

Irish Cetacean Review

2000-2009



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The Irish Whale and Dolphin Group

Irish Scheme for Cetacean Observation and Public Education



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Text & maps: Simon Berrow, Pádraig Whooley, Mick O'Connell, Dave Wall

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Design & layout: Cólín MacLochlainn

IWDG contacts:

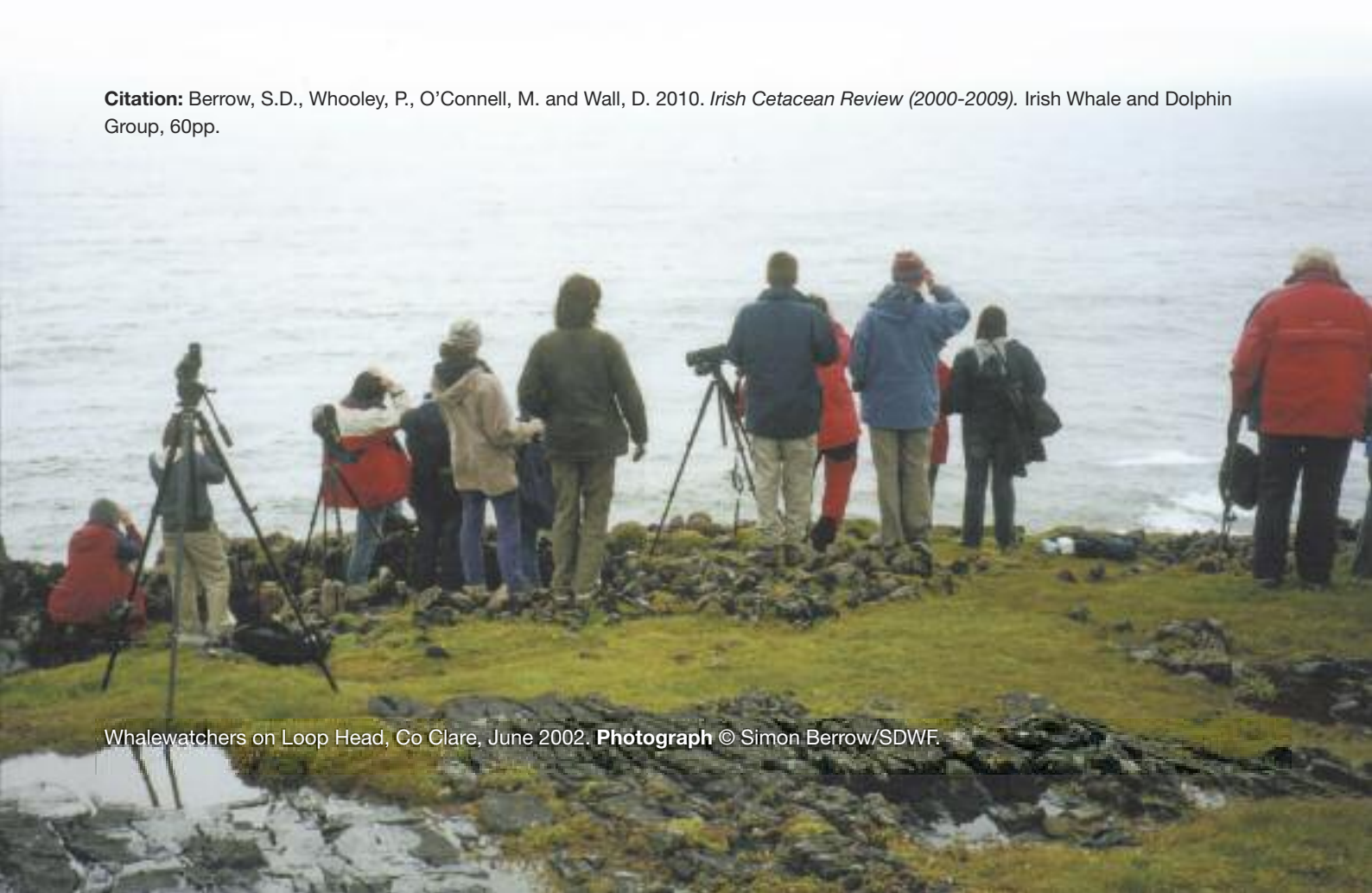
sightings@iwdg.ie

strandings@iwdg.ie

Website: www.iwdg.ie

E-mail: enquiries@iwdg.ie

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Whalewatchers on Loop Head, Co Clare, June 2002. **Photograph** © Simon Berrow/SDWF.

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2000-2009

A review of all cetacean sighting and stranding records made during the period 2000-2009 by the IWDG through ISCOPE, the Irish Scheme for Cetacean Observation and Public Education

Simon Berrow, Pádraig Whooley, Mick O'Connell and Dave Wall



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Irish Scheme for Cetacean Observation and Public Education

ISCOPE (Irish Scheme for Cetacean Observation and Public Education) was an Irish Whale and Dolphin Group (IWDG) initiative which aimed to promote better awareness and knowledge of cetaceans (whales, dolphins and porpoises) in Irish waters by encouraging public participation in cetacean recording.

Despite their importance, the ecology, status and habitat requirements of most cetacean species in Irish waters are poorly understood. Two cetacean species which are abundant in Ireland – harbour porpoise and bottlenose dolphin – are listed under Annex II of the EU Habitats Directive (92/43/EEC) and are priority species for Natura 2000. All cetacean species (baleen whales and toothed whales) are listed as priority species for conservation in Northern Ireland. Management of these and other cetacean species and site designation is constrained by lack of reliable data on their distribution and relative abundance.

Monitoring these highly mobile and largely inaccessible animals and identifying critical habitats is difficult and stranding

and sighting schemes have been developed for this purpose. The IWDG Stranding and Sighting Schemes provide a baseline for a National Cetacean Recording Scheme throughout the island of Ireland and enable agencies and government departments to fulfill obligations under international agreements, including the Marine Strategy Framework Directive, OSPAR, Natura 2000, Northern Ireland Biodiversity Strategy and the National Biodiversity Plan. Data obtained through cetacean stranding and sighting schemes have recently been recognized as Marine Environmental Impact Indicators and “important tools for describing trends in cetacean numbers and distribution.”

ISCOPE was initiated in 2003 and in the first three years recorded around 3,500 sightings and 400 strandings and organised over 900 effort watches from 78 sites. Due to the success of this initiative a second three-year project was initiated (ISCOPE II).

Here we report on the trends in data from ISCOPE II including some records from ISCOPE.

Acknowledgments

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As the numbers of observers who report “casual” observations extend into the thousands it is not practical to acknowledge all of you individually. So on behalf of IWDG we’d like to thank you collectively. You know who you are.

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Cetacean Stranding and Sighting Schemes

The objectives of the IWDG cetacean sighting scheme are to “co-ordinate a sighting scheme to determine the distribution and relative abundance of cetaceans around the Irish coast and within the Irish EEZ, including seasonal and geographical distribution, and to identify critical habitats and potential threats.” The scheme obtains sighting records from a range of sources including casual sightings, those with effort recorded and from both inshore and offshore waters. Utilizing “platforms of opportunity” is seen as a key action to improve coverage in offshore waters.

The initial objectives of the IWDG stranding scheme were to “record data from cetaceans stranded on the Irish coast including species identification, length and gender, in order to monitor species occurrence, distribution, relative abundance, status, epizootics or high mortality.” As the scheme has developed, the objectives have recently been progressed to “continue to record cetaceans stranded on the Irish coast and develop structures and procedures to collect the appropriate data to enable correct interpretation of stranding records.” A subsidiary objective is to provide biological samples for dedicated research projects within Ireland and abroad.

Organisation

The IWDG has built up a network of people who collect casual sightings or undertake watches where effort (time watched and environmental conditions) is recorded, and/or record stranded animals. An important factor in the design and organization of the sighting and stranding schemes was to establish a system that required minimal administration or funding yet was extensive and did not rely solely on a central administration. Thus it is hoped that the schemes will exist in the long term, collecting basic but valuable data for long term monitoring, and will not be too reliant on funding or key individual recorders.

Many observers are trained in identifying and recording cetaceans observed in Ireland. Since 2002 the number of training courses has increased significantly under the ISCOPE initiative. This has also enabled the delivery of follow-up courses to provide feedback to recorders and solicit input from

these recorders on how the scheme can be improved. Information on all schemes and other resources are available from the IWDG website (www.iwdg.ie), including an identification key (www.iwdg.ie/id_key). The Cape Clear Whale-watching weekends on Cape Clear Island, Co Cork, have given a large number of people their first experience of recording cetaceans and some of our most dedicated observers have been recruited through these weekends.

Validation of records is essential to ensure the schemes have quality control. Validation of sightings can be difficult if no image or video is available and the sighting is only fleeting. However, by carefully recording i.d. features and behaviour, the IWDG is able to validate 90% of records to species level.

Validation of stranding records is achieved by submitting a list, together with sufficient information to confirm species identification, to the *Irish Naturalists' Journal* for publication under ‘Cetacean Notes.’

All sighting and stranding records are stored on a database, which is held on the web server, enabling access to sightings and strandings data through the website (www.iwdg.ie). On the home page a scrolling information bar displays the latest records for easy access. Records are uploaded immediately on validation, together with images if supplied. Thus the IWDG website is a source of current information on cetacean records. A search facility is available to interrogate the database for records. Records can be mapped or listed in table format and data can be presented by species, location or within a pre-determined time frame.

Methodology

A sighting or stranding is an event and may consist of one or multiple individuals. Cetaceans recorded in Irish waters are reported to the IWDG from a number of sources but mainly online or via telephone. A small and decreasing number of casual sighting records are received by hard copy in the post.

Standardized casual and effort-related sighting forms and stranding forms have been produced for recording basic

details including name and contact details of recorder and date and location of the record. A hard copy is available for recorders or can be downloaded from www.iwdg.ie/downloads.

Around 90% of sighting and all stranding records are now submitted through the website. On receiving a record the reporter is acknowledged and thanked and informed as to the species observed (if required) and other details. Species identification, group size and location are the basic data required for each sighting record. However, additional information on observer, optics, behaviour and environmental conditions are also reported.

Around 15% of sighting records are accompanied by images, which are very useful in assisting validation, especially where a poor description is provided, and are also useful in the identification of individual animals.

An image is supplied for 90% of all stranding records. Length, gender and species identification are the basic information from a stranding record. Since 2006, an Irish Cetacean Genetic Tissue Bank has been established through collaboration between the IWDG and the Natural History Museum, Dublin, which the IWDG supports. At present, tissue samples are taken from around 25% of strandings.

We have included all records received between 2000 and 2009 in the maps and all records from 1948 to 2009 in the figures. All sighting effort maps include records collected under the Ship Survey Programme (ISCOPE I and II, ferry surveys and IWDG west coast survey). These records are not included in the summary bar charts as these records are not currently uploaded onto the IWDG Sightings Database. Sightings are mapped with a 50km² grid overlay, consistent with NPWS reporting requirements under the EU Habitats Directive.



IWDG Large Whale Project, from the MV *Holly Jo*, off the Cork coast, 2003. **Photograph** © Simon Berrow/IWDG.

Results

Sighting records

Since the first reported record of a cetacean sighting in 1948, a total of 19 species have been observed in Irish waters. There have been a total of 13,359 sighting records of 150,508 individual cetaceans either reported to, or collated by, the IWDG. Of these, 12,004 (90%) records were identified to species level, while the remaining 1,355 (10%) were downgraded to an appropriate category.

An analysis of sightings shows the most frequently recorded species was the harbour porpoise with 4,353 records (33%), followed by common dolphin (2,215 records, 17%), bottlenose dolphin (1,881 records, 14%), minke whale (1,673 records, 13%), fin whale (634 records, 5%), Risso's dolphin (452

records, 4%), humpback whale (152 records, 1.3%) and killer whale (146 records, 1.2%).

There has been a steady increase in the number of sighting records over the last ten years (Fig. 1). This reflects a greater awareness and interest in recording cetaceans in Ireland. The number of sighting records peaked in 2007 with 1,629 but has remained consistent at around 1,300-1,500 records per annum (Fig. 1).

Monthly distribution of sighting records

The monthly distribution of sightings is shown in Figure 2. There was a peak in sightings during the summer (August) and a minimum in the winter, especially in March.

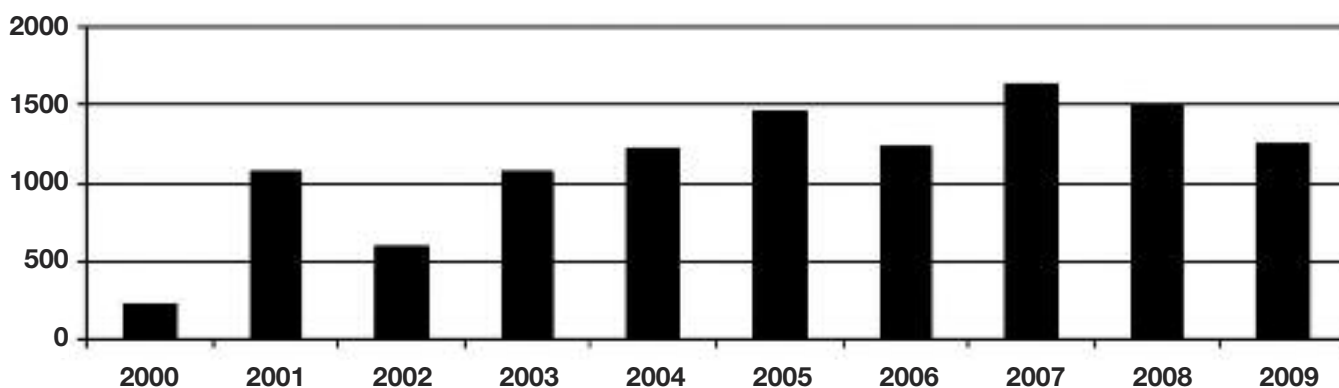


Figure 1. Number of cetacean sighting records submitted to the IWDG, 2000-2009.

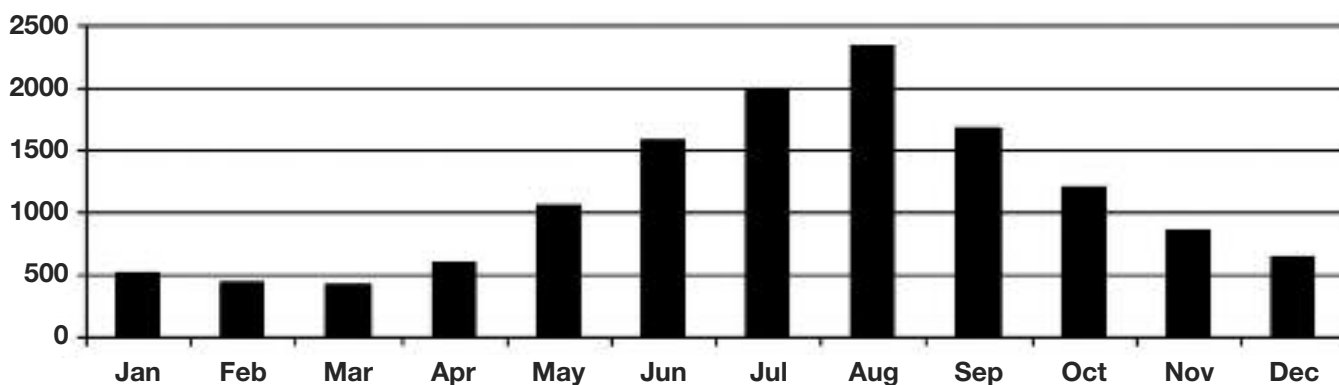


Figure 2. Monthly distribution of all sighting records (n=13,359).

Geographical distribution of cetacean sighting records (1948-2009)

The number of sightings by county is presented in Figure 3. Sightings were received from 16 coastal counties and one land-locked county (Kilkenny). Only County Leitrim failed to record any cetacean sightings. Sightings offshore (<30km) are not shown. Most records are from Co Cork, followed by Kerry, Dublin, Antrim, Clare, Donegal, Galway, Waterford, Down and Mayo. The harbour porpoise was the most frequently recorded species in most counties, with the notable exception along the west coast in counties Galway, Mayo, Sligo and Donegal where bottlenose dolphins were the most frequently recorded. This is noteworthy as it suggests harbour porpoises may be less abundant in those areas where bottlenose dolphins are dominant. There has been a total of 2,003 stranding events of a total of 2,227 individuals in Ireland. Of these, 1,748 (87%) were identified to species level. A total of 22 species have been recorded stranded, mainly harbour porpoise (23%) and common dolphin (18%).

Stranding records

There has been a steady increase in the number of published stranding records over the last ten years (Fig. 4). This largely reflects an increase in awareness and recording, especially since the formation of the IWDG in December 1990. Over the last ten years, we can see that the number of records per annum has plateaued out at between 140-150 records. This provides an opportunity to use the data to monitor long-term trends as the sample size is now quite consistent.

Monthly distribution of stranding records

Stranded cetaceans have been recorded in all months of the year but there was an increase in the winter with a peak in March (12.7%) followed by February (10.7%) and January (10.5%) (Fig. 5). The lowest number of strandings have occurred in September (5.6%) and October (6.4%) in the autumn, and in May (6.8%) in the spring. The peak in the winter may be associated with increased mortality through weaning of new calves.

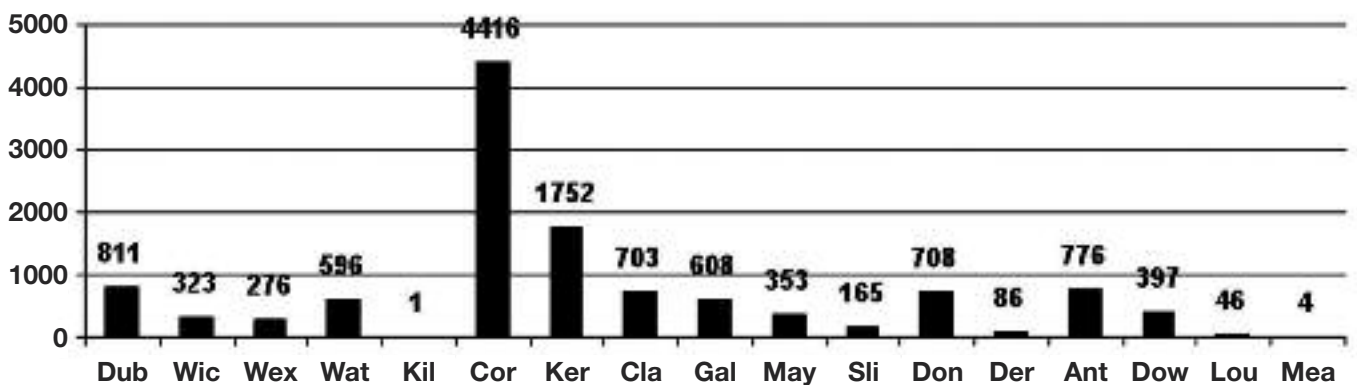


Figure 3. Geographical distribution of all sighting records (the number from each county are shown on the top of each bar).

