum***

One record: One was seen on 10 Oct in Porthgwarra Valley.

**Silver-Y *Autographa gamma***

Three records: Singles seen on 22 Aug and 10 and 12 Oct.

**Clouded Yellow *Colias croceus***

Small numbers recorded around Gwennap Head in late Sept and early Oct, with one or two on 26-29 Sept, four on 10 Oct and a single the following day.

**Red Admiral *Vanessa atalanta***

Probably under-recorded, the only reports being one on 21 July and two on 9 Aug.

**Painted Lady *Vanessa cardui***

This species was seen regularly around Gwennap Head and Porthgwarra Valley between 9 Aug and 10 Oct. Peak counts included about ten on 23 Aug and 12 arriving in off the sea on 11 Sept.

**Small Pearl-bordered Fritillary *Boloria selene***

A colony is evidently present on the grassy slopes immediately east of Gwennap Head, with up to ten present between 25 July and 19 Aug.



*Small Pearl-bordered Fritillary (Kevin Peace)*

Other butterfly species recorded around Gwennap Head and Porthgwarra Valley during the survey period included Large White *Pieris brassicae*, Small Copper *Lycaena phlaeas*, Common Blue *Polyommatus icarus*, Small Tortoiseshell *Aglais*

*urticae*, Peacock *Inachis io*, Wall Brown *Lasiommata megera*, Grayling *Hipparchia semele* and Meadow Brown *Maniola jurtina*.

**Migrant Hawker *Aeshna mixta***

One record: One flew in off the sea on 11 Sept.

**Common Darter *Sympetrum striolatum***

One record: One on the clifftop at Gwennap Head on 15 Oct.



### **The 2007 SeaWatch SW survey at Gwennap Head: Disturbance issues**

Unfortunately a number of incidents relating to human (water-based) disturbance of marine wildlife were reported during the survey period off Gwennap Head. One particular boat was seen approaching very close to Basking Sharks on numerous dates for periods of up to 20 minutes, frequently causing the sharks to alter course or dive below the surface. On one occasion this boat was also seen apparently encouraging Common Dolphins to bow-ride by sporadically surging forwards at high speed. It should be noted that Basking Sharks are an endangered species, and under UK law it is illegal to kill, injure or recklessly disturb this species. These incidents were therefore fully documented and several were captured on digital video; a full dossier has been passed to Cornwall and Devon Police for further action.

A different boat was twice seen to narrowly avoid colliding with Basking Sharks at the surface while passing through the area at high speed (the owner has since been verbally reprimanded by the SeaWatch SW co-ordinator), while angling charter boats were also seen approaching too close to sharks on several dates. In addition, canoeists/kayakers were occasionally seen approaching to within a few metres of Basking Sharks. Although such incidents are unlikely to result in serious harm or death to Basking Sharks, they may have a cumulative negative effect on their ability to feed and engage in social activity, and may lead to them moving out of the area temporarily.

Another type of disturbance was observed on 7 Oct, when a RIB carrying divers flushed a Grey Seal and several Shags, Oystercatchers and gulls from rocks to the west of Gwennap Head. Interestingly, apart from a couple of minor incidents (described in the Herring Gull and Gannet species accounts), there were no reports of negative interactions between local commercial fishermen and marine wildlife off Gwennap Head. It seems that leisure activities are potentially a more pertinent threat to animals in this specific area in the summer and autumn months.



*Sea kayaks off Gwennap Head (Russell Wynn)*

### **The 2007 SeaWatch SW survey: Sister sites at Berry Head and Strumble Head**

During the SeaWatch SW survey, effort-based observations were also carried out at Berry Head in Devon and Strumble Head in Pembrokeshire, in an attempt to provide a regional perspective for observations made at Gwennap Head. One of the aims was to see whether Balearic Shearwater movements could be followed at a regional (southwest UK) level, and also to assess whether movements of other migratory species in autumn could be subdivided into 1) those that moved down the west side of the UK via the Irish Sea and 2) those that passed down the east side of the UK and then through the English Channel.

#### **Berry Head**

Berry Head is an east-facing headland that protrudes into the southwest corner of Lyme Bay. The best conditions for observing seabird migration in autumn off Berry Head generally involve S/SW winds and poor visibility, with most birds moving south off Berry Head before exiting Lyme Bay and rounding Start Point and continuing westwards. Previous observations have indicated that Balearic Shearwaters in direct flight passing Berry Head are likely to pass Gwennap Head (~160 km to the west) about four hours later. Observations were carried out at Berry Head on nine dates between 15 July and 1 Oct 2007, totaling 71.25 hours. A comparison of data collected at Gwennap Head during roughly the same hours of observation reveals some interesting results for a selection of key migratory seabirds as shown below:

<i>Species</i>	<i>Berry Head</i>	<i>Gwennap Head</i>
<i>Balearic Shearwater</i>	128 (1.8 per hour)	166 (2.3 per hour)
<i>Manx Shearwater</i>	536 (7.5 per hour)	1585 (22.2 per hour)
<i>Sooty Shearwater</i>	113 (1.6 per hour)	202 (2.8 per hour)
<i>European Storm-petrel</i>	22 (0.3 per hour)	229 (3.6 per hour)
<i>Arctic Skua</i>	67 (0.9 per hour)	101 (1.4 per hour)
<i>Great Skua</i>	86 (1.2 per hour)	81 (1.1 per hour)

These data reveal some marked variation, but possibly the most important result is that Balearic Shearwaters were observed passing both watchpoints at similar hourly rates of ~2 birds per hour. This supports the view that these birds arrive off central and southwest England after crossing from the French coast, and then move at a regional level along the southwest coast of the UK before passing north and west into the Celtic and Irish Seas or back south towards the French coast.

In contrast, Manx Shearwaters were three times more abundant off Gwennap Head, which is compatible with birds entering the western English Channel from breeding sites to the west and north of southwest England. Interestingly, on 23 July, a marked eastwards passage of ~500 Manx Shearwaters off Gwennap Head was not recorded at all at Berry Head, revealing that these birds moved away from the coast and/or that the geographical location of Berry Head (within a large embayment) is unsuitable for observing birds moving east.

European Storm-petrels were over ten times more abundant off Gwennap Head, indicating that on the covered dates relatively few penetrated the English Channel beyond the southwest tip of Cornwall. Sooty Shearwaters were almost twice as frequent off Gwennap Head, again indicating a dominant westerly provenance.

Arctic and Great Skuas were seen in comparable numbers at both sites (between ~1 and 1.5 birds per hour), revealing that these birds were likely moving westwards along the southwest coast of the UK. This may indicate that most of these birds originate from further east, and may therefore have entered the English Channel from the east after passing southwards through the North Sea.

The appearance of Great and Cory's Shearwaters and Pomarine Skuas at both sites showed a reasonably good correspondence, but only small numbers of birds

were involved and it is hard to draw and firm conclusions. It was noticeable that on 18 Aug no Great or Cory's Shearwaters were seen at either site before 1155 hrs but, between then and 1330 hrs, two Great and one Cory's had passed Berry Head and five Cory's had passed Gwennap Head. This suggests that the weather conditions that trigger the appearance of these species close inshore may be influential across large areas (>150 km) at roughly the same time.

Single Leach's Storm-petrel and Sabine's Gull off Berry Head on 1 Oct were notable, as neither species was recorded from Gwennap Head during the entire survey period. Also, a total of 25 Little Gulls and 65 Sandwich Terns was seen off Berry Head on that date, with only one Little Gull and three Sandwich Terns off Gwennap Head the same day. This may indicate that these birds had all passed through the North Sea and English Channel but detached from the south coast prior to reaching Cornwall. In contrast, much larger numbers of Kittiwakes and Razorbills off Gwennap Head on that date had probably originated from the west coast.

Finally, the only large marine animals seen off Berry Head were occasional Harbour Porpoises and a single Ocean Sunfish, whereas several Basking Sharks and Ocean Sunfish, and numerous Common Dolphins and Harbour Porpoises, were seen off Gwennap Head on the same dates.