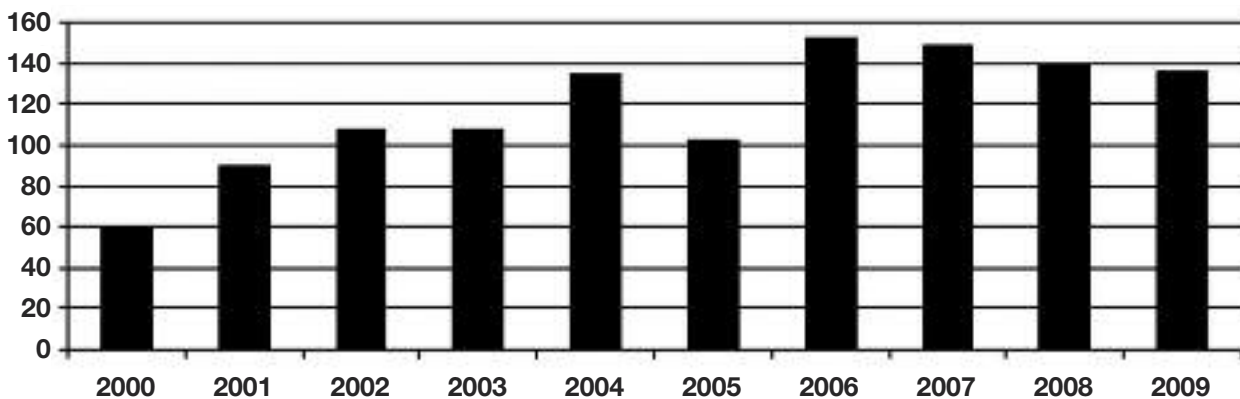


Figure 4. Number of published stranding records, 2000-2009.



Short-beaked common dolphins live stranded, Crookhaven, Co Cork, August 2008. **Photograph** © Pádraig Whooley/IWDG.

Live strandings

The number of live stranded cetaceans reported to the IWDG is increasing (Fig. 6). There have been 156 live stranding events of a total of 318 individuals, involving from 1 to 63 individuals. Mass strandings distort the total number of live stranded animals, with a stranding of 40 pilot whales in 2002 and 17 bottlenose dolphins in 2009 resulting in peaks in the total number stranded in these years. Live strandings occurred in every month, with an increase from March to October. This

may reflect an increase in people visiting the beach and therefore more likely to find a live stranded cetacean before it dies. To date, 14 species have been recorded live stranded. Common dolphins were by far the most frequently stranded species, followed by striped dolphin, which are both pelagic species, and typically found offshore. Indeed, four pelagic species (common dolphin, striped dolphin, pilot whale and white-sided dolphin) account for 60% of all live stranding events.

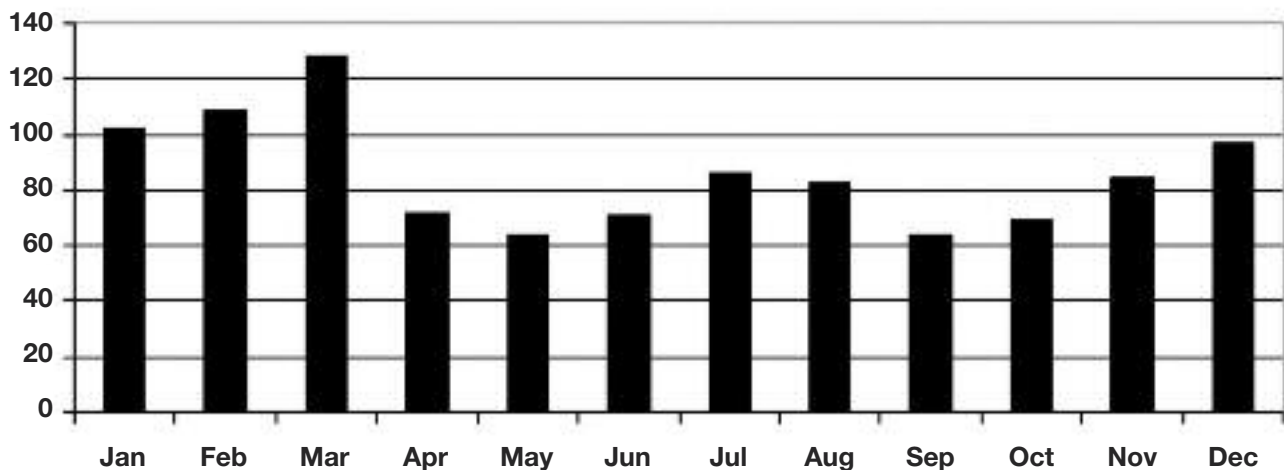


Figure 5. Total number of stranding records per month between 2000-2009.

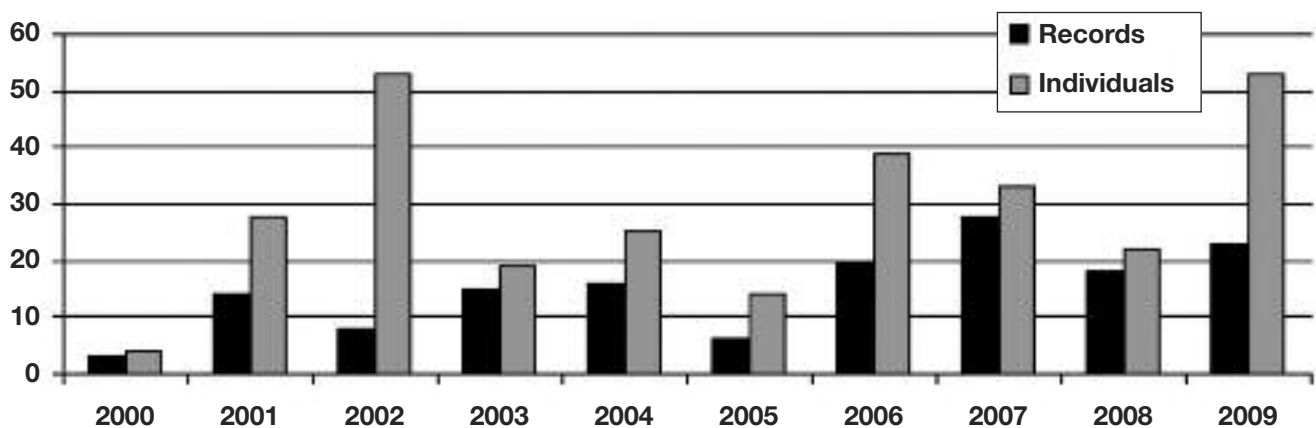


Figure 6. Number of published live stranding records, 2000-2009.



Humpback whale and common dolphins off the south coast. **Photograph** © Dave Wall/IWDG/GMIT.

Systematic List

Species

To date, 24 species of cetacean have been recorded in Ireland. Some of these are widespread and common while others are rare vagrants or migrate annually through Irish waters. For each species we present figures on the number of stranding records over the last 10 years and monthly sighting records. Maps of all records received are presented in addition to those received during ISCOPE and those with effort associated.

Maps legend

The Irish National State (INS) limit is shown on each map as this is the area for which we have legal conservation obligations. In Northern Ireland, statutory obligations extend to the 12 nautical mile limit. The 50m, 100m and 200m depth contours are shown. A 50km² grid is overlaid on each map, which is consistent with reporting requirements in Europe.

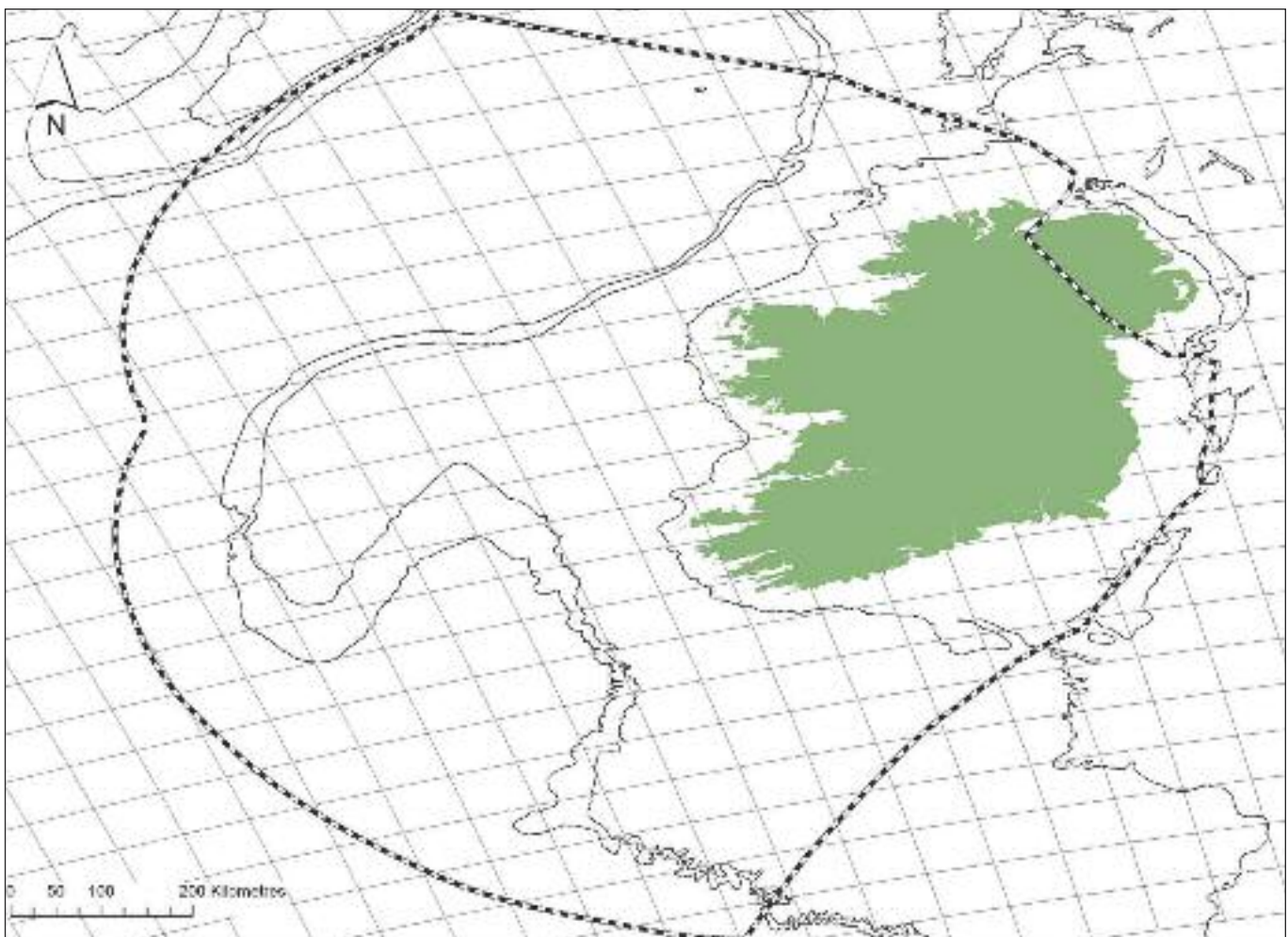
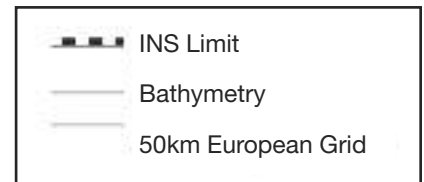


Figure 7. Index map and key.



Humpback whale breaching off Hook Head, Co Wexford, January 2010. **Photograph** © Pádraig Whooley/IWDG.

Humpback Whale (*Megaptera novaeangliae*)

Míol Mór Dronnach

Humpback whales are distributed throughout the Atlantic Ocean and are well studied between breeding grounds in the Caribbean and discrete feeding grounds in the Arctic and northern Europe. The smaller breeding population in the Cape Verde Islands, which may be the source of Irish humpback whales, is much more poorly studied. The humpback whale has been frequently sighted, especially along the south coast, with 138 sightings (1.3%) comprising 223 individuals. Generally seen singly or in pairs, they may be seen in association with fin whales. The majority of sightings were from the south and southwest coasts in counties Cork (56%), Waterford (16%) and Kerry (10%), with the remainder

distributed along the west, north and even east coasts. There were only two records in offshore waters: one off the west coast and one in the Celtic Sea. Sightings were low during the summer months, with a strong peak during November, which is similar to fin whales. There have been six stranding records of this species, dating back to 1893. Only two animals have been reported stranded during the last ten years including a young calf in July 2006, which had been observed alive one week earlier off Co Kerry. This was very similar to the stranding of a young humpback whale in 1992 in west Cork which was recorded a few weeks earlier in Kinsale harbour following boats.

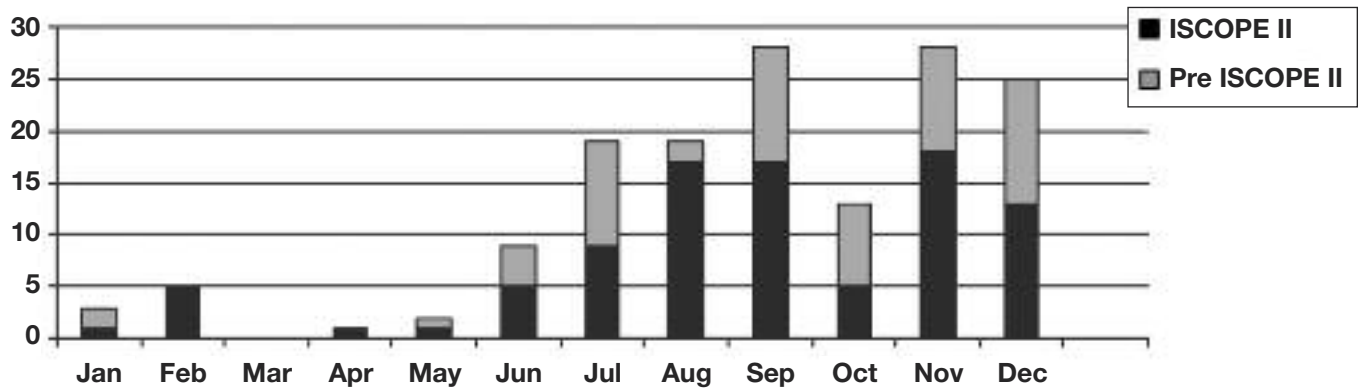


Figure 8. Monthly distribution of humpback whale sighting records (n=152).

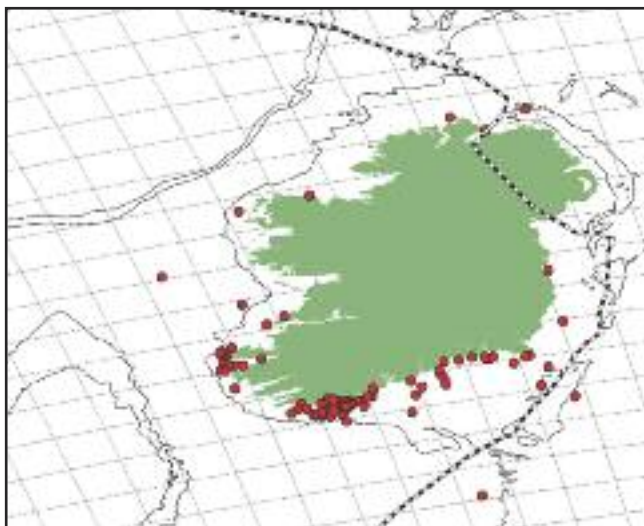


Figure 9. All IWDG casual sightings up to 2009.

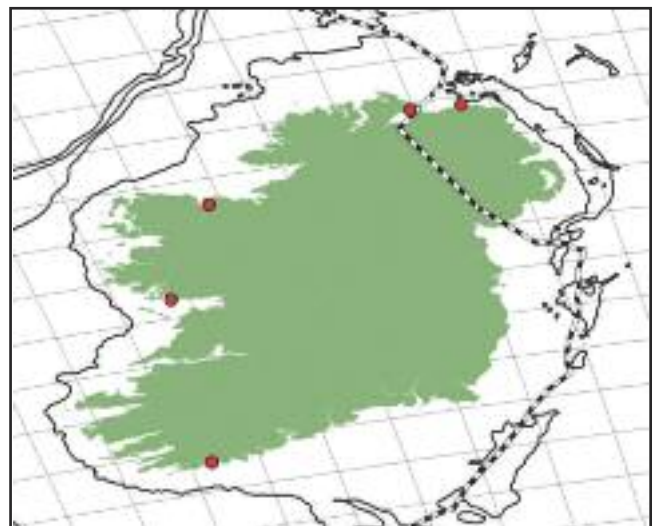


Figure 10. All stranding records up to 2009.

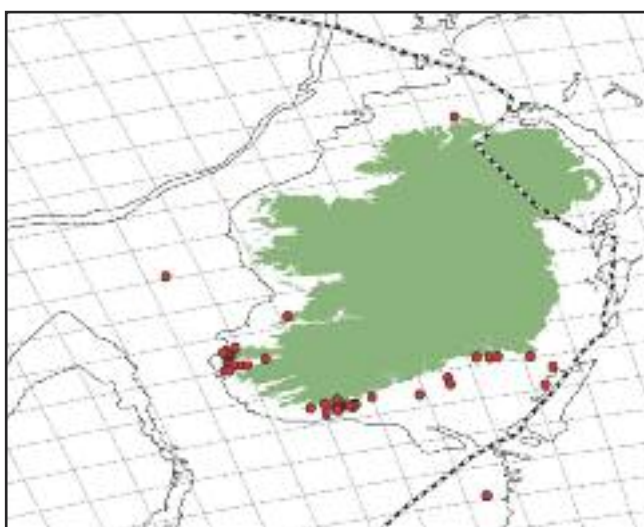


Figure 11. All casual sightings from ISCOPE II (2006-2009).

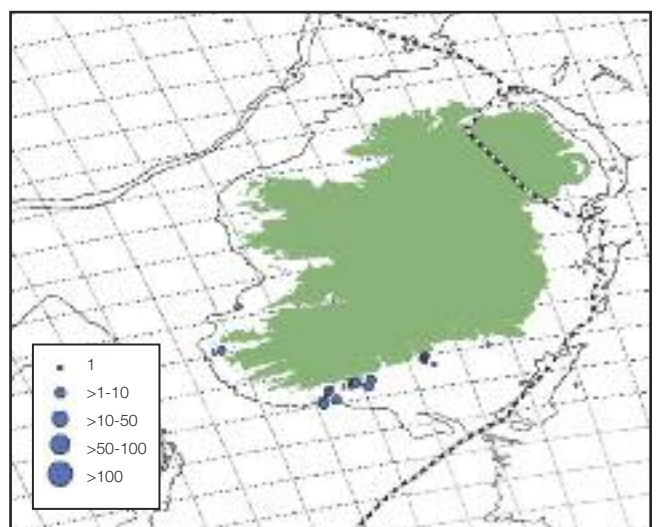


Figure 12. All effort related sightings (2001-2009).



Minke whale off west Cork, October 2005. **Photograph** © Pádraig Whooley/IWDG.

Minke Whale (*Balaenoptera acutorostrata*)

Droimeiteach Beag (Míol Mór Mince)

The minke whale is a cosmopolitan species found in all oceans and at virtually all latitudes, though it is thought to be more abundant in the northeast Atlantic. It is the smallest and most frequently sighted and stranded baleen whale in Irish waters. It was the fourth most frequently reported species with 1,468 sightings (15%) of a total of 2,536 individuals. Generally seen alone or in loose feeding aggregations, they were most abundant off the southwest coast. There were few offshore records and only three in deep water off the edge of the continental shelf, but this may be due to low effort in low sea states, as minke whales can be very difficult to observe in medium to high sea-states (sea-state ≥ 3). There appears to be an inshore movement in April and May with a peak in sightings in August, but they can be seen off the south coast through

the autumn and early winter. They were absent in January and February. There is a seasonal aspect to the occurrence of minke whales in the Irish Sea with animals appearing in the eastern Irish Sea from April to June. Stranding records are quite consistent with around 2-4 strandings per annum, with the occasional peak such as the seven recorded in 2001. Although stranded in all months, records increased greatly in May, peaking in June with a steady decline through to the winter. 79% of records were between May and October, which reflects the seasonal occurrence of this species in Ireland. It has stranded on all coasts. There was only one record of a live stranded minke whale, in St Helen's Harbour, Co Wexford in September 1985, which was apparently successfully re-floated.

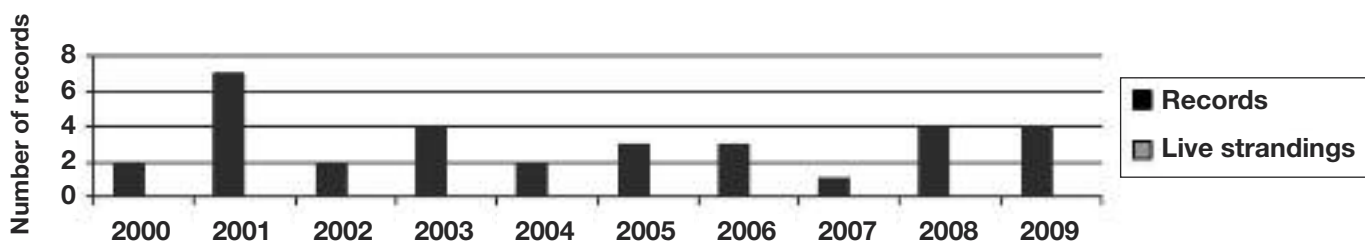


Figure 13. Yearly distribution of minke whale records 2000-2009.

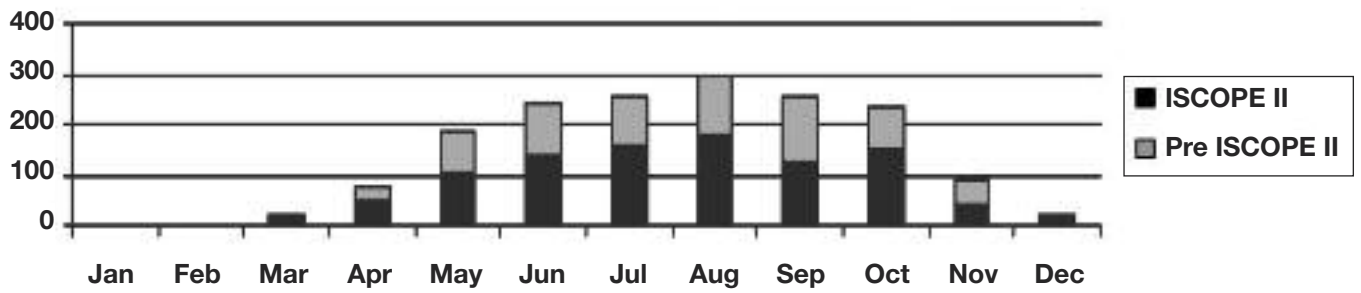


Figure 14. Monthly distribution of all minke whale sighting records (n=1,673).

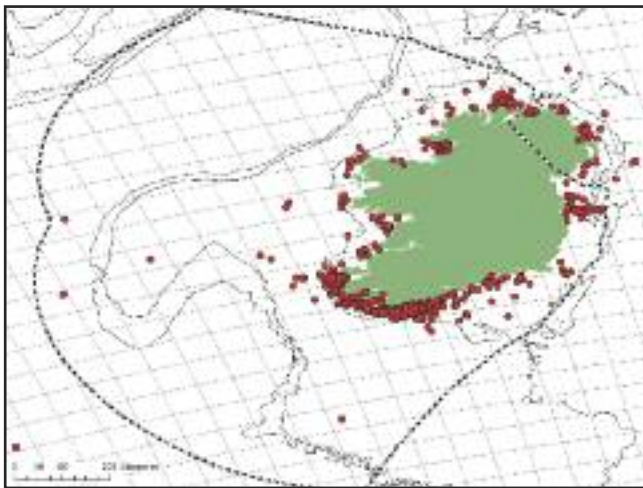


Figure 15. All IWDG casual sightings up to 2009.

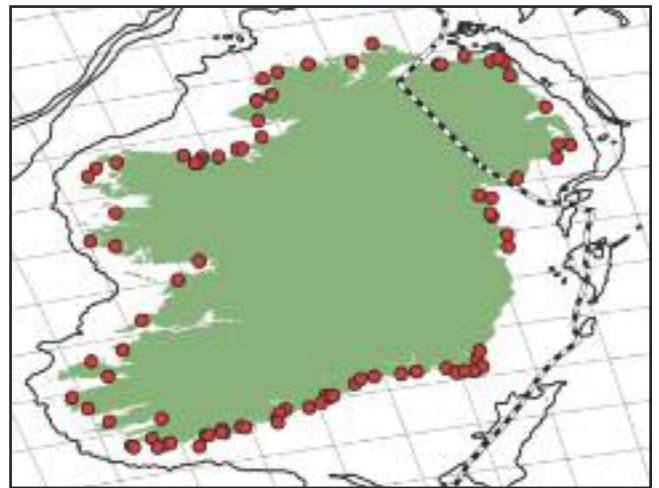


Figure 16. All stranding records up to 2009.

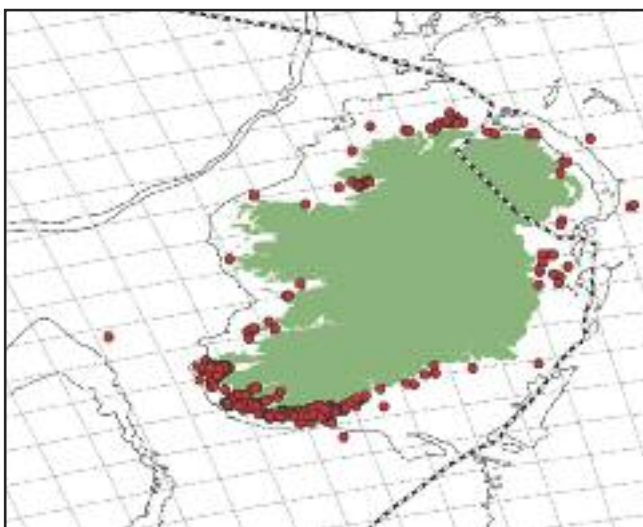


Figure 17. All casual sightings from ISCOPE II (2006-2009).

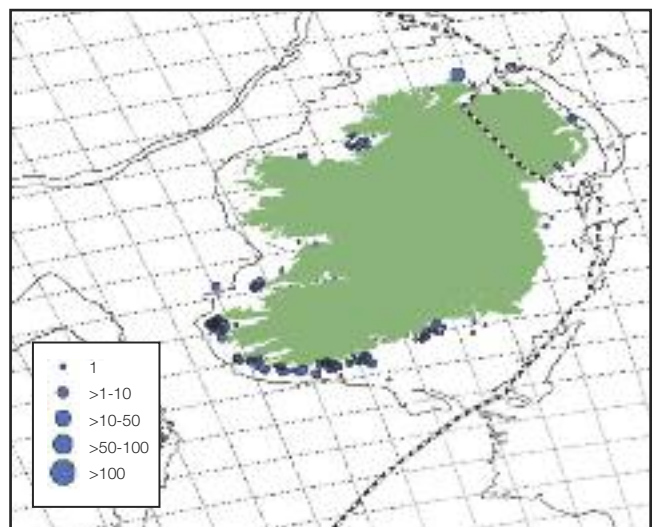


Figure 18. All effort related sightings (2001-2009).



Sei whale off Inishbofin, Co Galway, September 2009. Photograph © John Brittain.

Sei Whale (*Balaenoptera borealis*) **Droimeiteach na Saíán (Míol Mór an Tuaiscirt)**

The sei whale is very rarely recorded in Ireland though records at sea may be under-recorded due to difficulties in distinguishing sei whales from fin whales. A single sei whale in Larne Lough, Co Antrim, in July 2006, which subsequently stranded alive and was euthanased at Island Magee, was the first confirmed record of this species since 1914 in inshore waters. In September 2009, another single sei whale was positively identified on two occasions off Broadhaven Bay, Co

Mayo, and Inishbofin, Co Galway. There is currently insufficient data on this species but sightings in Irish waters are very rare and further offshore survey effort may result in more sightings. It is thought that the occurrence of sei whales in shelf waters can be spasmodic with large number of whales appearing in shelf waters without warning. It is not known what drives these events. There are only three stranding records, two of which were in 1913-1914.

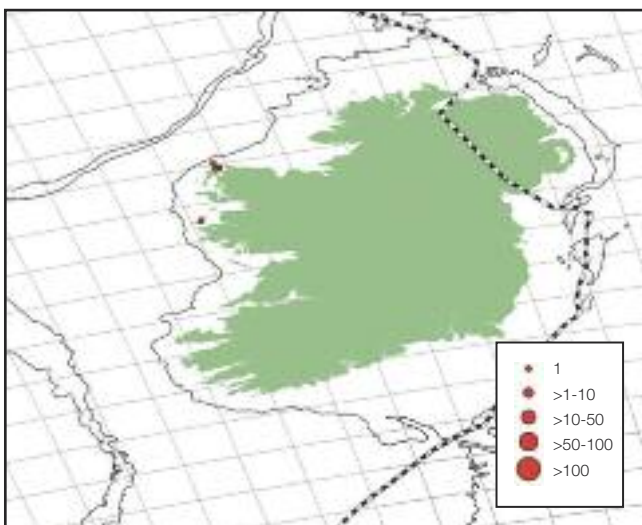


Figure 19. All casual sightings from ISCOPE II (2006-2009).

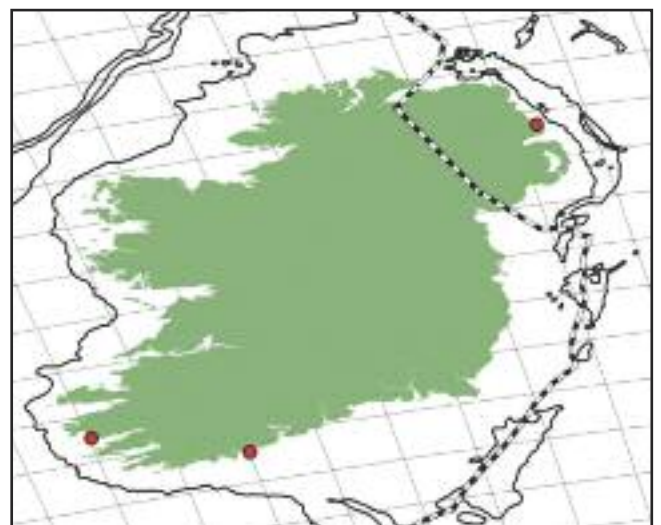


Figure 20. All stranding records up to 2009.

Fin Whale (*Balaenoptera physalus*)

Droimeiteach (Míol Mór Eiteach)

Fin whales are abundant and widespread in the North Atlantic, preferring deep waters beyond the edge of the continental shelf. In some localities such as the south coast they may occur close inshore. The fin whale was the fifth most frequently reported species, with 615 sightings (6%) with a total of 2,404 individuals. There were 175 sighting records downgraded to either “large whale species” or “sei, fin, blue whale” category and these are likely to have been fin whales. Usually seen in small groups with an average group size of four, they have also been recorded in loose feeding aggregations of around 15-20 animals. Almost all inshore sightings (92%) came from the south coast, with most sightings from counties Cork (72%), Waterford (16%) and Wexford (4%). Offshore records were concentrated along the shelf edge and in the Porcupine Sea Bight. Effort related records show concentrations off the northwest continental shelf with a peak in the autumn. Fin

whales off the south coast showed an inshore movement in early summer between May and June in seven of the last nine years (2001-2009), with a regular peak in sightings during November in west Cork. Sightings suggest an eastward movement towards counties Waterford and Wexford through the autumn and winter once fin whales leave Co Cork. They were largely absent between December and March, and April is the only month with no fin whale sightings. Fin whales have frequently stranded in Ireland, with 32 records dating back to 1862. They have stranded in all months with no seasonal peak. Most records are from the south and northwest coasts which probably reflects their close proximity to the edge of the continental shelf. Live strandings are rare with five recorded to date, all since 2001. The live stranding of two young animals on the same day in December 2007 and 185km apart was a particularly unusual event.

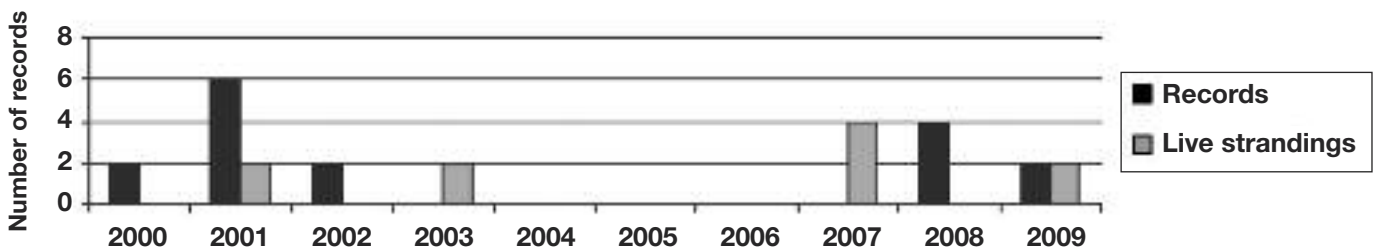


Figure 21. Yearly distribution of fin whale records 2000-2009.

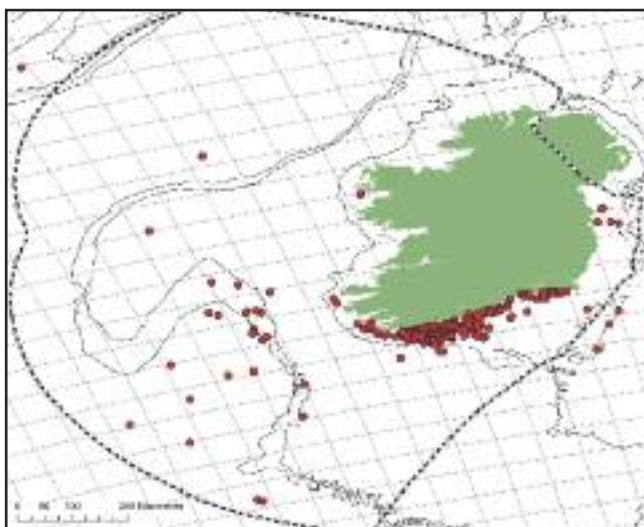


Figure 22. All IWDG casual sightings up to 2009.

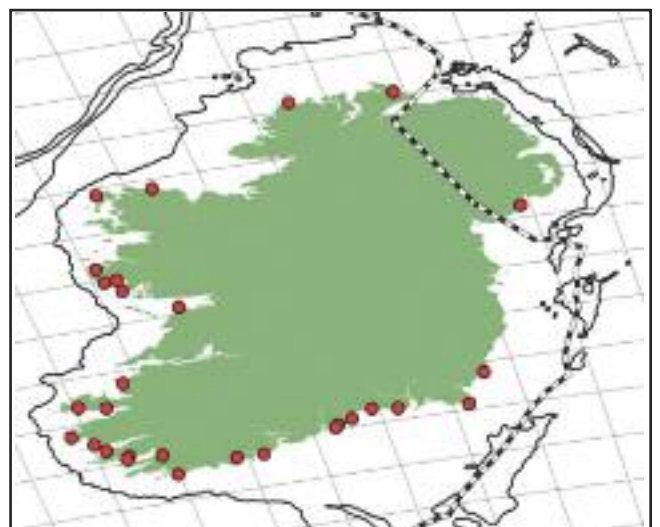


Figure 23. All stranding records up to 2009.



Fin whales off Galley Head in west Cork, December 2008. **Photograph** © Pádraig Whooley/IWDG.