*Juvenile Sabine's Gull off Berry Head on 1 Oct 2007 (Mark Darlaston)*

### **Strumble Head**

Strumble Head is a north-facing headland located in the south of Cardigan Bay. The best conditions for observing seabird migration in autumn at this site generally involve winds between north and west, with birds moving west off Strumble Head before rounding the islands off St David's Head to the southwest and then continuing southwards. Strumble Head is located about 235 km north of Gwennap Head, but the two sites are not connected by a direct flight line so it is unlikely that daily movements can be correlated between the two. However, observations at Strumble Head do provide a useful regional perspective, especially regarding birds moving south through the southern Irish Sea. A summary of 2007 observation hours at Strumble Head during the survey period is shown below:

<i>Observation period</i>	<i>Number of days</i>	<i>Observation hours</i>
15-31 July	2	14.5
1-15 Aug	8	47.75
16-31 Aug	11	50.75
1-15 Sept	15	90.5
16-30 September	14	95
1-15 Oct	9	56
<b>Total</b>	<b>59</b>	<b>354.5</b>

Strumble Head was covered on 59 dates between 15 July and 15 Oct 2007, totaling 354.5 hours. Only 14.5 hours of observations were carried out in July, whereas almost half of the total hours were in September. Although detailed analysis of the full dataset is beyond the scope of this report, some initial results are reproduced here.

Balearic Shearwaters off Strumble Head typically peak in late September or early October; in 2007 the peak day count of 37 on 17 Sept was slightly earlier than usual. A total of 256 birds were recorded between 15 July and 15 Oct, as shown below:

<i>Observation period</i>	<i>Number of birds</i>	<i>Birds per hour</i>
15-31 July	1	0.1
1-15 Aug	4	0.1
16-31 Aug	9	0.2
1-15 Sept	105	1.2
16-30 Sept	126	1.3
1-15 Oct	11	0.2
<b>Total</b>	<b>256</b>	<b>0.7</b>

Although the total of 256 Balearic Shearwaters is the third highest at Strumble Head since detailed seabird recording began in 1984, the peak day count and hourly rate are actually the second highest recorded, only being beaten by 2006.

The 2007 Strumble Head data indicate that relatively few Balearic Shearwaters were passing south through Cardigan Bay in July and August, with a concentration of southwards passage in September before a return to lower numbers in October. This compares well with the overall UK pattern, with no birds recorded to the north and west of Strumble Head in the Irish Sea area from October onwards, indicating a marked exodus during September. Interestingly, the peak day count of 37 off Strumble Head on 17 Sept was a week earlier than the second highest day count of the survey period off Gwennap Head, hinting at the possibility that the wave of birds passing south out of the Irish Sea in mid-September was then recirculating in the western English Channel a week later.

Sooty Shearwaters were relatively scarce off Strumble Head in 2007, with a total of just 44 recorded, almost all in September. This total equates to ~0.1 per hour, compared to ~0.5 per hour off Gwennap Head during the survey period, a five-fold difference. It is also notable that no Cory's or Great Shearwaters were recorded off Strumble Head in 2007, whereas both species were seen in small numbers off Gwennap Head. Most large shearwaters apparently passed down the west coast of Ireland in 2007, only appearing briefly off the southwest tip of the UK mainland during strong southwest winds and poor weather conditions. Relatively few seemed to penetrate into the southern Irish Sea, although there was evidently a small southwards passage of Sooty Shearwaters through this area.

Common Scoters were seen in lower than usual numbers off Strumble Head in 2007, with a total of 1504 recorded (numbers in the main wintering area in Camarthen Bay were also markedly low during the 2007/08 winter). Peak hourly rates were noted in two distinct periods: from 15-31 July (10.7 per hour) and from 16-30 Sept (6.9 per hour). However, although this general pattern is similar to that observed off Gwennap Head, the overall hourly rate off Strumble Head (4.2 birds per hour) is seven times higher than that off Gwennap Head (0.6 birds per hour). Most birds passing the former site are probably heading for feeding grounds in Carmarthen Bay, and therefore don't reach Cornwall.

A total of 264 Arctic Skuas were seen off Strumble Head, with <0.5 per hour in July, August and October, but a peak of >1.0 per hour in September. Peak counts included 58 on 3 Sept and 46 on 17 Sept. The overall hourly rate of 0.7 is very similar to that off Gwennap Head (0.6), and the large count on 17 Sept is only four days before the peak count off Gwennap Head, possibly providing evidence for a



wave of birds moving southwards at that time. Great Skuas show a similar overall pattern to Arctic Skua although in lower numbers, with a total of 124 seen and a peak in September. Intriguingly, the hourly rate of 0.35 per hour is again almost identical to that off Gwennap Head (0.34), although this is only a crude comparison as the latter value covers the entire 93-day survey period.

A total of 14 Pomarine Skuas were seen off Strumble Head in 2007, with the hourly rate being twice as high as off Gwennap Head. Likewise, while 47 Little Gulls were seen off Strumble Head only two were recorded off Gwennap Head. Totals of Leach's Storm-petrels (nine), Long-tailed Skuas (seven) and Sabine's Gulls (23) off Strumble Head also compared to none off Gwennap Head, and hourly rates of Red-throated and Great Northern Diver were also markedly higher off Strumble Head. It would seem that Gwennap Head, located on the southwest tip of the UK mainland, is in the shadow zone for southwards passage of these scarcer seabirds as they pass out of the southern Irish Sea; it is certainly the case that sites in north Cornwall such as St Ives and Pendeen also fare better for these species than Gwennap Head.

Commoner seabirds such as Manx Shearwaters, Kittiwakes and auks were not recorded in detail at Strumble Head due to the very large numbers involved, especially early in the season when birds are still present around breeding colonies. Of the rarer seabirds, records of Wilson's Storm-petrel on 5 Aug and Roseate Terns on 15 and 17 Sept were of note.

Only three species of cetaceans were recorded off Strumble Head during the survey period, with peak counts of up to 130 Harbour Porpoises and 70 Common Dolphins, and just a single Bottlenose Dolphin. No Basking Sharks were seen and a poor total of just four Ocean Sunfish were recorded between 16 Aug and 29 Sept (including one breaching). An unidentified turtle was also observed on 19 Sept.

In summary, data received from sister sites at Berry Head and Strumble Head during 2007 have proved to be extremely useful, putting the Gwennap Head dataset into a regional context and providing important insights into the migration routes and timings of different seabird species. All three sites have advantages and disadvantages, but Gwennap Head appears to be the optimum site for observing the full range of key target species, including Balearic Shearwaters, Basking Sharks and cetaceans; this hopefully justifies concentrating the full 93-day effort-based survey at this location!

## **Small boat surveys for Balearic Shearwaters and other marine wildlife in the western English Channel in 2007**

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### **Introduction**

The charity Marinelife, through the Biscay Dolphin Research Programme, has been monitoring seabirds and cetacean in the western English Channel and Bay of Biscay through monthly ferry surveys since 1995. Over the period, 130 dedicated 'distance sampling' surveys and a further 450 casual surveys have been completed by volunteer recorders, with over 290,000 km travelled in the English Channel alone.

The surveys have produced a wealth of seabird and cetacean sightings with, for example, over 1300 sightings of ten cetacean species including regular Common Dolphin, Bottlenose Dolphin, Harbour Porpoise and Minke Whale, with the latter two species increasing in range and abundance over the period. Inspired by the sightings from the larger survey vessels, a programme of opportunistic small boat surveys was launched off the Dorset coast in 2005. On the surveys, small numbers of Balearic Shearwaters were recorded scavenging around fishing boats in both 2005 and 2006.



*Balearic Shearwater (Tom Brereton/Marinelife)*

In an initiative made in conjunction with the RSPB and SeaWatch SW, Marinelife expanded survey activity in 2007 and launched a more wide-ranging programme of small-boat surveys off the Devon and Dorset coastlines, targeted at collecting information on offshore distribution and habitat use of Balearic Shearwaters. It was hoped the data collected would help inform future conservation strategies for this highly threatened seabird.

The surveys were potentially of conservation significance because it has been speculated that Lyme Bay may be of particular importance as a moulting area for the species in a UK context. Evidence for this includes the relatively large numbers seen periodically off Portland Bill and Berry Head in recent years during the summer months.

The main aims of the surveys were thus:

- To determine the offshore distribution of Balearic Shearwaters and identify any key areas, where important concentrations are regularly present.
- To investigate Balearic Shearwater habitat use and behaviour, especially fishery interactions.
- To determine spatial, seasonal and inter-annual temporal distribution patterns.
- To determine the diversity of other seabirds and marine wildlife species present, especially UK Biodiversity Action Plan Priority species such as cetaceans, Basking Shark and Herring Gull.



*Balearic Shearwater (Tom Brereton/Marinelife)*

## Methods

Offshore 'opportunistic' surveys involved the placing of volunteer observers on recreational dive and angling boats. Volunteer recorders from Devon and Dorset were recruited from Marinelife, the Dorset Bird Club and the RSPB, with additional surveyors coming forward following publicity on the *Birdguides* website, allowing survey coverage to extend into Hampshire. There was an enthusiastic response to the survey from owners of dive and angling boats, who were not only interested in Balearic Shearwaters and the project, but also willingly sponsored passage for the surveyors. The surveys work by teaming up volunteer recorders with individual boat skippers, so that arrangements could be made between both parties when places became available and weather conditions were suitable for surveys.