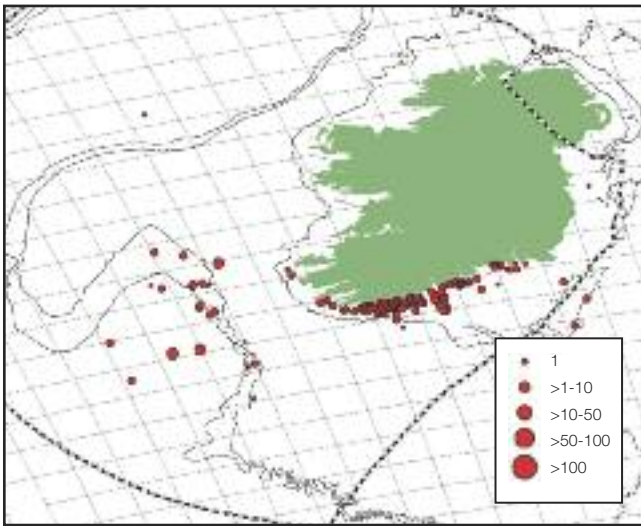


Figure 24. All casual sightings from ISCOPE II (2006-2009).

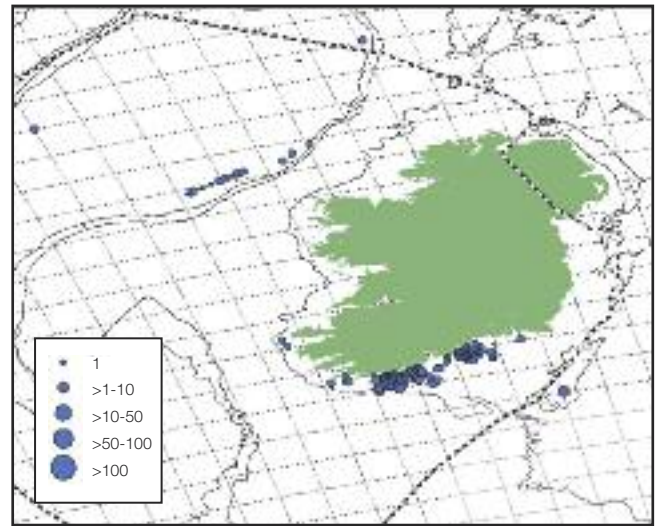


Figure 25. All effort related sightings (2001-2009).

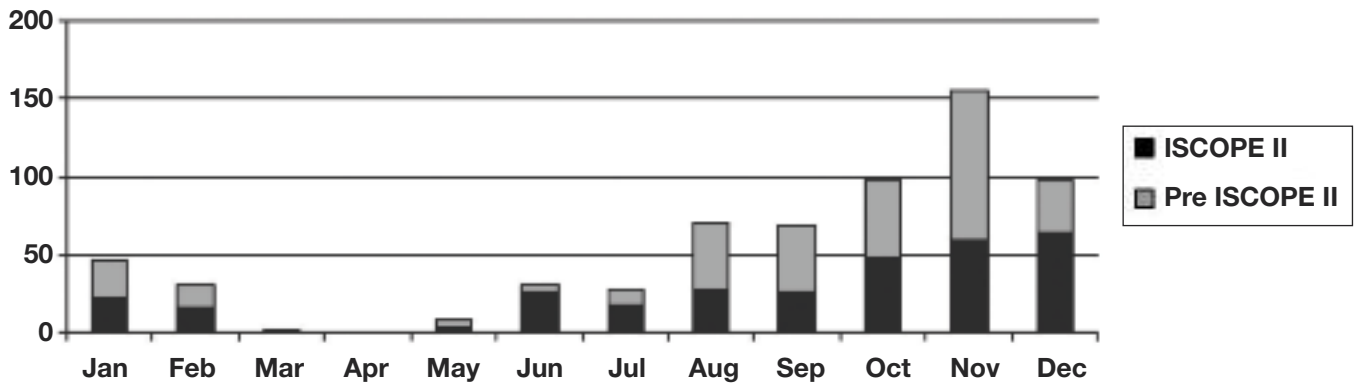


Figure 26. Monthly distribution of all fin whale sighting records (n=634).

Blue Whale (*Balaenoptera musculus*)

Míol Mór Gorm

The blue whale is widespread but rarely sighted in the northeast Atlantic. It is recorded acoustically each year migrating along the western seaboard of Ireland. A single blue whale was reported in the deep waters off Rockall Trough in May 2001. On 15 and 17 September 2008 two confirmed but separate sightings of single blue whales were recorded on the

slopes of the Porcupine Seabight and the NW slopes of Porcupine Bank. One animal was photographed for photo-identification and had not been previously recorded in the North Atlantic. There are eight stranding records dating back to the 18th century but none since 1957.

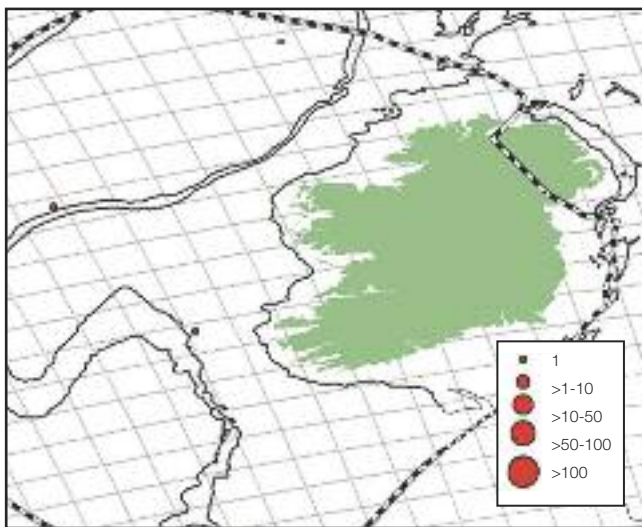


Figure 27. All casual sightings from ISCOPE II (2006-2009).

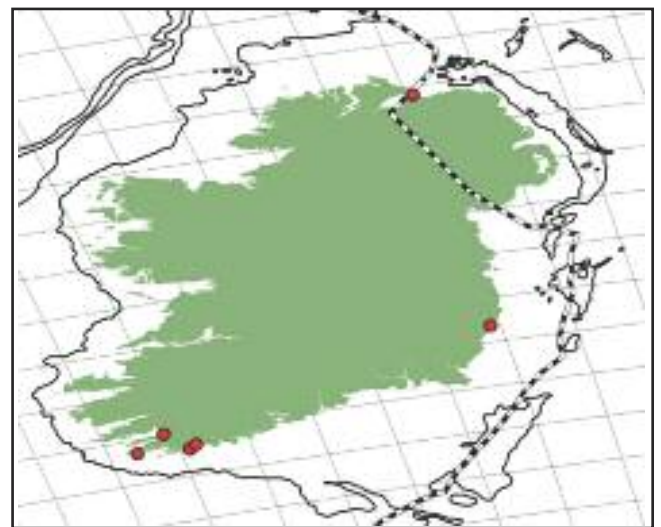


Figure 28. All stranding records up to 2009.



Blue whale off the west coast of Ireland. **Photograph** © Ivan O'Kelly.



Sperm whales in the Irish Northwest. **Photograph** © Air Corp Maritime Squadron.

Sperm Whale (*Physeter macrocephalus*)

Caisealóid

The sperm whale has a large geographic range and can be seen throughout the North Atlantic from the equator to high latitudes. In the northeast Atlantic it is widespread in deep waters to the west of the continental shelf, over sub-marine canyons and close to volcanic islands in waters deeper than 200m. Sperm whales were largely absent from inshore waters and sightings here were likely to be associated with live stranding events. Acoustic and visual surveys to the west of Ireland have shown this species to be present in the deep waters of the Rockall Trough and in subsea canyons located along the shelf slopes and slopes of the Porcupine Bank. There have been 67 stranding records, all of single individuals,

in Ireland since 1753. Most records were from the west and south coasts with a concentration in Co Galway. There were peaks in January and March with 53% of stranding records from the first four months of the year. There has been an increase in strandings since the 1960s, which may be due to a combination of increased reporting and increased mortality due to anthropogenic factors. Three live stranded sperm whales have been reported, all since 2004. The majority of sperm whales stranded in Ireland are adult males, thus the live stranding of a neonatal calf in Co Clare in May 2004 was very unusual. It was the second smallest sperm whale recorded stranded in the North Atlantic.

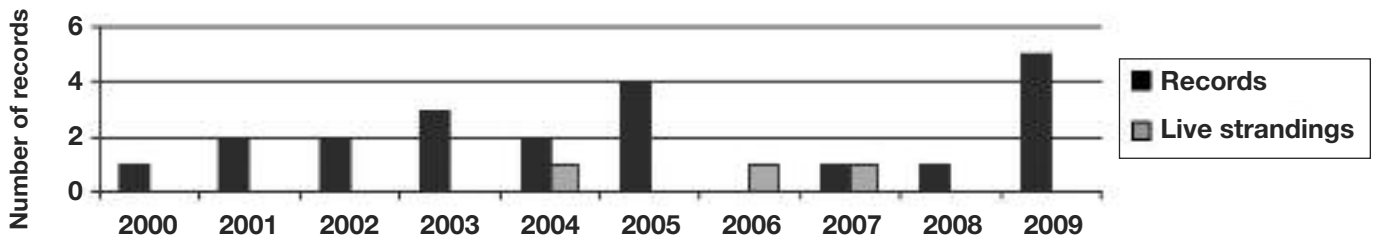


Figure 29. Yearly distribution of sperm whale records 2000-2009.

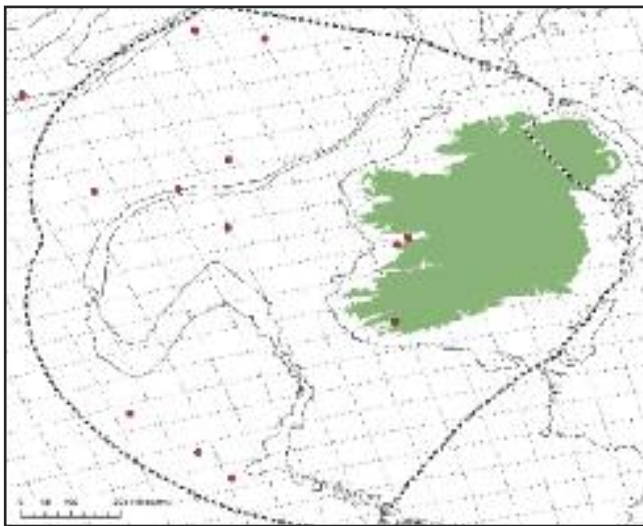


Figure 30. All IWDG casual sightings up to 2009.

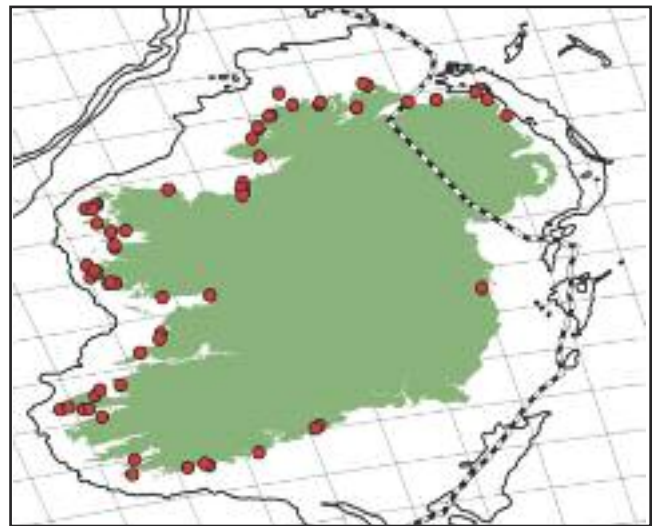


Figure 31. All stranding records up to 2009.

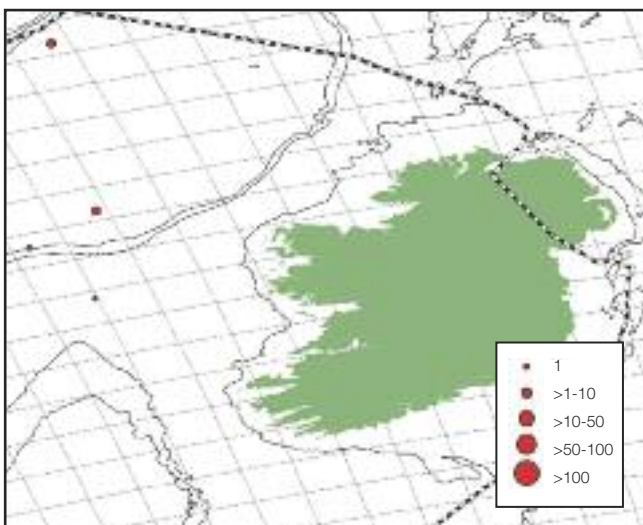


Figure 32. All casual sightings from ISCOPE II (2006-2009).

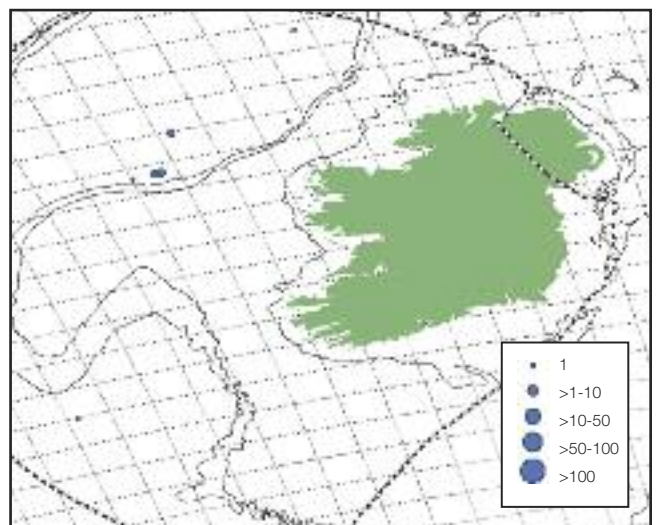


Figure 33. All effort related sightings (2001-2009).

Pygmy Sperm Whale (*Kogia breviceps*)

Caisealóid Bheag

The pygmy sperm whale is a poorly known species in the North Atlantic and has never been observed alive in Irish waters. It has a tropical to temperate water distribution favouring deep water beyond the edge of the continental shelf. There have been eight stranding records, all since 1966 and five since 2000. A female measuring 2.0m was definitely live stranded in Co Kerry in 2002 and other strandings were suspected as being live stranded. The location of strandings indicates that the species has a distribution lying in deep waters to the southwest of Ireland. It has never been sighted alive in Irish waters.

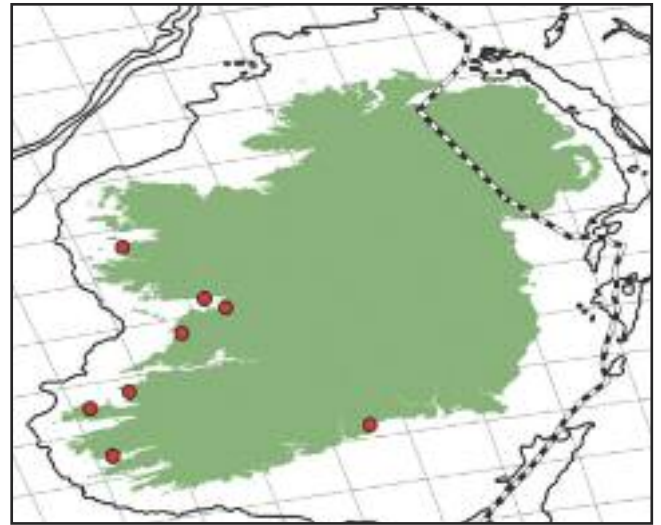


Figure 34. All stranding records up to 2009.

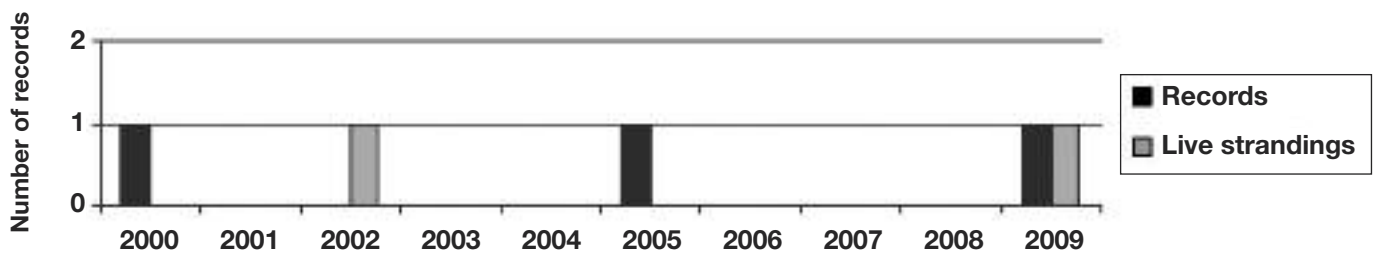


Figure 35. Yearly distribution of pygmy sperm whale records 2000-2009.



Pygmy sperm whale. **Photograph** © Sinéad Murphy.

Beaked whale family (*Ziphiidae*)

Fine na míolta móra socacha

The beaked whale family comprises five species of whales. All are deep-diving species preferring offshore habitats. Three species of *Mesoplodon* have been recorded (Sowerby's, True's and Gervais' beaked whales) in addition to Cuvier's beaked whale and northern bottlenose whale. The latter two species have been frequently stranded and occasionally sighted. No species of *Mesoplodon* has been positively identified in Irish

waters by the IWDG and our knowledge is largely based on strandings. Almost all strandings (86%) have been along the west coast, which reflects their preference for deep shelf-edge and Atlantic trench systems. Sightings of beaked whales in offshore waters show a distribution focused on subsea canyon systems of the Porcupine Bank and Northwest Shelf slopes and in the deep waters of the Rockall Trough.

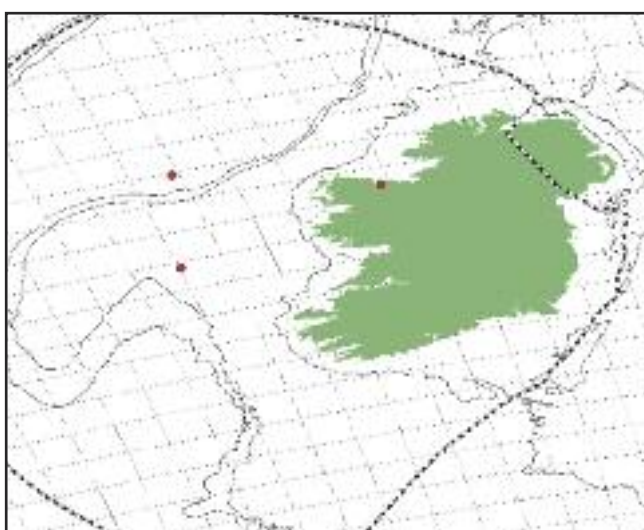


Figure 36. All IWDG casual sightings up to 2009.