*The Tiger Lily, Weymouth and the Tiger Lily, Exmouth: two of the angling boats used for surveys (Chris Caines and Tom Brereton/Marinelife)*

On each dedicated survey, effort-related seabird and cetacean recording was carried out using standard survey methods developed for 'ships of opportunity' surveys, with both sightings and effort-based data collected.

Where possible, sightings data collected for each seabird and cetacean encounter included: age and number of individuals, position (using a GPS), behaviour and weather/sea conditions (including sea state). On some boats, forward viewing was

possible and distance sampling methods were deployed, with additional data collected including the angle of sighting (using graticule binoculars or by angle board) and distance to the sighting (estimated using a Heinemann stick or with laser range finder binoculars).

For Balearic Shearwaters, behaviour at point of first observation was noted and categorised as either (1) Flying – passing through; (2) Flying – responsive movement towards the boat; (3) Natural feeding - including seen in flight circling an area; (4) Scavenge feeding around fishing boats (including flying around the boat); and/or (5) Resting on the water. Subsequent behaviour (if different) for the duration of the sighting was also recorded, into one or more of the following categories: (6) Flying – passing through; (7) Flying – responsive movement towards the boat; (8) Natural feeding - including seen in flight circling an area; (9) Scavenge feeding around fishing boats (including flying around the boat); and/or (10) Resting on the water.

*Balearic Shearwater recording forms are in the appendix.*

Regardless of any Balearic Shearwaters or other marine wildlife encounters, effort-related data collected at 15-30 minute intervals (or whenever the course of the ship changed) included direction of travel, speed and position of the ship, and sea and weather conditions. The time, location and duration of stopping points (for dive or angling efforts) was also noted.

In addition a sightings scheme was established, and skippers from a wider variety of boats including fishing boats and yachts were encouraged to send in Balearic Shearwater sightings. To help aid seabird identification, interested parties were supplied with a Marinelife/Biscay Dolphin Research Programme seabird identification chart. Casual recorders were asked to undertake more basic recording, supplying the GPS position of the sighting, number seen and the date.

*The Marinelife seabird identification chart is included in the appendix.*

## **Results**

### **Survey coverage**

2007 was a very early season for Balearic Shearwaters off southern England, and as a consequence the early part of the season when high numbers were present was missed. In spite of this, and the fact that unsuitable windy weather conditions prevailed over much of the remainder of the summer, a reasonable level of survey coverage was achieved. In total volunteer surveyors completed 25 surveys between May and September covering 850 km on 12 boats from seven ports spanning the Isle of Wight and Hampshire in the east to Exmouth, Devon in the west.

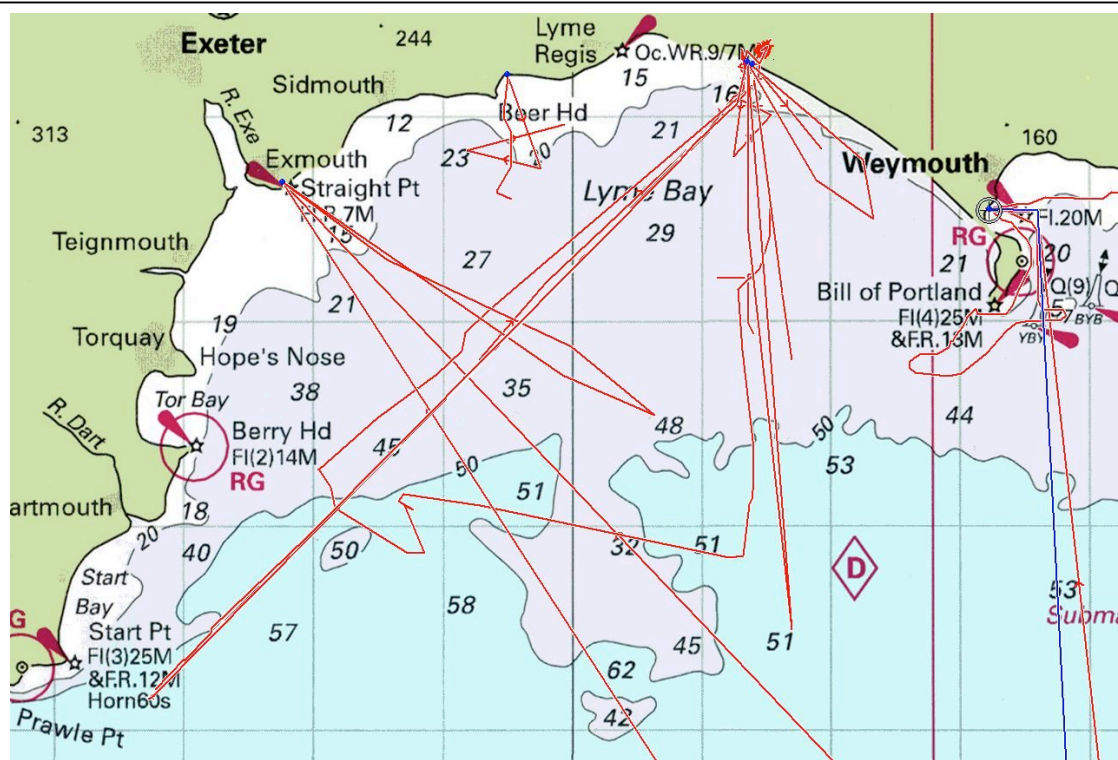
### **Balearic Shearwater sightings**

In total 39 sightings were made of 80 individuals between June and September. Virtually all of the birds seen well were adults in varying stages of moult, with just one juvenile seen on 11 August. The majority of sightings (51%) were recorded on a single day (8 July), when 41 were seen within 6 km (both to the east and west) of Portland Bill. The bulk of these birds were either seen (1) flying past the boat, (2) feeding amongst angling and fishing boats in the Shambles, or (3) resting on the sea amongst rafts of Manx Shearwaters. The largest groups detected, of eight and ten individuals, were seen resting on the sea within 2 km of Portland Bill.

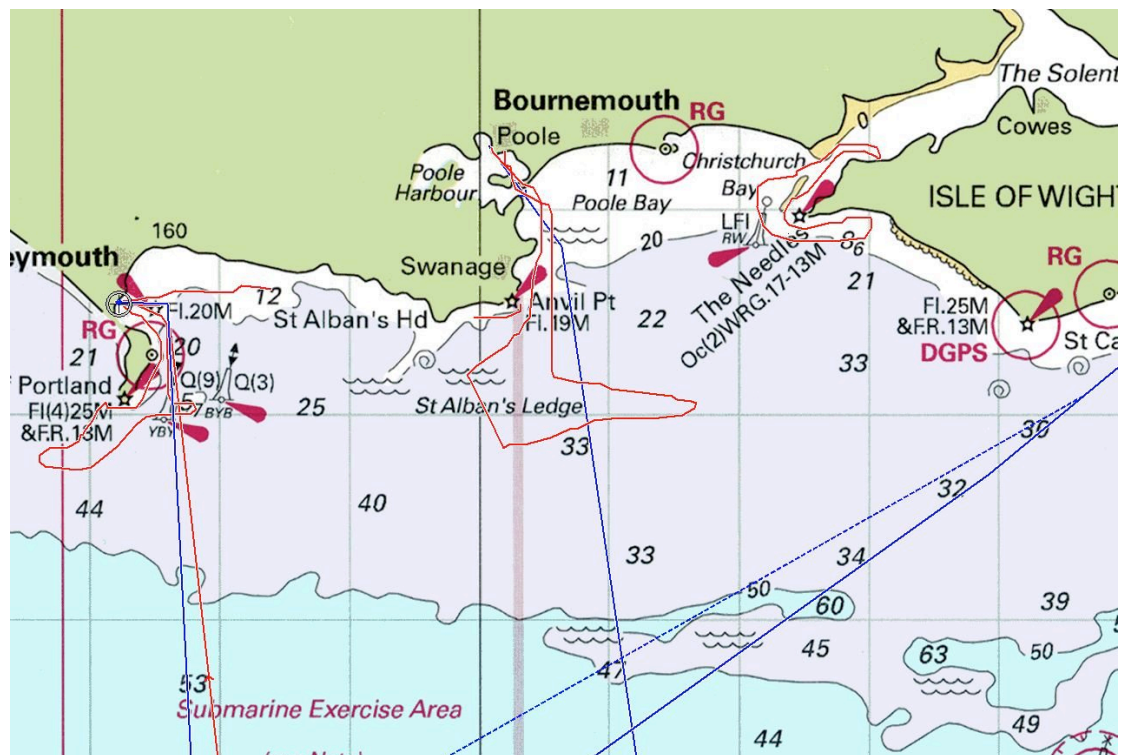


<b>Month</b>	<b>No. surveys</b>	<b>No. sightings</b>	<b>No. individuals</b>
June	1	1	1
July	10	25	63
August	8	9	12
September	5	3	3
October	1	1	1
<b>Totals</b>	<b>25</b>	<b>39</b>	<b>80</b>