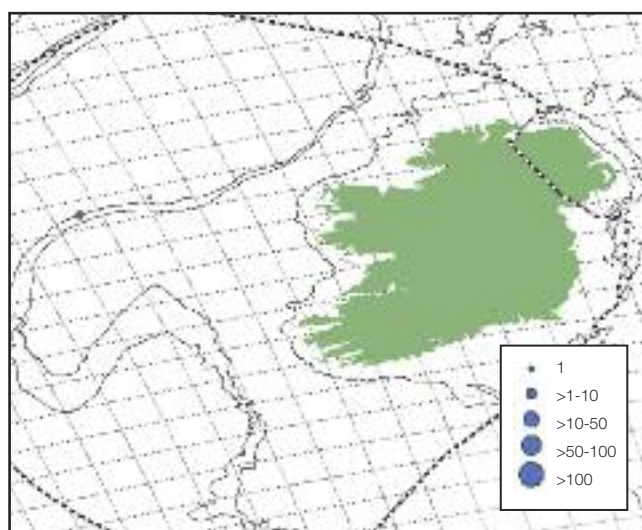


Figure 37. All effort related sightings (2001-2009).



Northern bottlenose whale, Pullen Harbour, Beara peninsula, Co Cork, August 2005. **Photograph** © Pádraig Whooley/IWDG.

Cuvier's Beaked Whale (*Ziphius cavirostris*)

Míol Mór Cuvier

The Cuvier's beaked whale is the most commonly stranded beaked whale on the Irish coast with 49 strandings of individual animals recorded since 1904. Cuvier's beaked whales are occasionally observed at sea and are thought to frequent deep underwater canyon systems near the continental shelf edge. There has been a marked increase in strandings of this species with 16 records between January 2000 and 31 December 2009, which is consistent with other deep-diving species and a cause for concern. Most records are from the western seaboard. No live strandings have been recorded in Ireland for this species. The month of March accounts for 25% of all Cuvier's beaked whale strandings recorded in Ireland.

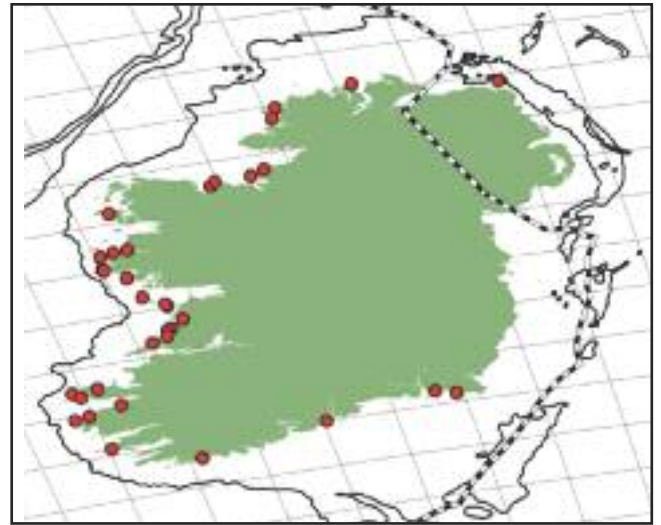


Figure 38. All stranding records up to 2009.

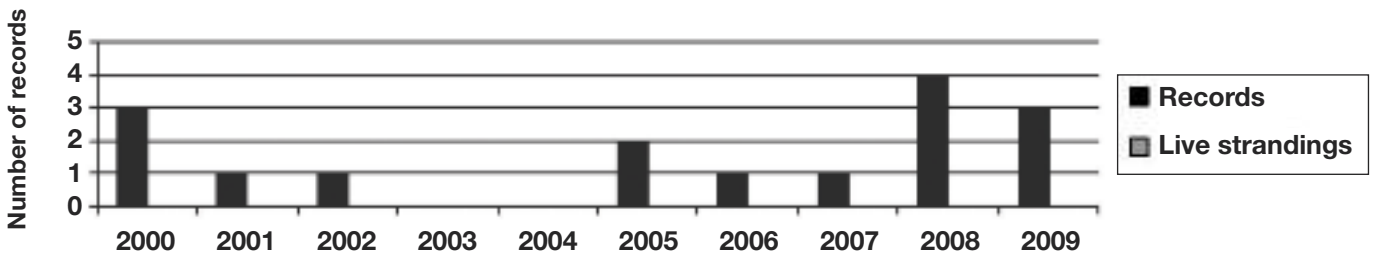


Figure 39. Yearly distribution of Cuvier's beaked whale records 2000-2009.



Cuvier's beaked whale. Photograph © Graeme Cresswell.



Northern bottlenose whale breaching off the Beara peninsula, Co Cork. **Photograph** © Pádraig Whooley/IWDG.

Northern Bottlenose Whale (*Hyperoodon ampullatus*)

Míol Mór Bolgshrónach

Northern bottlenose whales are found only in the North Atlantic. There were very few sightings of this deep-diving species, which is typically found offshore in waters deeper than 1,000m. Opportunistic sightings have been documented over shelf edge waters by the Air Corps Maritime Squadron and species identity confirmed by images. Sightings in inshore waters were extremely rare, occurring only during summer months, and most were in west Cork. There is a high probability of a link between sighting and stranding events. On 9 August 2005 a solitary bottlenose whale entered the deep-water ferry terminal at Cork harbour and subsequently died. Five days later a second, apparently healthy, animal entered and remained in Pulleen harbour on the Beara peninsula over a five-day period. On 22 August 2009 an extremely unusual

sighting of three bottlenose whales was made outside the mouth of Carlingford Lough, Co Down; again, this was followed within five days by the live stranding and death of two adult specimens in Bantry Bay, Co Cork. Between 1829 and December 2009, there have been 39 stranding records of 43 individual northern bottlenose whales. There have been six live stranding records of ten individual animals since 1998. Records from the east coast are historical. There was a notable increase in strandings in 2006 when four records were received of a total of five individuals; two of these were live strandings which included a mother and calf in Co Sligo. Strandings have been most frequently recorded in August and September which together account for 54% of the total received.

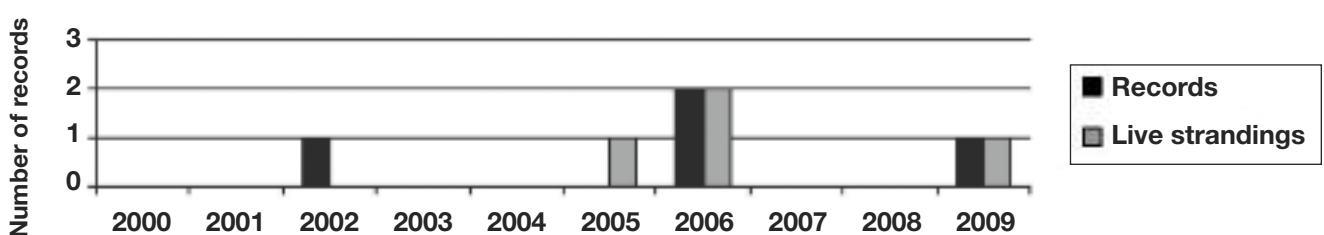


Figure 40. Yearly distribution of northern bottlenose whale records 2000-2009.

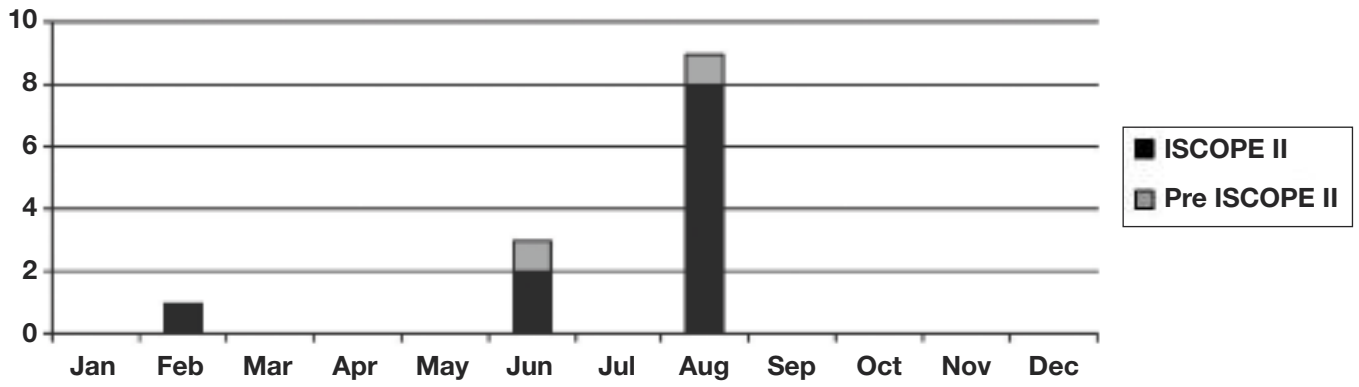


Figure 41. Monthly distribution of northern bottlenose whale sighting records (n=13).

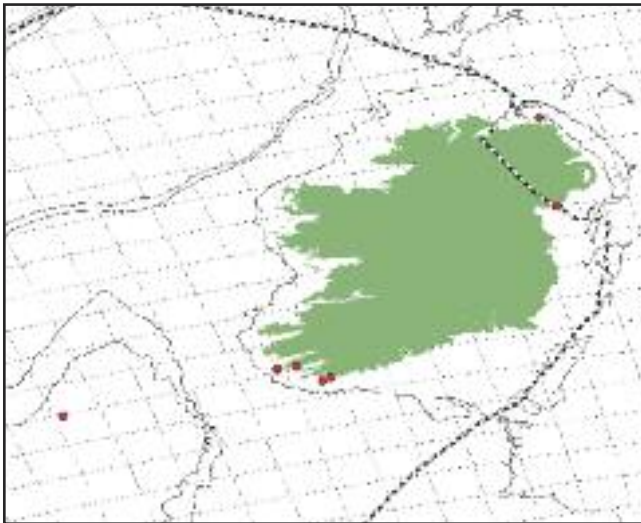


Figure 42. All IWDG casual sightings up to 2009.

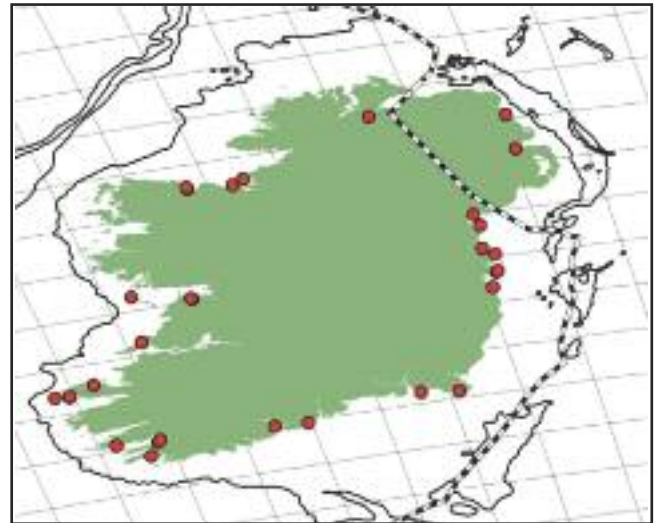


Figure 43. All stranding records up to 2009.

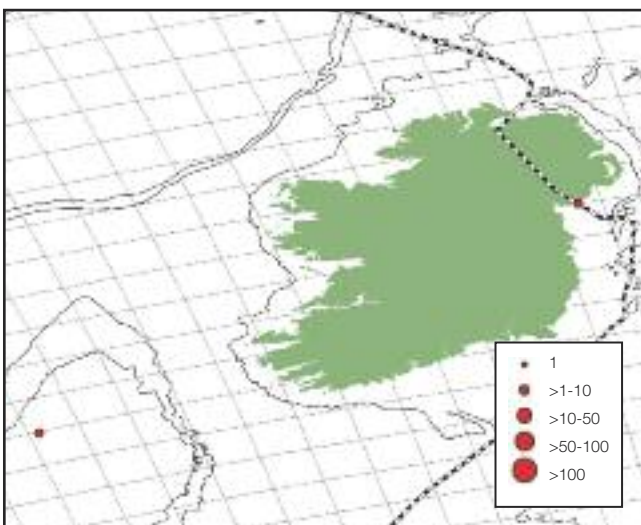


Figure 44. All casual sightings from ISCOPE II (2006-2009).

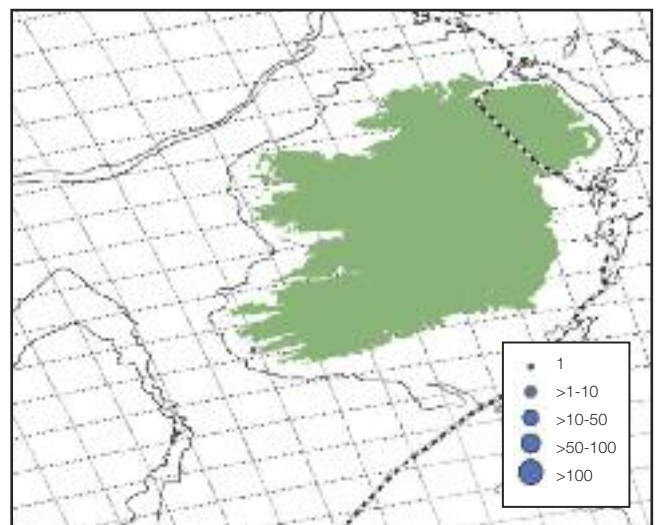


Figure 45. All effort related sightings (2001-2009).

True's Beaked Whale (*Mesoplodon mirus*)

Míol Mór Socach Breá

Little is known about the distribution or behaviour of True's beaked whales off the Irish coast as they have never been observed alive in Irish waters. Between 1899 and 2009, ten stranding records have been documented, all of which have been of single animals. Only one live stranding has been recorded which was in Owenahincha, Co Cork, in 1997. The

only other stranding record received for this species since 1997 was of a badly decomposed male found at Strandhill, Co Sligo, on 20 March 2009. Strandings do not appear to be seasonal, with records in January (1), February (1), March (1), April (1), June (2), July (1), October (1) and November (1) with one record undated.

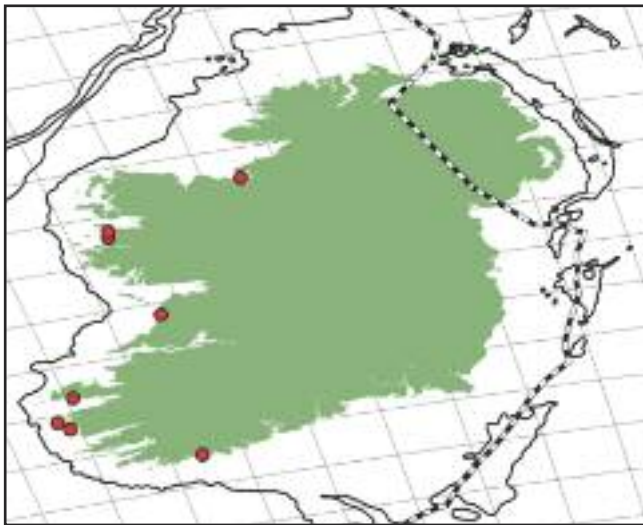


Figure 46. All stranding records up to 2009.



True's beaked whale, Strandhill, Co Sligo, March 2009.

Photograph © Don Cotton.

Gervais' Beaked Whale (*Mesoplodon europaeus*)

Míol Mór Socach an tSruitha

Gervais' beaked whales are rare in Irish waters and very little is known about their ecology or distribution. Only one stranding record has been received for this species, a 4.08m male which stranded in Ballysadare Bay, Co Sligo, on 22 January 1989.

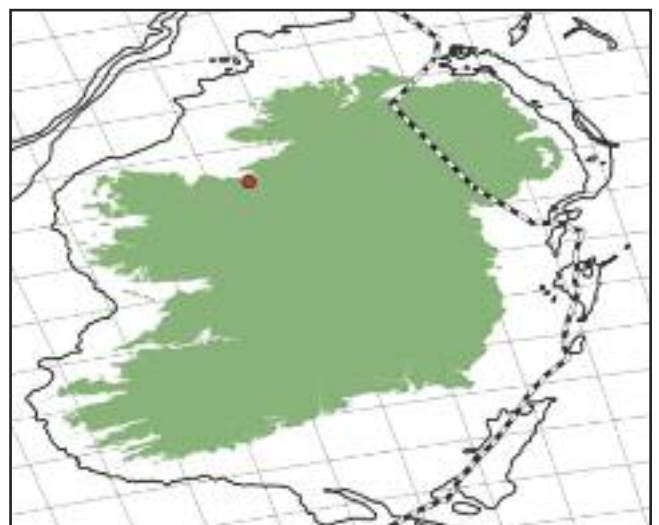


Figure 47. All stranding records up to 2009.

Sowerby's Beaked Whale (*Mesoplodon bidens*)

Míol Mór Socach na Mara Thuaidh

As with other beaked whale species, little is known about the distribution of Sowerby's beaked whales around the Irish coast. Sixteen strandings of this species have been recorded since 1864, with eight of these occurring since April 2004. All strandings were of single animals. There is only one record of a live stranded Sowerby's beaked whale, a 5.5m female (which later died) at Courtown, Co Wexford, in August 2004. Strandings for this species have occurred throughout the year with a peak in August (27% of records).

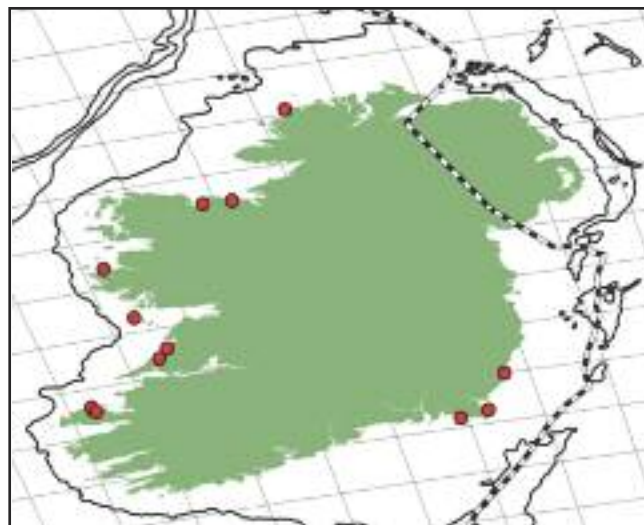


Figure 48. All stranding records up to 2009.