*Offshore Balearic Shearwater records by month*



East Devon/West Dorset



East Dorset/West Hampshire

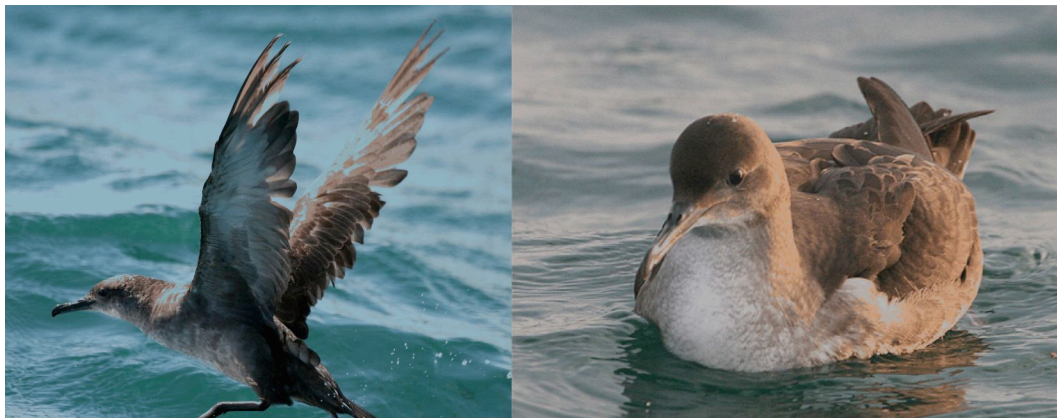
Survey coverage in 2007. Solid red lines represent small boat surveys, solid blue track lines monthly ferry surveys, dashed blue lines, irregular ferry surveys.



*Balearic Shearwater scavenging amongst Herring Gulls (Tom Brereton/Marinelife)*

Away from Portland, no significant aggregations of Balearic Shearwaters were detected, with two-thirds of sightings being of singletons. Birds were seen over a wide geographical area, including off the Needles, Isle of Wight in the east, out towards Start Point in the western sector of Lyme Bay and in the middle of the English Channel, with a notable concentration (maximum day count four birds) in the separation zone, north of the Hurd Deep. The vast majority (>80%) of Balearic Shearwaters seen away from Portland were either seen in flight (moving through) or were scavenging amongst gulls, Great Skuas and Fulmars around fishing boats. Birds seen in association with fishing boats were tame and approached within a few metres of the boat. Whilst scavenging, Balearic Shearwaters were not unduly harassed by Herring Gulls or other seabirds and, in addition to scavenging behaviour, birds were sometimes seen diving for small fish around boats.

Balearic Shearwaters were also regularly seen leaving scavenging flocks of birds around fishing boats, to inspect dive and angling boats for scavenging or other feeding opportunities, but soon left if discard was not readily available.



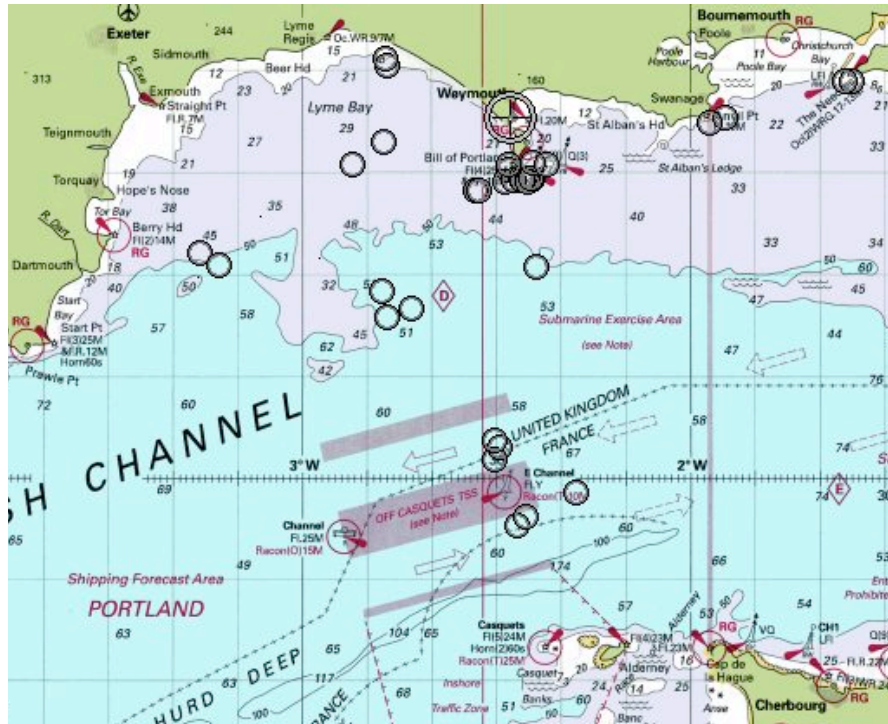
*Moulting adult (left) and juvenile (right) Balearic Shearwater (Tom Brereton/Marinelife)*

Balearic Shearwaters were patchily distributed within Lyme Bay and no important moulting areas were found in spite of widespread coverage. Balearic Shearwaters were scarce in some well-watched areas. For example, the most intensively surveyed area was a rectangular-shaped compartment up to six miles offshore between West Bay and Abbotsbury, with several visits made per week in this area



through the summer, by local fishing boats that had crew capable of identifying Balearic Shearwaters and other seabirds. However, there were only three Balearic Shearwater sightings made in this area at different times of the summer and the birds did not stay around.

The main fishing activities observed in Lyme Bay were scallopers and potters fishing for shellfish, with a smaller number of beam trawlers (e.g. fishing for Sole) and otter trawlers (e.g. for Red Mullet). The most attractive trawlers to Balearic Shearwaters and other seabirds were undoubtedly the otter trawlers, which attracted large numbers of birds when the nets were being hauled. For example, on 11 August up to 500 large gulls, plus smaller numbers of Kittiwakes, terns and skuas were seen around a single French otter trawler.



*Locations of Balearic Shearwater sightings (open circles)*

### **Other wildlife sightings**

Over the summer months a good variety of other seabird species were seen offshore, particularly in Lyme Bay. The surveys detected the regular presence of feeding European Storm-petrels in Lyme Bay ~3 km out from the coast, from late May to early July, and Great Skuas in August and September from 10km out. European Storm-petrels were most abundant after a period of south-westerly gales, which concurred with observations made by local fishermen. In total, over 400 European Storm-petrels were seen with a maximum count of 100+ at a distance of 3-7 km offshore from West Bay on 1 June, whilst over 90 Great Skuas were seen with a maximum of 33 on 29 September.

Other sea and shorebird species recorded at sea (with maximum day counts in brackets) included: Common Scoter (6), Manx Shearwater (470), Sooty Shearwater (8), Fulmar (69), Gannet (989), Cormorant (10), Sanderling (3), Black-tailed Godwit (6), Grey Phalarope, Mediterranean Gull (4), Little Gull (3), Kittiwake (110), Black Headed Gull (6), Lesser Black-backed Gull (114+), Herring Gull (1463), Great Black-backed Gull (193), Yellow-legged Gull (1+), Arctic Skua (13), Pomarine Skua, Sandwich Tern (5), Black Tern (2), Arctic Tern (20), Common Tern (10), Guillemot (330), Razorbill (55) and Puffin (3).



There were a surprising number of cetaceans seen on the surveys with regular sightings of Harbour Porpoise in Lyme Bay from July to September. All the sightings were beyond 10 km out, and the maximum seen was 19 on 11 August. There were several sightings of Ocean Sunfish and Basking Shark as well as reports of Bottle-nosed Dolphin by local fishermen. However, the most amazing discovery was the presence of White-beaked Dolphins in western Lyme Bay. Between early August and the end of September, five sightings were made totalling 29 animals with a maximum group size of 19. Four of the five groups came to bow-ride. This is a highly unusual series of records as White-beaked Dolphins are chiefly a cold-water species, mainly occurring in the northern North Sea and off northwest Scotland. The animals were all seen in a restricted area extending over 25 km<sup>2</sup> characterised by relatively cool water, sandy/gravelly sediments on the seabed, a water depth of around 50 m and close to a traditional cod spawning area.