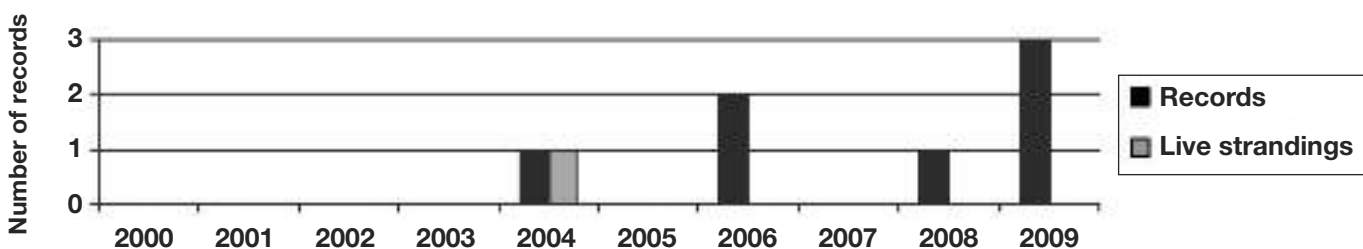


Figure 49. Yearly distribution of Sowerby's beaked whale records 2000-2009.



Sowerby's beaked whale, Enniscrone, Co Sligo, November 2006. Photograph © Don Cotton.



Bottlenose dolphins, Castlehaven harbour, Co Cork, April 2010. **Photograph** © Pádraig Whooley/IWDG.

Common Bottlenose Dolphin (*Tursiops truncatus*)

Deilf Bholgshrónach

The bottlenose dolphin was the third most frequently reported species with 1,583 sightings (16%), of a total of 17,668 individuals. The average group size was 11, although the occurrence of “solitary” bottlenose dolphins in Irish waters is well documented. This large dolphin species can occur off any coast, but the majority of sightings occurred inshore along the western seaboard. Since 2007 there has been an increase in sightings from the east and north coasts, with evidence of a southward movement from Northern Irish waters. There is one well known resident population in the Shannon estuary and a small “semi-resident” group recently described in Cork Harbour. Generally considered a coastal species, they have a year-round distribution with a peak between May and September which may be strongly influenced by observers increasing reporting during the summer months. Offshore sightings of this species tend to be on the Porcupine Bank and Seabight, with a few sightings also occurring in the deeper waters of the Rockall Trough. The Maritime Squadron observed and photographed a large group of c100 individuals 120 miles west of Clifden, Co Galway, in September 2007. A group of around 250 bottlenose dolphins recorded in August

2009 during the ‘Cetaceans on the Frontier’ cruise was the largest single group recorded in Ireland. There were no stranding records of this species before 1960. Between 1960 and 2009, there were 90 strandings, usually involving single animals. July and August were the months when strandings were most frequently recorded, each accounting for 13% of the mean annual total. This compares to May, which only accounts for 1%. Bottlenose dolphins have stranded on all coasts but most records are from the western seaboard with concentrations in counties Kerry and Clare. Since 1998, there has been between one and 10 stranding incidents involving bottlenose dolphins per year. There has been a marked increase in live strandings with eight strandings of nine animals between 1 January 2001 and 31 December 2008 and no live strandings recorded before this time period. A live stranding of 17 individuals near Fenit, Co Kerry, in July 2009 was unprecedented in Ireland or the UK. Recent matching of images of bottlenose dolphins sent to the IWDG have shown the same individual dolphins have been recorded off counties Dublin, Cork, Kerry, Galway, Mayo, Donegal and Antrim, showing that these inshore dolphins use the entire Irish coast.

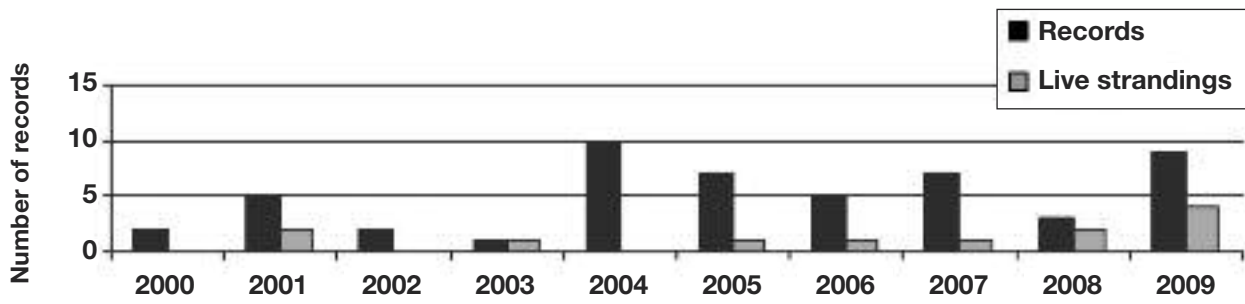


Figure 50. Yearly distribution of common bottlenose dolphin records 2000-2009.

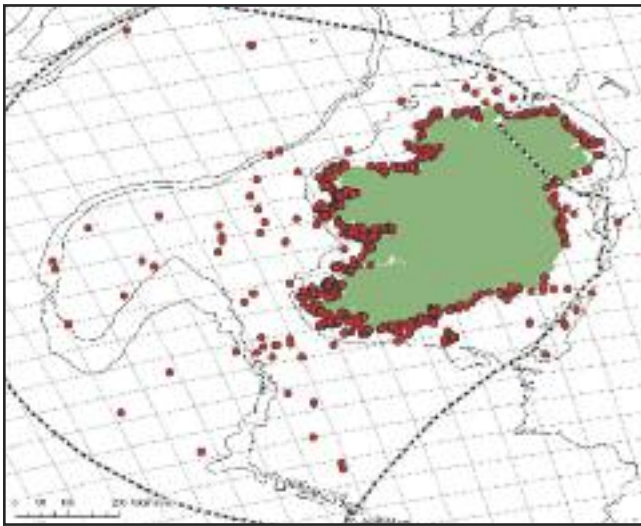


Figure 51. All IWDG casual sightings up to 2009.

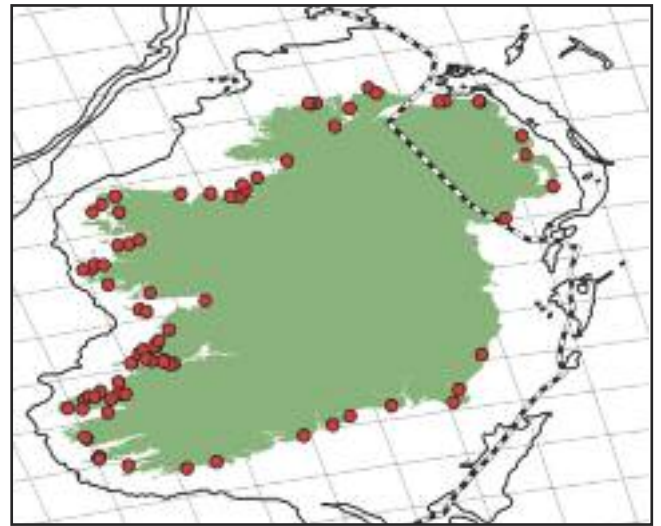


Figure 52. All stranding records up to 2009.

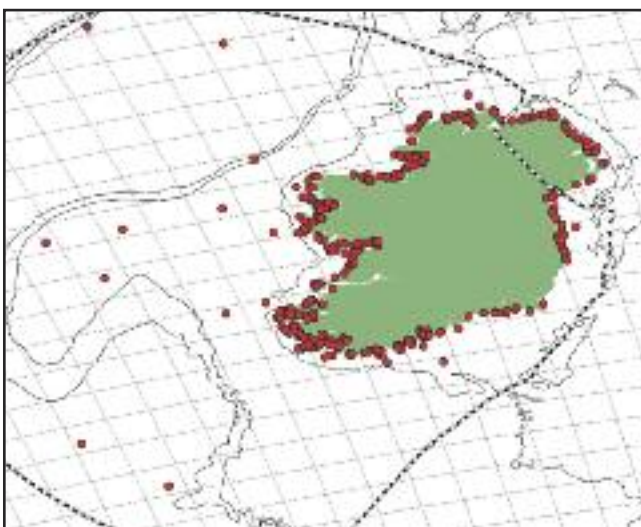


Figure 53. All casual sightings from ISCOPE II (2006-2009).

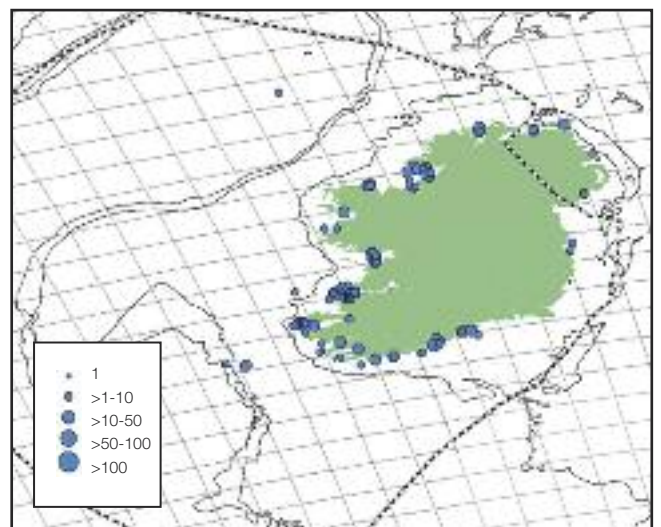


Figure 54. All effort related sightings (2001-2009).



Bottlenose dolphins in the Shannon Estuary. **Photograph** © Simon Berrow/SDWF.

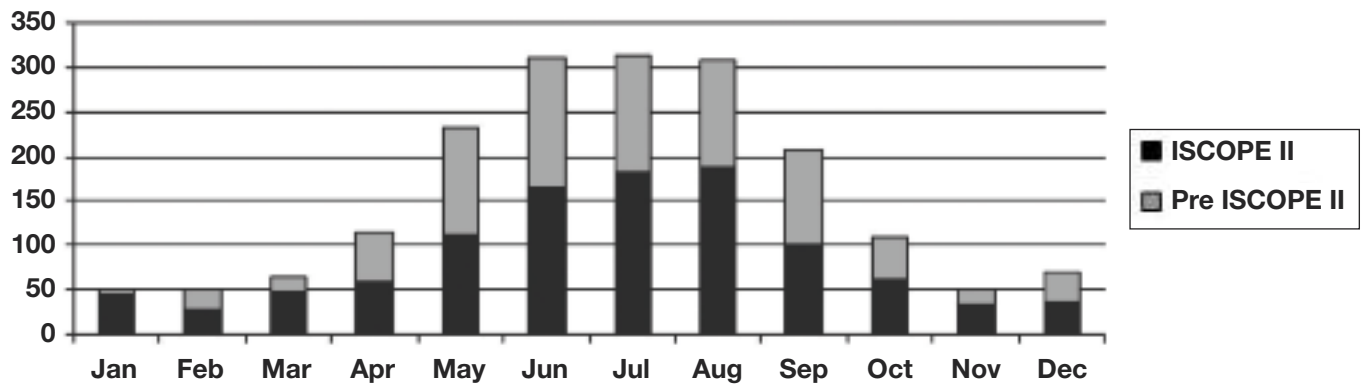
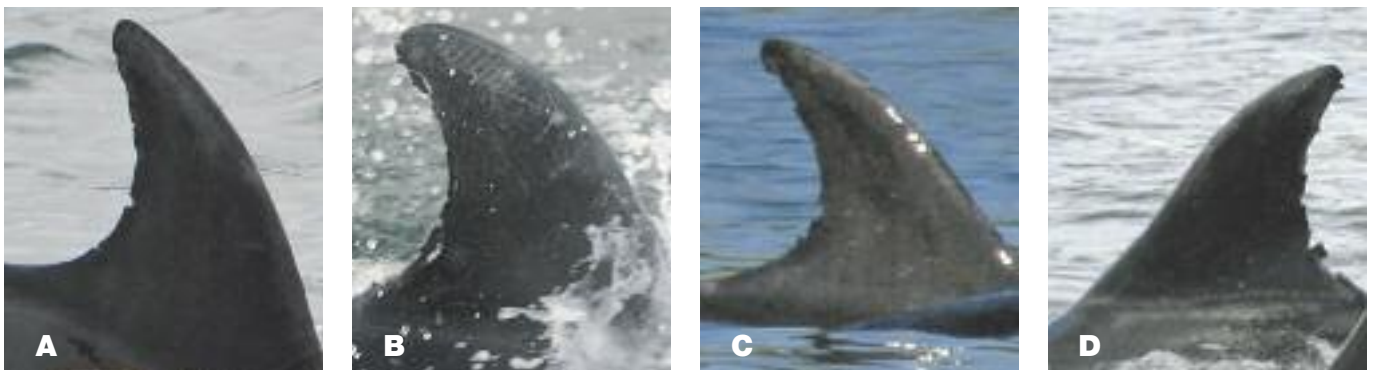


Figure 55. Monthly distribution of common bottlenose dolphin sighting records (n=13).



Recent photo-ID images of bottlenose dolphins matching individuals on the IWDG online database. The images were taken in (a) Castlehaven, Co Cork (*Pádraig Whooley*), (b) Dunree, Co Donegal (*Paul Mayo*), (c) Baltimore, Co Cork (*Robbie Murphy*) and (d) Co Antrim (*Gary Burrows*). They have helped show that Ireland's inshore bottlenose dolphins use the entire Irish coast.

Striped Dolphin (*Stenella coeruleoalba*)

Deif Stríocach (Deif Riabhach)

Striped dolphins are a widely-distributed species in tropical and warm temperate waters of the Mediterranean and Atlantic. The northern limit of their range is about 50°N and the southern limit about 40°S, although there are records from much higher latitudes. This species was first reported in Ireland in 1984 when an individual stranded in Portstewart, Co Antrim. However, a re-examination of skulls stored in the Natural History Museum in Dublin revealed it had stranded previously on five occasions as early as 1855-1870 but had been misidentified as a common dolphin. From 1864 to 31 December 2009, records of 132 strandings for this species were received, but 98% of records date from 1984 and 60% date from 2000. Live stranding records have only been received since 2000, with 17 incidents recorded to the end of 2009. Striped dolphin strandings appear to be on the increase, with notable peaks in 2006 and 2008. Data from fisheries bycatch studies indicate that this species has a distribution lying in far-offshore waters to the southwest of Ireland. Striped dolphins are rarely sighted in Irish inshore waters, with just two sightings, which might reflect difficulties in their identification at sea where they can resemble common dolphins. These were of apparently healthy individuals, though this is not typical habitat for this pelagic dolphin.



Striped dolphin off the continental shelf edge. **Photograph**
© Conor Ryan/IWDG.

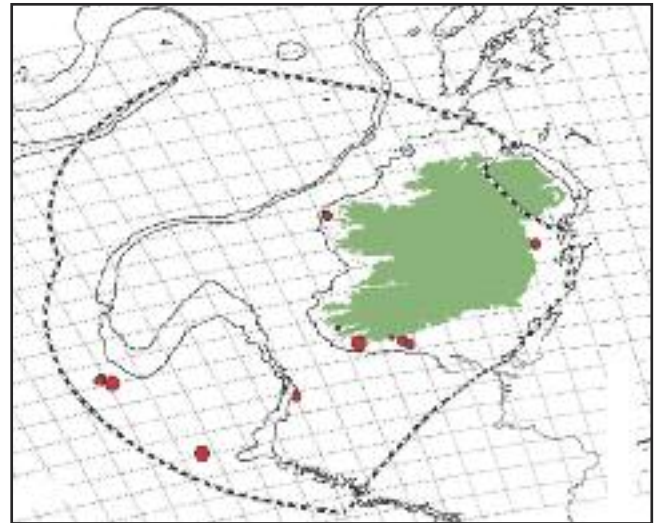


Figure 57. All IWDG casual sightings up to 2009.

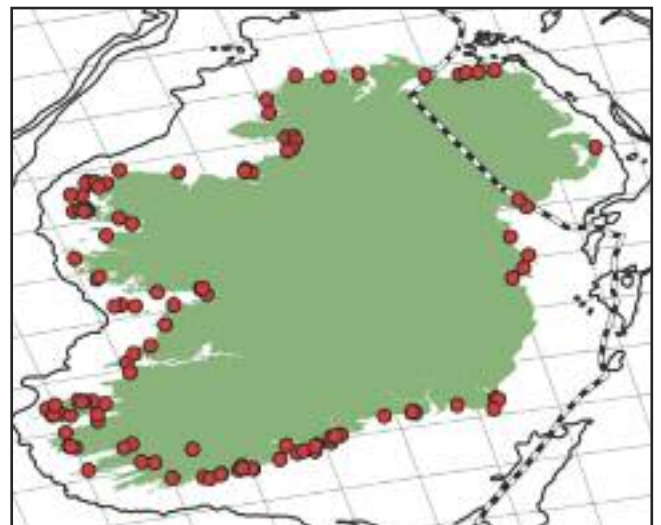


Figure 58. All stranding records up to 2009.

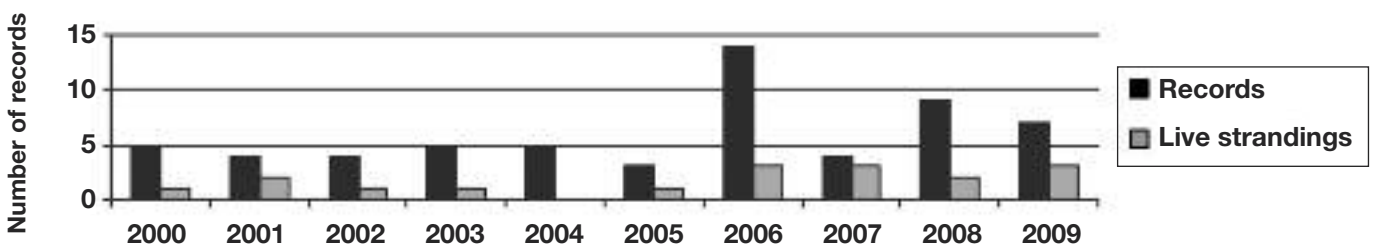


Figure 56. Yearly distribution of striped dolphin records 2000-2009.