*Gallery of other sightings – clockwise from top left: Arctic Skua, Great Skua, European Storm-petrel and White-beaked Dolphin (Tom Brereton/Marinelife)*

## Discussion

The surveys produced a wealth of seabird and other marine wildlife sightings, although perhaps the real highlight was being able to get stunning views of practically all of the species encountered. Many of the dolphins came to bow-ride and most of the seabirds tended to come alongside survey boats either to scavenge or to search for other food sources. The surveys confirmed Lyme Bay and the Portland Bill area as some of the most accessible areas in the world to get very close views of Balearic Shearwaters, with the birds being bold and tame around fishing boats.

The small boats surveys have generated some valuable new data on the offshore distribution of Balearic Shearwaters off the south coast of England, with 39 at-sea sightings of 80 birds.

The majority of sightings (51%) were located within 6 km of Portland Bill on the 8 July, coinciding with a maximum reported day count for the year of 117 at Portland Bill Bird Observatory. Large numbers of moulting birds were present daily off Portland Bill from mid-June to mid-July. The available survey data suggests that, in 2007, this was a key moulting area with birds highly aggregated in inshore waters. It is not known what factors were driving the high density of birds in the Portland Bill area, and more specifically what the main food sources were. Local fishermen have suggested shoaling Smelt as one of the possible key food sources.

Despite over 850 km of survey effort and good spatial coverage, especially in Lyme Bay, no other significant concentrations of Balearic Shearwaters were detected. In Lyme Bay, birds were spread over a wide area in one's and two's, usually in association with trawlers, especially otter trawlers.

Elsewhere in 2007, *Marinelife* ferry and cruise ship surveys detected Balearic Shearwaters over a wide area of the European Atlantic from July to September, including the Celtic Sea, the Western Approaches, the Brittany coast, the northern Bay of Biscay and the southern Bay of Biscay. Once again, no large concentrations were found and the bulk of sightings were roaming singletons.

Lyme Bay was confirmed as a regular summer feeding area for Great Skuas and European Storm-petrels. As with most other seabirds (except auks), these birds were most often seen in association with fishing boats. Great Skuas were most frequently seen offshore around the larger trawlers, whilst European Storm-petrels were seen more inshore (regularly within 3 km of land even on calm days) and often around small crabbers.

Of the other marine animals seen, the White-beaked Dolphins sightings were extraordinary, with several groups seen, all well outside of both their normal UK range and global southern range margin. It is interesting to note that sightings of this cold water species were seen in a relatively cold part of Lyme Bay and in a year when sea temperatures were cooler than average in the area. Subsequent research has confirmed two public sightings of White-beaked Dolphin in the same general area in 2006, indicating that the 2007 sightings may not have been a one off.

### Future work

This was first year of surveys, and much of the key early part of the season was missed, whilst substantial parts of the focal area were not surveyed at all. It is not known whether the patterns of distribution apparent in 2007 reflect a consistent temporal pattern. For these reasons, *Marinelife* aims to carry out a more wide-ranging programme of boat-based surveys in 2008.

If you would like to take part in the surveys, please contact the author at the above address.

### Acknowledgements

Thanks go to the dive and angling boats that provided free passage for the surveys. Thanks also to Jack Warmington, Tom Greasty, Colin Dukes and Chris Mowlam for supplying sightings from fishing boats. Particular acknowledgement is due to Dave Sales of Southern Sea Fisheries Committee, Ian Cornwell of the Huntress II, West Bay <http://www.westbaydivecharters.co.uk/> and Chris Caines of the Deep Sea Directory and skipper of the Tiger Lily, Weymouth [http://www.deepsea.co.uk/boats/tiger\\_lily/index1.htm](http://www.deepsea.co.uk/boats/tiger_lily/index1.htm), for their help in organising places on boats and supporting the project in general. Finally thanks go to the surveyors who helped collect the data including John Down, John Davis, Daragh Coxon, Russell Neave, James McCarthy, Darren Fanner, Steve Trehwella and Chris Meaney. Russell Wynn (SeaWatch SW), Andy Webb (JNCC) and Helen Booker

(RSPB) gave advice on the recording forms and survey methods. Thanks also to Russell Wynn for commenting on an earlier version of this article.



*Trawler in Lyme Bay (Tom Brereton/Marinelife)*

### **Southwest Marine Ecosystems (SWME) 2007**

On 10 December 2007 the first SWME meeting was held at the Marine Biological Association, Plymouth. The meeting was jointly organised by SeaWatch SW and SAHFOS, and aimed to bring together the diverse community of scientists and conservationists working on marine ecosystems off southwest England. The focus of this first meeting was an overview of environmental conditions and marine wildlife sightings in 2007, and comparison with previous years. A total of about 40 attendees contributed to the meeting, and it was deemed to be a great success; we hope to produce a summary document of meeting results in due course. It is intended that this will become an annual event. The titles of presentations are shown below:

#### Introduction

Russell Wynn (NOCS) and David Johns (SAHFOS)

*Introduction to Southwest Marine Ecosystems 2007*

#### Weather and sea surface temperature

Simon Josey (NOCS)

*Northeast Atlantic Sea Surface Temperature in 2007: comparison with long-term trends*

Peter Miller (Remote Sensing Group, PML)

*Satellite-based observations of SST and chlorophyll in southwest waters in 2007*

#### Phytoplankton and zooplankton

Clare Buckland and SAHFOS colleagues

*CPR and related plankton data from southwest UK in 2007 and comparison with previous years*

#### Marine invertebrates

Nova Mieskowska (MBA)

*Impacts of climate change on rocky shore fauna along southwest coasts*

Becky Seeley (MarLIN)

*2007 sightings from southwest UK reported to Marine Life Information Network*

Steve Trehwella (Dorset)

*New arrivals along southwest coasts: an indicator of climate change?*

#### Fish

Martin Genner (MBA)

*Impacts of climate change and fishing activities on demersal fish communities off southwest UK*

Doug Herdson (NMA)

*Observations on range extension fishes and exotic macro-invertebrates in southwest UK in 2007*

#### Basking Sharks

David Sims (MBA)

*An overview of Basking Shark distribution, behaviour and occurrence off southwest UK*

Angus Bloomfield (MCS)

*Basking Shark Watch data from 2007 and comparison with previous years*

Nevin Hunter (Cornwall and Devon Police)

*Marine wildlife and the law: the southwest perspective*



Cetaceans and seals

Nick Tregenza (Chelonia/CWT), Jan Loveridge and Jeff Loveridge (CWT)

*Cetacean monitoring in southwest UK coastal waters: acoustic methods and strandings data*

Dave Jarvis (BDMLR), Dan Jarvis (NSS) and Cheryl Mills (Cornwall Seal Group)

*Marine mammal observations by BDMLR, National Seal Sanctuary and the Cornwall Seal Group*

Tom Brereton (Marinelife)

*Marinelife monitoring of cetaceans and seabirds in southwest waters*

Seabirds

Helen Booker (RSPB)

*RSPB monitoring of seabird populations in southwest England: initial results from 2007 and comparison with previous years*

Nigel Smallbones (Berry Head NNR)

*Seabird and cetacean monitoring at Berry Head in 2007 and comparison with previous years*

Russell Wynn, Leire Ordorika and Cecile Chauvel (NOCS)

*Monitoring migratory marine animals off southwest coasts: initial results of SeaWatch SW 2007*



*Student Stephanie Hinder at the SeaWatch SW watchpoint (Russell Wynn)*

### **Update on progress for SeaWatch SW 2008**

During 2007, we will again be collating all Balearic Shearwater records for the UK and Ireland in collaboration with *Birdguides*; early indications are that January 2008 saw unprecedented winter numbers remaining in the western English Channel. Preparations are also well advanced for the 2008 SeaWatch SW survey off Gwennap Head, with most of the mid-July to mid-October survey period already covered by experienced seabird observers, and a number of marine wildlife observers also signed up. Continued support from our sponsoring organisations has ensured that we can once again offer free B&B to the core seabird observers. As mentioned previously, if you would like to get involved in the project survey during 2008 please visit the website and contact the project co-ordinator.