Short-beaked common dolphins. **Photograph** © Dave Wall/IWDG/GMIT.

Short-beaked Common Dolphin (*Delphinus delphis*)

Deilf Choiteann

The short-beaked common dolphin is an oceanic species that is widely distributed in tropical to cool temperate waters of the Atlantic Ocean. It has been suggested there are at least two genetically distinct populations in the North Atlantic (western and eastern North Atlantic stocks) but no genetic structure within the same region. The short-beaked common dolphin was the second most frequently reported species after the harbour porpoise, with 1,778 sightings (18% of all sightings) totalling 7,634 individuals. With an average group size of 36 animals, they were the most abundant of all cetacean species recorded in Ireland. There was a peak in inshore records in August. There appears to be an eastward movement along the south coast during autumn and winter, with sightings peaking off Co Kerry towards late summer, between September and January off Co Cork and November to February off Co Waterford. Short-beaked common dolphins were reported along the western seaboard and in the Irish

Sea, with records from ferries showing a noticeable increase in their numbers in the southern Irish Sea in the autumn. Sighting records occur throughout the continental shelf and along most of the shelf edge and in deep water. The short-beaked common dolphin was the second most frequently stranded cetacean (after the harbour porpoise) with 364 strandings of 435 animals (average 1.2 animals per stranding), which accounted for 18% of all cetacean stranding records up to 2009. Although the first stranding record for this species dates from 1882, 62% of the total number recorded have occurred since January 2000. Strandings were recorded in all months of the year with most strandings in February (16%) and January (14%) and the least in May (5%) and July (5%). No live strandings were recorded prior to 1998 but 48 incidents involving 111 animals have been recorded since then, with 52.1% of all short-beaked common dolphin live strandings being recorded between 2006 and 2009.

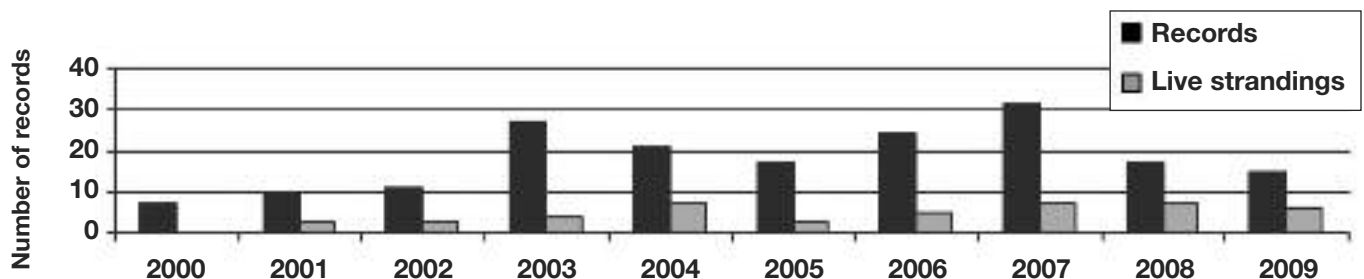


Figure 59. Yearly distribution of short-beaked common dolphin records 2000-2009.

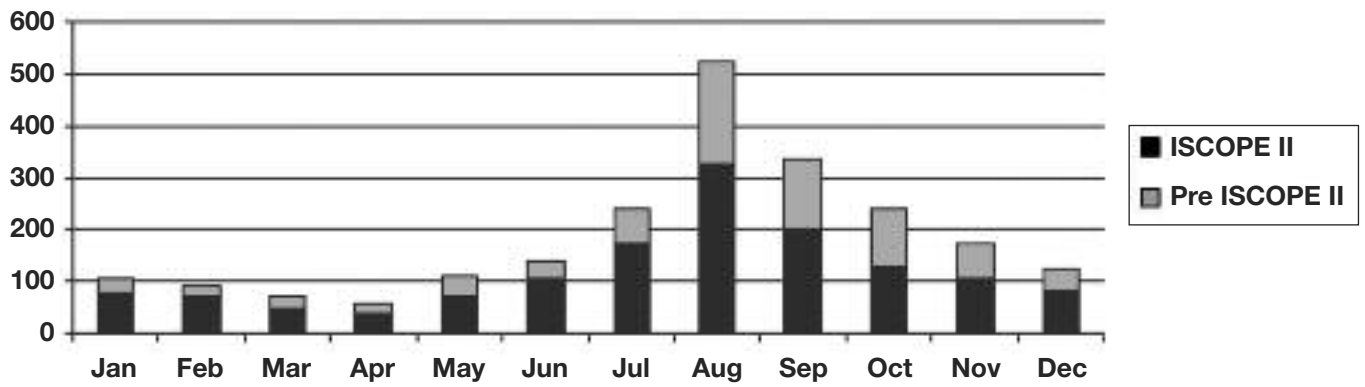


Figure 60. Monthly distribution of short-beaked common dolphin sighting records (n=2,215).

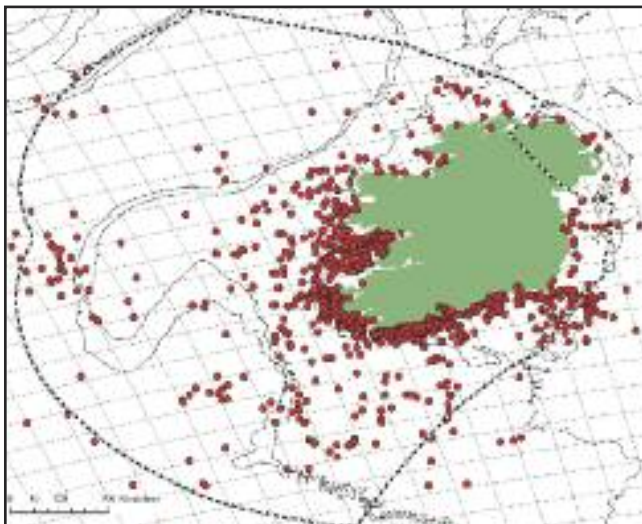


Figure 61. All IWDG casual sightings up to 2009.

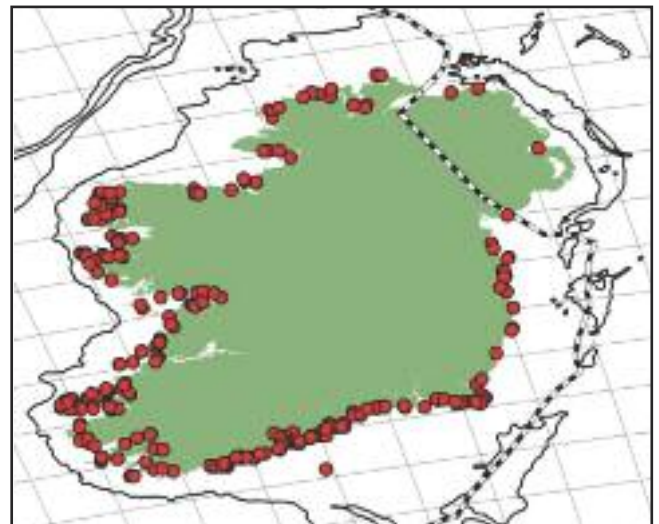


Figure 62. All stranding records up to 2009.

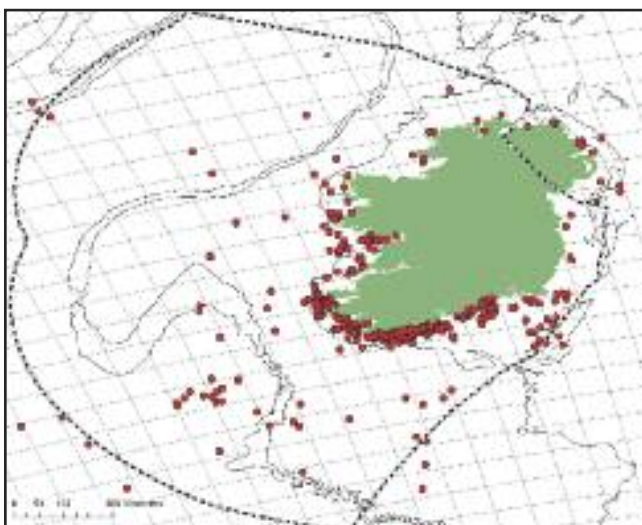


Figure 63. All casual sightings from ISCOPE II (2006-2009).

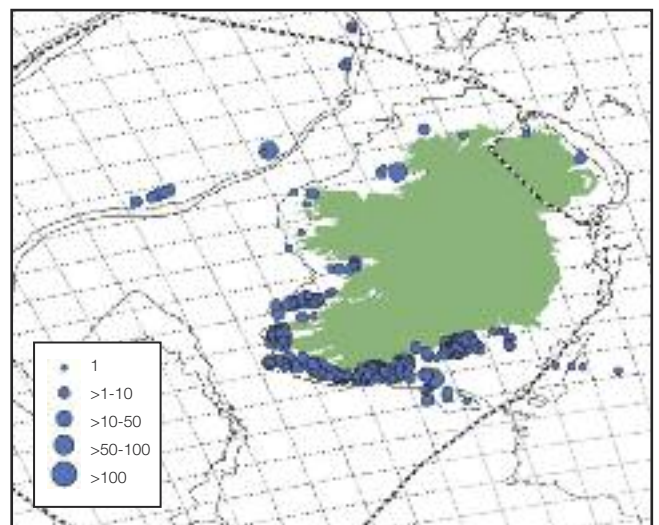


Figure 64. All effort related sightings (2001-2009).

White-beaked Dolphin (*Lagenorhynchus albirostris*)

Deilf Bhánsocach

Sightings of this pelagic species in Irish waters were rare. There was a northwest bias to their distribution: no sighting of the species was off south or southwest coasts. Data suggest that the distribution of white-beaked dolphins in Irish waters has been contracting northward over the past two decades; this may be as a result of changes in sea surface temperature due to global warming. Since 1883, 28 stranding records have been received, representing only 1.4% of the total number of cetacean stranding records. Twenty-two of the records for this species have occurred since 1982. Since 2004, the average number of strandings per annum has nearly doubled. Three individual live strandings are on record, with one each in 2004, 2007 and 2008. The highest number of strandings (23%) occurred in August and none have been recorded in June or July.



White-beaked dolphin. Photograph © Dave Wall/IWDG/GMIT.

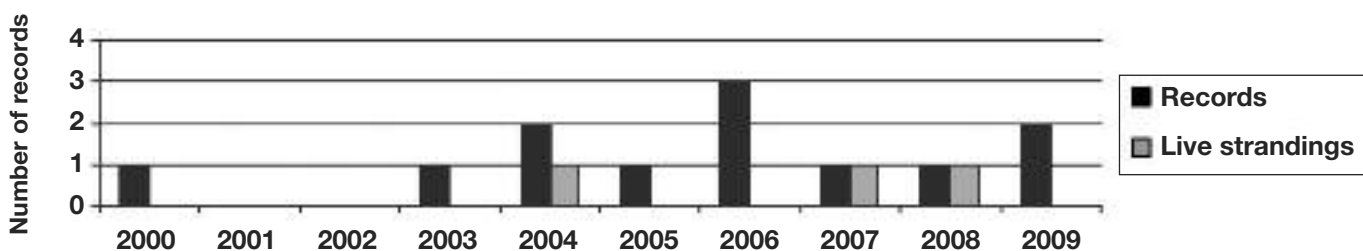


Figure 65. Yearly distribution of white-beaked dolphin records 2000-2009.

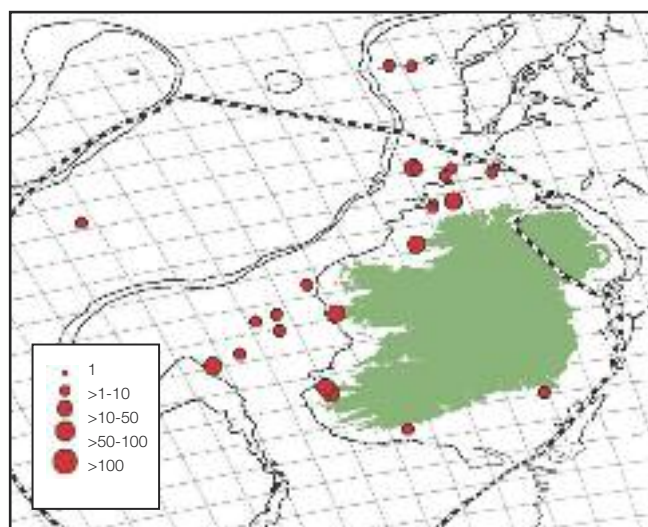


Figure 66. All IWDG sightings up to 2009.

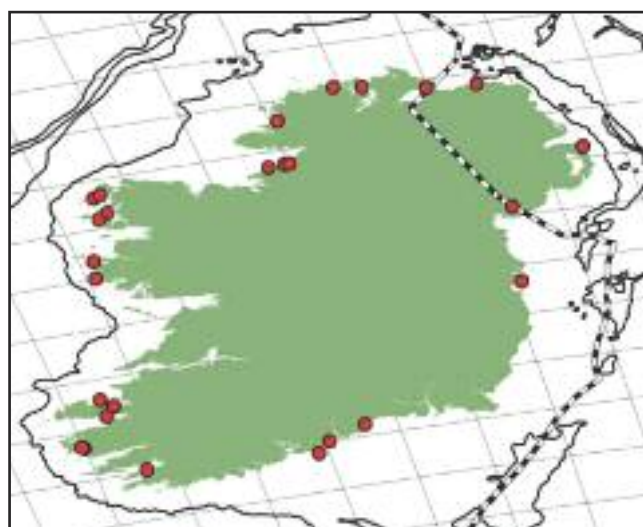


Figure 67. All stranding records up to 2009.



Atlantic white-sided dolphins. **Photograph** © Graeme Cresswell.

Atlantic White-sided Dolphin (*Lagenorhynchus acutus*) **Deif Bhánchliathánach**

The Atlantic white-sided dolphin is restricted to the North Atlantic. It inhabits cool waters along the edge of the continental shelf and over offshore banks. Sightings of Atlantic white-sided dolphins were rare in all Irish inshore waters during the reporting period. There were only 70 records, with an average group size of 14 animals per encounter. Almost all sightings are off the edge of the continental shelf and over offshore banks. They were occasionally photographed by the Irish Air Corp Maritime Squadron off west coast and northwest waters. As with the striped dolphin, they were more regularly recorded stranded than sighted and were the fifth most frequently stranded cetacean in Irish waters. Sightings data show a peak in July, which is likely to reflect opportunities to survey their preferred offshore habitats during summer rather than seasonal distribution.

White-sided dolphins are frequently stranded in Ireland but records are consistent and relatively stable. Strandings peaked in March and April, which might be associated with bycatch in pelagic fisheries for mackerel and horse-mackerel. Most records are from the western seaboard with concentrations in counties Galway and Mayo but white-sided dolphins have also

stranded on the north and east coasts. This species is susceptible to mass live stranding with the best documented event in Ireland involving 19 individuals in Killala Bay, Co Mayo, in September 1994. An unusually high number of white-sided dolphins were live stranded in 2007. There were eight different stranding events from January to September and from Kerry to Donegal, though most (4) were in Donegal.

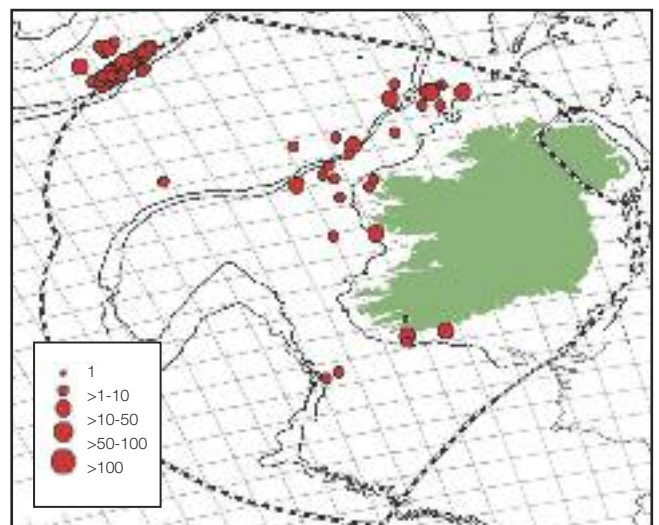


Figure 68. All IWDG sightings up to 2009.

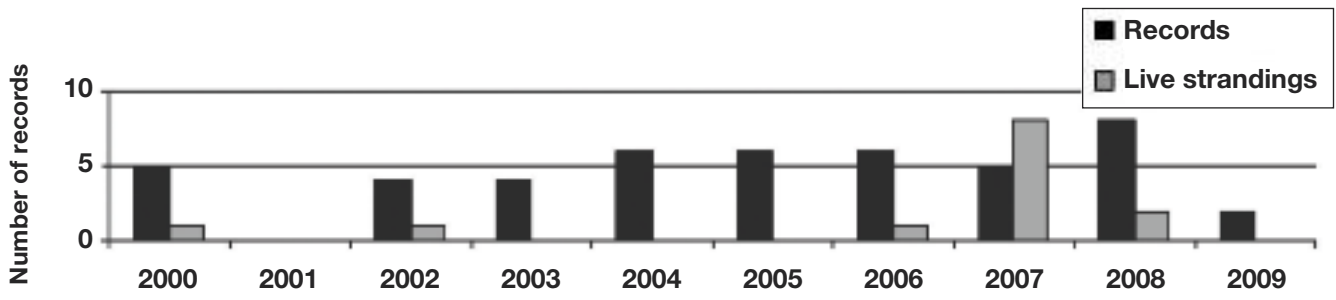


Figure 69. Yearly distribution of Atlantic white-sided dolphin records 2000-2009.