As with 2007, we again anticipate effort-based observations being carried out at our sister sites of Berry Head and Strumble Head during the survey period, as well as more boat-based surveys in the western English Channel. In addition, Cornwall Wildlife Trust will be collaborating with us during their ongoing Basking Shark monitoring, and it is hoped that we will have effort-based monitoring of Basking Sharks at one or more additional sites in west Cornwall for some or all of the survey period. The main aim will be to see whether surface sightings of Basking Sharks follow a similar temporal pattern at different sites, or whether local tidal and seafloor topographic effects lead to marked differences.

A major boost to the project in 2008 will be the addition of Alice Jones to the team. Alice will be carrying out a three-year PhD project based upon SeaWatch SW data, with the main objective being to understand the short- and long-term environmental (abiotic) and biological (biotic) controls on migratory marine top predator distribution in southwest UK waters. Alice is funded by the Natural Environment Research Council (NERC) and is also sponsored by SAHFOS; she will be based at the National Oceanography Centre, Southampton. In addition, Joe Morris will be carrying out a Masters project investigating tidal controls on Basking Shark surface occurrences off Gwennap Head in conjunction with CWT, and Kathryn Driscoll will be undertaking an undergraduate project on Basking Sharks using SeaWatch SW and CWT data. Stephanie Hinder and Cecile Chauvel are due to complete their Masters projects in spring 2008, both of which are using SeaWatch SW data from 2007.

Finally, Russell Wynn and Ken Shaw will be on board the *RRS James Cook* from 1 Sept to 7 Oct, as part of a scientific research cruise. The cruise will involve offshore geological studies between the UK and the Canary islands, but Russell and Ken will be monitoring all seabirds and cetaceans and hopefully providing daily updates to the SeaWatch SW website (<http://www.seawatch-sw.org>).



*Summer colour on Gwennap Head (Jeremy Barker)*

### **Conservation implications and project publicity**

The results of SeaWatch SW are already providing invaluable information about the distribution, abundance and behaviour of the critically endangered Balearic Shearwater in UK waters. Collaboration with colleagues in France and Spain are also helping to put the UK results into a European perspective.

During 2007, SeaWatch SW data contributed to a proposal developed by RSPB/Birdlife International to get Balearic Shearwater added to the list of threatened ad/or declining species covered by the OSPAR Convention for the Protection of the Marine Environment of the North-east Atlantic. A decision on this proposal should be made during 2008. SeaWatch SW also contributed to an important new publication by Birdlife International called the 'Rare Birds Yearbook 2008', which provides an up-to-date assessment of the status of all the World's 189 critically endangered species. Balearic Shearwater was one of the species covered in detail, with eight pages describing its conservation status and providing an update on the situation in 2007. Finally, SeaWatch SW data (for all target species) will be contributing to the first Marine Protected Area planning workshops scheduled for spring 2008.

The project gained significant publicity during 2007. The SeaWatch SW website received about 12,000 individual hits during the year, mostly during the survey period, with people logging on regularly to see the daily sightings updates from Gwennap Head. News items reporting the Balearic Shearwater study by [Wynn et al. \(2007\)](#) appeared in national and regional media, including The Daily Telegraph and The Scotsman newspapers and BBC Radio Cornwall. News reports on the early results of the SeaWatch SW survey also appeared on the BBC News website (partially riding on the back of the Great White Shark hysteria!), and the project was mentioned in several newspapers and radio shows in the southwest region. Finally, the project co-ordinator also contributed to an article in BBC Focus magazine investigating sharks in UK waters.



*Filming on Gwennap Head for BBC Focus magazine (Tom McKinney)*

### **References and 2007 abstracts**

**Wynn, R.B.**, Josey, S.A., Martin, A.P., Johns, D.J. and Yésou, P. (2007) Climate-driven range expansion of a critically endangered top predator in northeast Atlantic waters, *Biology Letters*, 3, 529-532.

Global climate change is driving rapid distribution shifts in marine ecosystems: these are well established for lower trophic levels, but are harder to quantify for migratory top predators. By analysing a 25-year sightings-based dataset, we found evidence for rapid northwards range expansion of the critically endangered Balearic Shearwater *Puffinus mauretanicus* in northeast Atlantic waters. A 0.6°C sea surface temperature increase in the mid-1990s is interpreted as an underlying controlling factor, while simultaneous northward shifts of plankton and prey fish species suggests a strong bottom-up control. Our results have important conservation implications and provide new evidence for climate-driven regime shift in Atlantic ecosystems.

**Wynn, R.B.** and Yésou, P. (2007) Changing status of the Balearic Shearwater *Puffinus mauretanicus* in northwest European waters. *British Birds*, 100, 392-406.

Sightings data collated from the European Atlantic coastline reveal a recent change in the post-breeding distribution of the Balearic Shearwater *Puffinus mauretanicus*, and provide evidence for a progressive northwards shift in dispersal patterns. Numbers recorded in the traditional post-breeding quarters, centred on the French Biscay coast, have declined since the mid 1990s and now show marked inter-annual variability. In contrast, numbers recorded from northwest European coastlines have increased since the mid 1990s, the majority being seen along the coasts of northern France and southwest Britain, with smaller numbers north to southern Scandinavia. Although variability in observer effort may have contributed to the observed increase in northwest Europe, the spatial and temporal consistency of the data suggests that the trend is real. Large numbers of this critically endangered seabird are now spending part of the year in British and Irish waters; this paper highlights the need for future effort-based surveys across the species' non-breeding range, and will provide a baseline for conservation measures in northwest European coastal regions where large concentrations now occur regularly.

Yésou, P., Barzic, A., **Wynn, R.B.** and Le Mao, P. (2007) France has strong responsibilities for the conservation of Balearic Shearwater *Puffinus mauretanicus*. *Alauda*, 75, 287-289.

Balearic Shearwater, which breeds in the western Mediterranean, is critically endangered according to IUCN criteria and is listed under Annex 1 of the UNEP Convention on Migratory Species. Its population is estimated at 2000-2400 breeding pairs or less than 10,000 individuals. Most birds migrate to the Atlantic after breeding, and French coastal waters of Biscay and the western Channel then regularly hold over 50% of the species' population. Although conservation actions, studies and surveys have been undertaken in Spain, Portugal and the UK, a national survey and conservation program still needs to be developed by France.



## SeaWatch SW general seabird recording form

*(use new form at start of each hour)*

Date (dd/mm/yy):

Start/finish time (24 hour clock):

Observer:

Wind direction	Wind strength	Sea state	Cloud cover	Glare	Visibility	Other notes

Level 2 species (large shearwaters, Pomarine + Long-tailed Skuas, Leach's Storm-petrel, Sabine's Gull)

Species	No.	Time (24 hr)	Direction	Distance	Age/plumage/other notes

Level 3 species (all other seabirds not listed above, except Gannet, Fulmar and Shag)

[illegible]

**Other species (e.g. Basking Sharks, Ocean Sunfish, marine mammals, migrant birds):**

**SeaWatch SW marine wildlife recording form**  
(use new form for each half-day interval)

Date (dd/mm/yy):

Start/finish time (24 hour clock):

Observer:

*Weather at start of survey (morning or afternoon)*

Wind direction	Wind strength	Sea state	Cloud cover	Glare	Visibility	Other notes

*Basking Sharks, Ocean Sunfish, whales, dolphins, seals, turtles, jellyfish, fish*

[illegible]

## SeaWatch SW Balearic Shearwater recording form

Date (dd/mm/yy):

Observer:

[illegible]

**Day total:**

## SeaWatch SW target species and required recording levels

### Level 1 (time, number, direction, distance, age/plumage, length/size, behaviour)

Balearic Shearwater *Puffinus mauretanicus*

\*Basking Shark *Cetorhinus maximus*

\*Ocean Sunfish *Mola mola*

\*Any cetaceans (whales, dolphins) and turtles

Any rare seabirds considered by BBRC

### Level 2 (time, number, direction, age/plumage/other notes)

Cory's Shearwater *Calonectris diomedea*

Great Shearwater *Puffinus gravis*

Sooty Shearwater *Puffinus griseus*

Leach's Storm-petrel *Oceanodroma leucorhoa*

Pomarine Skua *Stercorarius pomarinus*

Long-tailed Skua *Stercorarius longicaudus*

Sabine's Gull *Larus sabini*

Puffin *Fratercula arctica*

### Level 3 (day/half-day total, direction)

Common Scoter *Melanitta nigra*

Manx Shearwater *Puffinus puffinus*

European Storm-petrel *Hydrobates pelagicus*

Cormorant *Phalacrocorax carbo*

Arctic Skua *Stercorarius parasiticus*

Great Skua *Stercorarius skua*

Mediterranean Gull *Larus melanocephalus*

Little Gull *Larus minutus*

Kittiwake *Rissa tridactyla*

Guillemot *Uria aalge*

Razorbill *Alca torda*

Any wildfowl, divers, grebes, waders, terns, auks not already listed above

\*Any seals

\*Any jellyfish

\*Recording of these species is primarily the responsibility of the core shark observer, but notes should also be made by the core seabird observer whenever possible.

Note that Fulmar and Shag are local breeding species and are therefore not included in the survey, however, core seabird recorders are encouraged to make selected counts if time allows. Gannets are too numerous at this site to count thoroughly, and are therefore also not included in the survey.

On days of heavy seabird passage, focus on Level 1 species first, then Level 2 species, then Level 3 species. Some Level 3 species, e.g. Manx Shearwater, may be moving in such large numbers that counting individuals is impossible. In this case, take a 5 or 10 minute sample count every hour/half-hour until the passage eases.

Distant unidentifiable auks can be recorded as auk sp., however, all other species should only be recorded if the identification is 100% certain. See the SeaWatch SW website for some relevant ID info.

Individual sightings of Basking Sharks, Ocean Sunfish, cetaceans and turtles are defined as those where individual animals are >100 m apart when first seen.

Completed recording forms should be photocopied at the first available opportunity, and one copy posted to: Dr Russell Wynn, SeaWatch SW co-ordinator, National Oceanography Centre, European Way, Southampton, SO14 3ZH, UK.



**Weather recording at Gwennap Head during SeaWatch SW***Wind direction*

Provide a rough direction and compass bearing for the direction in which the wind is blowing from, e.g. SW 225°.

*Wind strength*

Use the Beaufort force values as follows (onshore indicators provided for guidance):

- 0 = Calm (smoke rises vertically)
- 1 = Very light breeze (wind motion visible in smoke)
- 2 = Light breeze (wind felt on exposed skin, leaves rustle)
- 3 = Gentle breeze (leaves and smaller twigs in constant motion)
- 4 = Moderate breeze (dust and loose paper raised, small branches begin to move)
- 5 = Fresh breeze (smaller trees sway)
- 6 = Strong breeze (large branches in motion, umbrella use difficult)
- 7 = Near gale (whole trees in motion, effort needed to walk into wind)
- 8 = Gale (twigs broken from trees, cars veer on road)
- 9 = Strong gale (light structural damage)
- 10 = Storm (trees uprooted, considerable structural damage)

*Sea state (roughly equivalent to Beaufort scale):*

- 0 = Flat sea, like a mirror
- 1 = Ripples without crests
- 2 = Small wavelets with glassy crests, not breaking
- 3 = Large wavelets, crests begin to break, scattered whitecaps
- 4 = Small waves becoming longer with frequent whitecaps
- 5 = Moderate height, longer waves with some foam and spray
- 6 = Large waves with foam crests and some spray
- 7 = Sea heaps up and foam begins to streak
- 8 = Moderately high waves with breaking crests forming spindrift, streaks of foam
- 9 = High waves with dense foam, wave crests start to roll over, considerable spray
- 10 = Very high waves, sea surface white with considerable tumbling, reduced visibility

*Cloud cover*

Give approximate percentage value to nearest 10%, i.e. clear sky = 0% and full cloud cover = 100%.

*Glare (used to define how much of the sea surface in front of observer is affected by reflected sunlight)*

Give approximate percentage value to nearest 10%, i.e. no glare = 0% and full glare = 100%.

*Visibility (furthest distance at which sea is visible, in km)*

Use the Runnel Stone buoy as a marker, which is located about 1.5 km south of the watchpoint. If the Wolf Rock lighthouse is clearly visible then visibility is >15 km.

*Other notes*

Any relevant observations, e.g. heavy rain, time of passage of weather front etc.

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1. Flying – passing through
2. Flying – responsive movement towards the boat
3. Natural feeding - (including seen in flight circling an area)
4. Scavenge feeding around fishing boats (including flying around the boat)
5. Resting on the water

# FORM B2: BALEARIC SHEARWATER SIGHTINGS MADE DURING EFFORT-BASED AT-SEA RECORDING

Please send data to: Tom Brereton, 12 St Andrews Road, Bridport. DT6 3BG

Email: [tom.brereton@marine-life.org.uk](mailto:tom.brereton@marine-life.org.uk) Phone: 0044 (0)7816786173



**National Oceanography  
Centre, Southampton**  
UNIVERSITY OF SOUTHAMPTON AND  
NATURAL ENVIRONMENT RESEARCH COUNCIL

<b>DATE</b> (--1--1--)		<b>NAME OF SHIP &amp; HOME PORT</b>		<b>OBSERVER NAMES &amp; CONTACT PHONE NUMBERS</b>
<b>POSITION ON SHIP</b> (Bridge or deck no.)		<b>BOAT OWNER &amp; CONTACT PHONE NUMBER</b>		1.  2.

TIME		LOCATION		WEATHER		SIGHTING								*BEHAVIOUR												
Start	End	Latitude	Longitude	Sea state	Visibility	REF NO.	Angle	Distance	Species	Certainty (tick one)		Number Seen (Record ages if possible)			Type (tick one or more)											
(00:00)	(00:00)	(deg., min., sec.)	(deg., min., sec.)	(scale 0-9)	(scale 1-6)		(degrees °)	(m)		Def.	Prob.	TOT.	Ad.	Juv.	1	2	3	4	5	6	7	8	9	10		

## NOTES ON FILLING IN THE FORM

**ANGLE** - The compass bearing, in degrees, to initial location of sighting

**DISTANCE** - Enter the distance in metres to initial sighting (or alternatively in parentheses, the declination in degrees from the observers to the sighting)

### SEA STATE CODE

0 mirror calm

1 slight ripples, no foam crests

2 small wavelets, glassy crests, but no whitecaps

3 large wavelets, crests begin to break, few whitecaps

4 longer waves, many whitecaps

5 moderate waves of longer foam, some spray

6 large waves, whitecaps everywhere, frequent spray

### VISIBILITY CODE IN KM

1 <1

2 1-5

3 6-10

## \*BEHAVIOUR CODES FOR BALEARIC'S

### At point of first observation (tick one only)

1. Flying – passing through
2. Flying – responsive movement towards the boat
3. Natural feeding - (including seen in flight circling an area)
4. Scavenge feeding around fishing boats (including flying around the boat)
5. Resting on the water

### Subsequent behaviour (if different, tick one or more)

6. Flying – passing through
7. Flying – responsive movement towards the boat
8. Natural feeding - (including seen in flight circling an area)
9. Scavenge feeding around fishing boats (including flying around the boat)
10. Resting on the water

## NOTES

Ref. No.

Ref. No.

Ref. No.

Ref. No.

**Please send data to: Tom Brereton, 12 St Andrews Road, Bridport. DT6 3BG**  
**Email: [tom.brereton@marine-life.org.uk](mailto:tom.brereton@marine-life.org.uk) Phone: 0044 (0)7816786173**



<b>DATE</b> (--1--1--)		<b>NAME OF SHIP &amp; HOME PORT</b>		<b>OBSERVER NAMES &amp; CONTACT PHONE NUMBERS</b>
<b>POSITION ON SHIP</b> (Bridge or deck no.)		<b>BOAT OWNER &amp; CONTACT PHONE NUMBER</b>		1.  2.

[illegible]

\* = Mandatory



## ENVIRONMENTAL CONDITIONS

CODE	SEA STATE
0	<input type="checkbox"/> mirror calm
1	<input type="checkbox"/> slight ripples, no foam crests
2	<input type="checkbox"/> small wavelets, glassy crests, but no whitecaps
3	<input type="checkbox"/> large wavelets, crests begin to break, few whitecaps
4	<input type="checkbox"/> longer waves, many whitecaps
5	<input type="checkbox"/> moderate waves of longer foam, some spray
6	<input type="checkbox"/> large waves, whitecaps everywhere, frequent spray
7	<input type="checkbox"/> sea heaps up, white foam blows in streaks
8	<input type="checkbox"/> long, high wave edges breaking, foam blows in streaks
9	<input type="checkbox"/> high waves, seas begin to roll, dense foam streaks

CODE	VISIBILITY IN KM
1	<input type="checkbox"/> <1
2	<input type="checkbox"/> 1-5
3	<input type="checkbox"/> 6-10
4	<input type="checkbox"/> 11-15
5	<input type="checkbox"/> 16-20
6	<input type="checkbox"/> >20

PRECIPITATION TYPE:
<input type="checkbox"/> None
<input type="checkbox"/> Rain
<input type="checkbox"/> Snow
<input type="checkbox"/> Fog/Mist
<input type="checkbox"/> Hail
<input type="checkbox"/> Sleet

CODE (BEAUFORT SCALE)	WIND SPEED IN KM
0	<input type="checkbox"/> <1
1	<input type="checkbox"/> 1-3
2	<input type="checkbox"/> 4-6
3	<input type="checkbox"/> 7-10
4	<input type="checkbox"/> 11-16
5	<input type="checkbox"/> 17-21
6	<input type="checkbox"/> 22-27
7	<input type="checkbox"/> 28-33
8	<input type="checkbox"/> 34-40
9	<input type="checkbox"/> 41+

CODE	SWELL HEIGHT
0	<input type="checkbox"/> Light - 0=1m
1	<input type="checkbox"/> Moderate - 1-2 m
2	<input type="checkbox"/> Heavy - 2+m

**PRECIPITATION INTENSITY/FREQUENCY TYPES & CODES:** **IL** - Intermittent light;  
**IH** - Intermittent heavy; **CL** - Continuous light; **CH** - Continuous Heavy

**CLOUD COVER** - Record as eighths fraction of sky covered by clouds e.g. 0 - unclouded, 4 - semi-clouded, 8 - fully clouded

# THE BISCAY DOLPHIN RESEARCH PROGRAMME

## GUIDE TO SEABIRDS

**Balearic Shearwater**  
*Puffinus mauretanicus*  
Length: 35 cm  
Wingspan: 83 cm



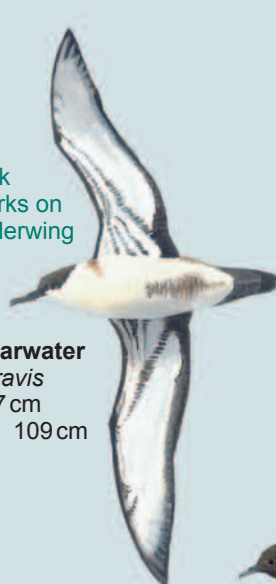
brown vent



dark cap

dark marks on underwing

**Great Shearwater**  
*Puffinus gravis*  
Length: 47 cm  
Wingspan: 109 cm



**Sooty Shearwater**  
*Puffinus griseus*  
Length: 46 cm  
Wingspan: 102 cm



ADULT

**Northern Gannet**  
*Morus bassanus*  
Length: 95 cm  
Wingspan: 172 cm



grey-buff underside



no dark cap



**European Storm-petrel**  
*Hydrobates pelagicus*  
Length: 16 cm  
Wingspan: 37 cm

faint band on wing

dark feet do not project past tail



dark marks on underwing

**Manx Shearwater**  
*Puffinus puffinus*  
Length: 33 cm  
Wingspan: 79 cm



strong pale band on wing

yellow feet project past tail

**Wilson's Storm-petrel**  
*Oceanites oceanicus*  
Length: 17 cm  
Wingspan: 40 cm



**Northern Fulmar**  
*Fulmarus glacialis*  
Length: 48 cm  
Wingspan: 105 cm



clean underwing



WINTER  
thin black line



WINTER  
thick black line



WINTER

**Macaronesian Shearwater**  
*Puffinus baroli*  
Length: 27 cm  
Wingspan: 62 cm

**Common Guillemot** *Uria aalge*  
Length: 42 cm  
Wingspan: 69 cm

**Razorbill** *Alca torda*  
Length: 38 cm  
Wingspan: 65 cm

**Atlantic Puffin** *Fratercula arctica*  
Length: 27 cm  
Wingspan: 55 cm

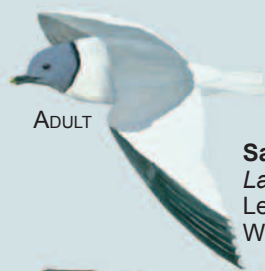


**Grey Phalarope**  
*Phalaropus fulicarius*  
Length: 21 cm  
Wingspan: 38 cm



Biscay Dolphin Research Programme





ADULT

**Sabine's Gull**  
*Larus sabini*  
Length: 30 cm  
Wingspan: 88 cm



JUVENILE

**Herring Gull**  
*Larus argentatus*  
Length: 61 cm  
Wingspan: 144 cm

**Yellow-legged Gull**  
*Larus michahellis*  
Length: 61 cm  
Wingspan: 144 cm

**Lesser Black-backed Gull**  
*Larus fuscus*  
Length: 60 cm  
Wingspan: 130 cm

**Great Black-backed Gull**  
*Larus marinus*  
Length: 71 cm  
Wingspan: 160 cm



JUVENILE

**Black-legged Kittiwake**  
*Rissa tridactyla*  
Length: 39 cm  
Wingspan: 102 cm



ADULT

**Long-tailed Skua**  
*Stercorarius longicaudus*  
Length: 44 cm  
Wingspan: 99 cm

Skuas also have a dark form in which the body is dark brown rather than creamy white



very long central tail feathers



long central tail feathers

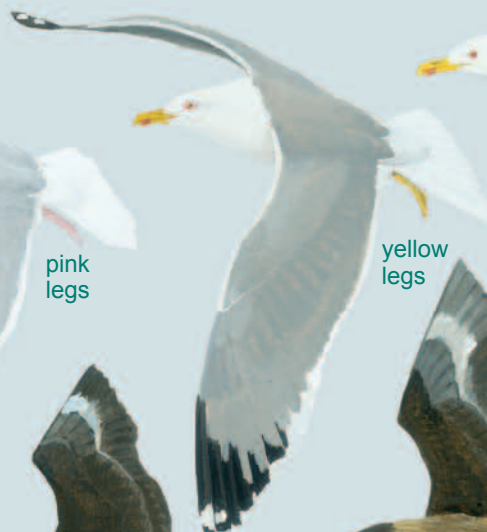
**Arctic Skua**  
*Stercorarius parasiticus*  
Length: 56 cm  
Wingspan: 106 cm



pink legs

spoon-shaped central tail feathers

**Pomarine Skua**  
*Stercorarius pomarinus*  
Length: 70 cm  
Wingspan: 119 cm



yellow legs



yellow legs



pink legs

**Great Skua**  
*Stercorarius skua*  
Length: 60 cm  
Wingspan: 132 cm

JUVENILE  
HERRING  
GULL



Juvenile gulls are difficult to tell apart. They are all similar to the Herring Gull illustrated (left) but plumages differ slightly as shown in the table below.

	GREATER BLACK-BACKED GULL	LESSER BLACK-BACKED GULL	YELLOW-LEGGED/HERRING GULL
PLUMAGE	pale grey and brown	dark brown	pale grey and brown
TAIL	white, with a few dark marks	black mainly	white, with dark marks
TAIL BAND	broken	thick and well defined	well defined

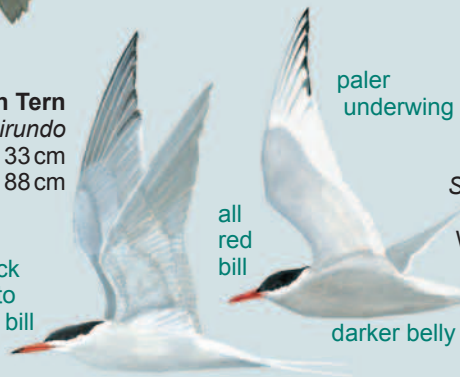


Thin bill and crest

Thick bill, no crest

**Great Cormorant**  
*Phalacrocorax carbo*  
Length: 90 cm  
Wingspan: 145 cm

**Common Tern**  
*Sterna hirundo*  
Length: 33 cm  
Wingspan: 88 cm



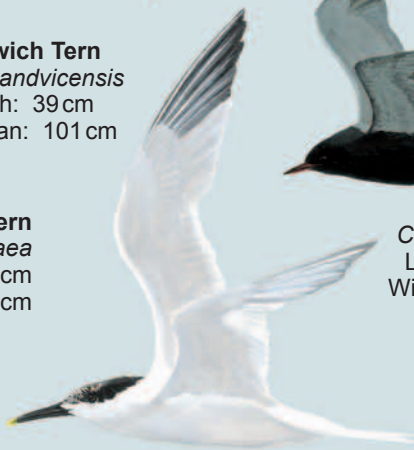
black tip to red bill

paler underwing

darker belly longer tail

**Sandwich Tern**  
*Sterna sandvicensis*  
Length: 39 cm  
Wingspan: 101 cm

**Arctic Tern**  
*Sterna paradisaea*  
Length: 34 cm  
Wingspan: 88 cm



**Black Tern**  
*Chlidonias niger*  
Length: 23 cm  
Wingspan: 65 cm