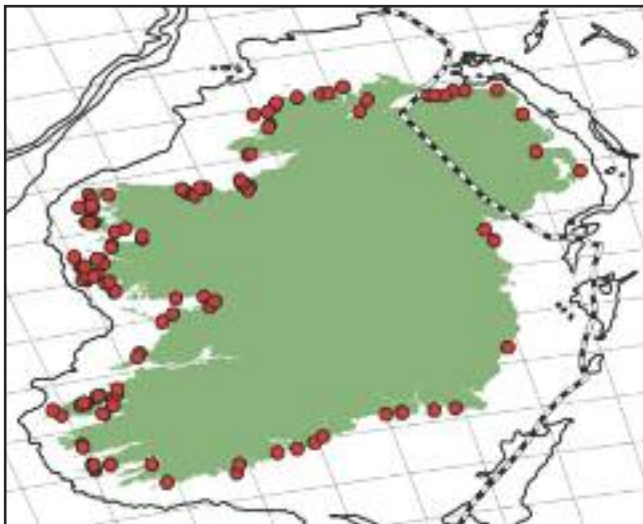


Figure 70. All stranding records up to 2009.

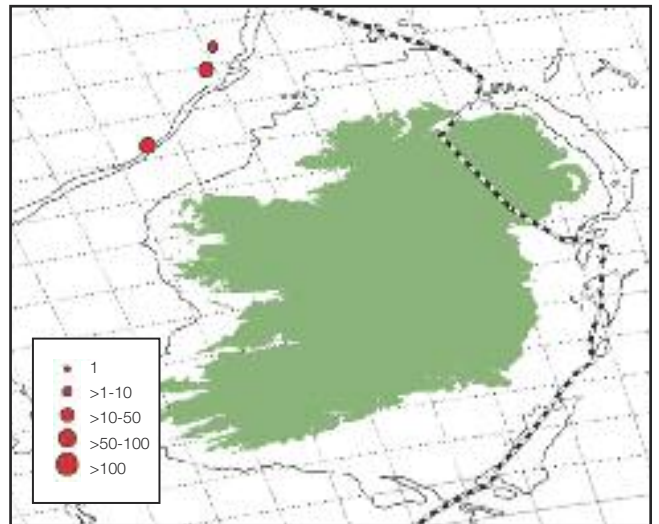


Figure 71. All casual sightings from ISCOPE II (2006-2009).

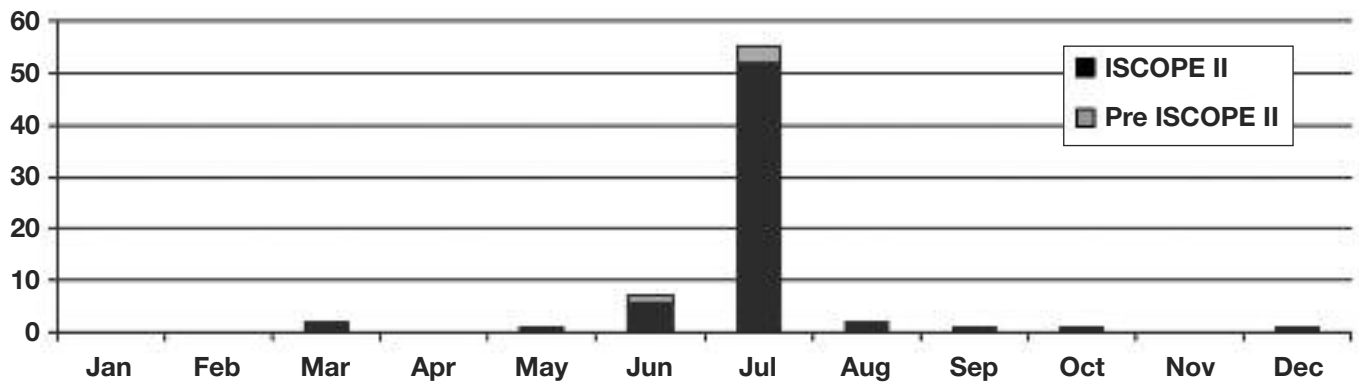


Figure 72. Monthly distribution of Atlantic white-sided dolphin sighting records (n=70).



Risso's dolphin off the Blasket Islands, Co Kerry. **Photograph** © Simon Berrow/IWDG.

Risso's Dolphin (*Grampus griseus*)

Deilf Liath

Risso's dolphin was the sixth most frequently sighted species with 252 sightings (3%) totalling 1,983 individuals. They were consistently the third most frequently reported dolphin species, after short-beaked common and bottlenose dolphins. The average group size encountered was five individuals. Most sightings were between May and July suggesting a late spring inshore movement, but they were recorded in all areas and in all months. They were reported off all coasts and were the dolphin species most regularly recorded in the Irish Sea, with counties Wicklow and Wexford accounting for 41% of all

inshore Risso's dolphin sightings. Offshore records were largely confined to the shelf edge off the southwest coast. There were 63 recorded strandings since 1926, representing 3.1% of all cetacean strandings. Nearly one-half (48%) of records have been received since 2000 and there was a noticeable peak in 2003 with seven recorded strandings. Three live strandings have been recorded with one in 2002 and two in 2003. The most frequent months for strandings were May and July, each accounting for 17% compared to the least in March (3%) and November (2%).

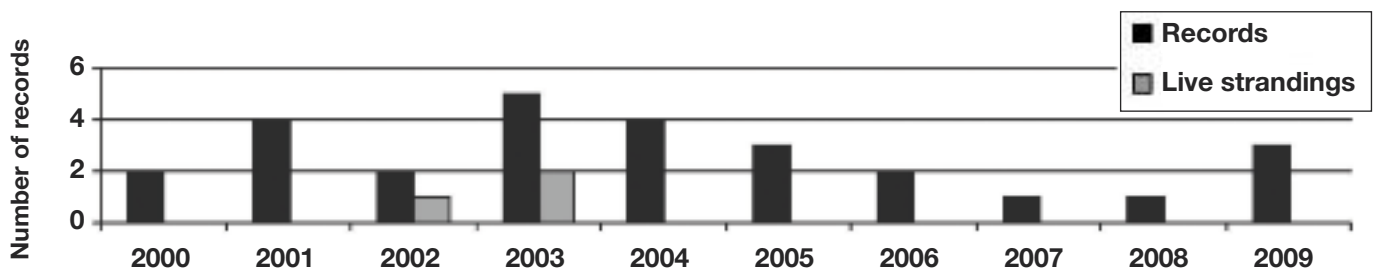


Figure 73. Yearly distribution of Risso's dolphin records 2000-2009.

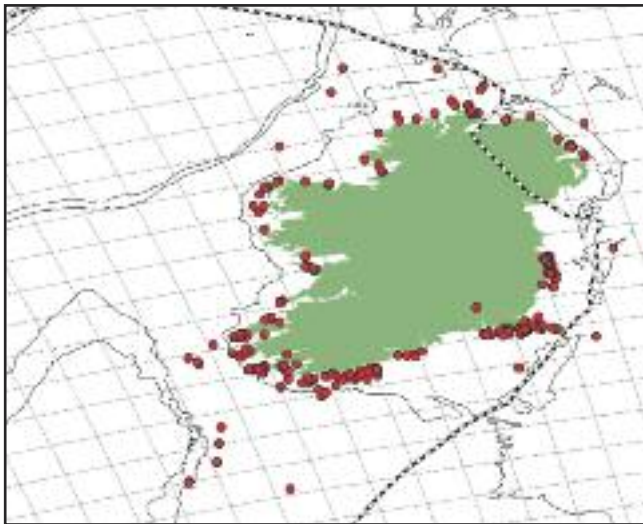


Figure 74. All IWDG casual sightings up to 2009.

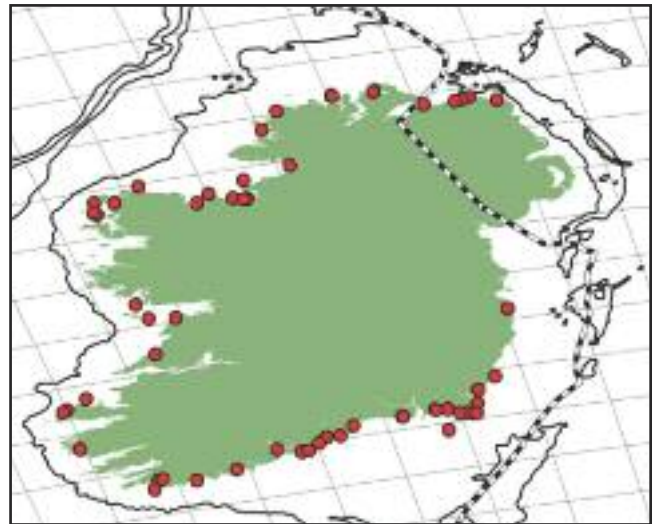


Figure 75. All stranding records up to 2009.

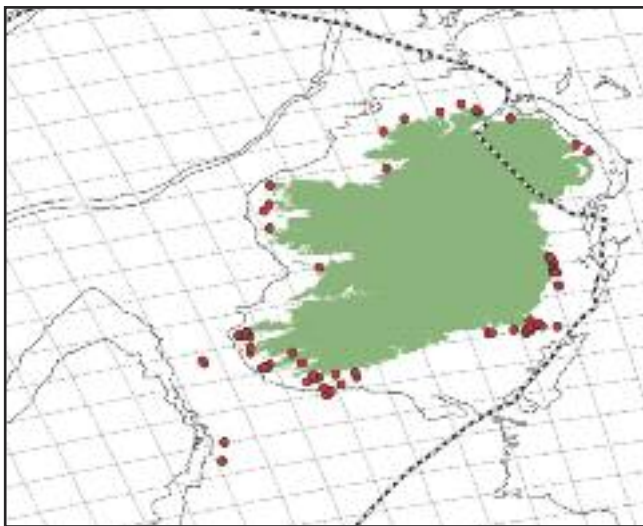


Figure 76. All casual sightings from ISCOPE II (2006-2009).

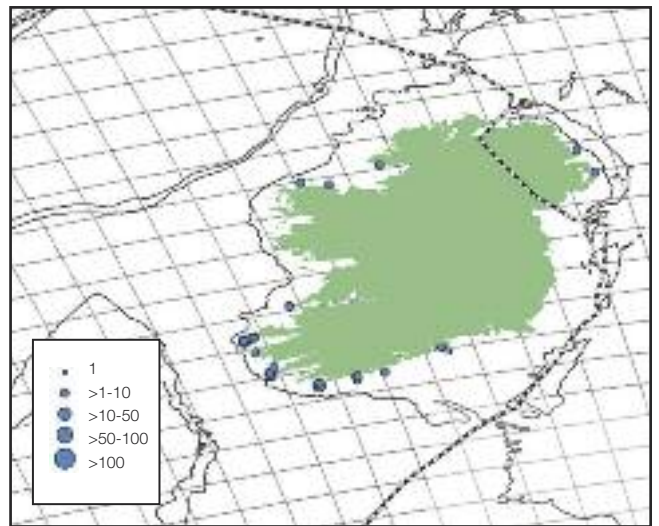


Figure 77. All effort related sightings (2001-2009).

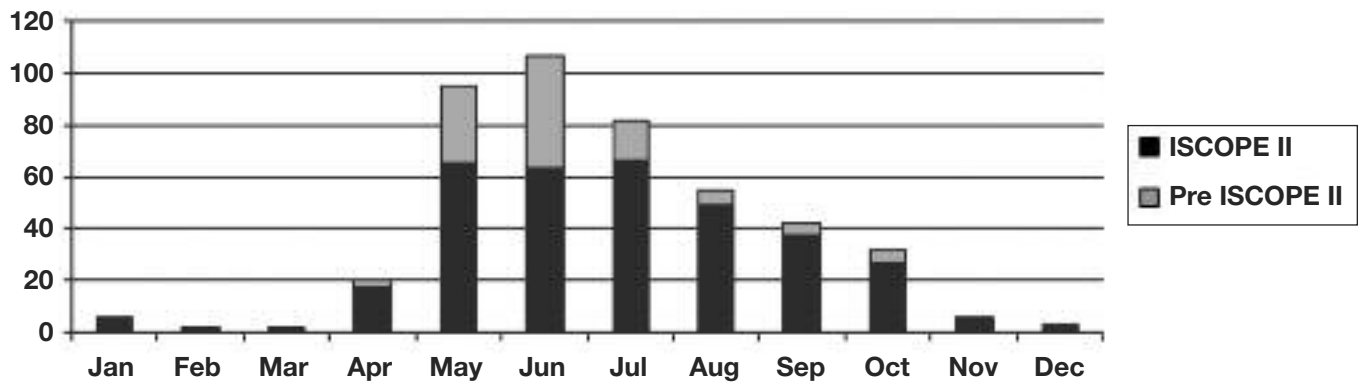


Figure 78. Monthly distribution of Risso's dolphin sighting records (n=452).



Pod of killer whales in Broadhaven Bay, Co Mayo, July 2009. **Photograph** © Lieutenant Alan O'Regan (on the *LÉ Ciara*).

Killer Whale (*Orcinus orca*)

Cráin Dhubh

The killer whale was occasionally sighted, with 117 records (1%) of a total of 313 individuals. As would be expected of any apex predator, killer whale sightings were infrequent in most areas, reflecting their long-range foraging requirements. Although killer whales were reported in all waters, sightings data suggest that the west, southwest and north coasts including the North Channel have a higher proportion of sightings than southeast and east coasts. The highest number of killer whale sightings was from Co Cork. Recent photographic evidence shows a movement of killer whales between Scotland and Ireland of a group known as the “West Coast Community” whose core area is the Hebrides. Small

group size averages of around three individuals and their preference for offshore islands, combined with research from Scotland, all suggest that at least some killer whales in Irish waters are “transient” ecotype and are possibly marine mammal eaters. Since 1918, only fourteen stranding records have been received, representing a mere 0.7% of total cetacean strandings during this time. Strandings have only been recorded on the north, west and south coasts and there are no live strandings on record. Strandings have been recorded from six months of the year, namely December (5), June (3), July (3), March (1), August (1) and September (1).

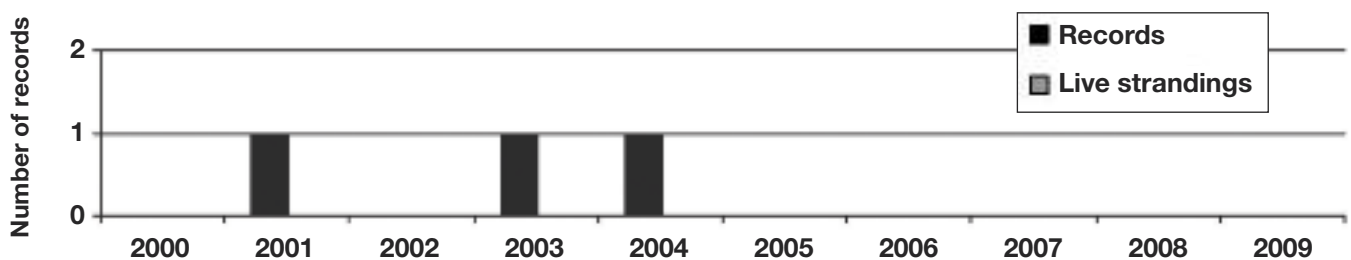


Figure 79. Yearly distribution of killer whale records 2000-2009.

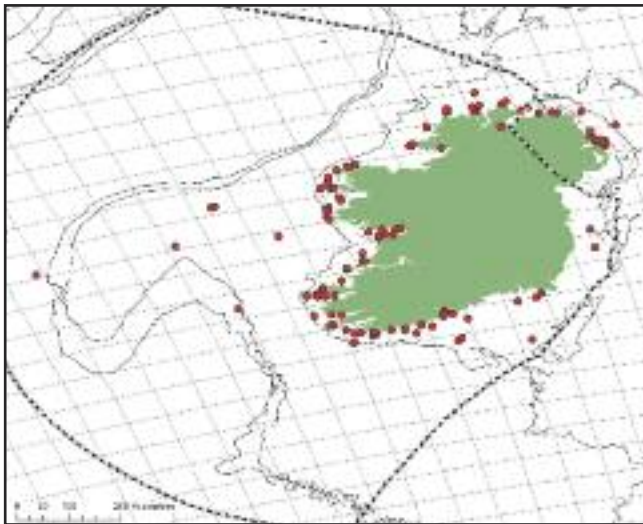


Figure 80. All IWDG casual sightings up to 2009.

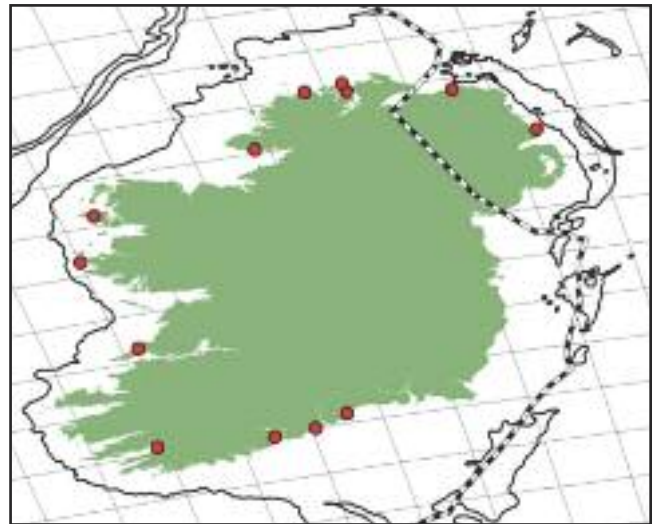


Figure 81. All stranding records up to 2009.

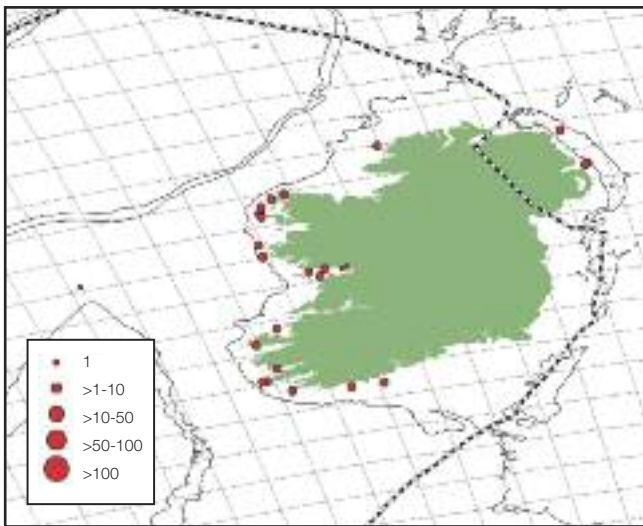


Figure 82. All casual sightings from ISCOPE II (2006-2009).

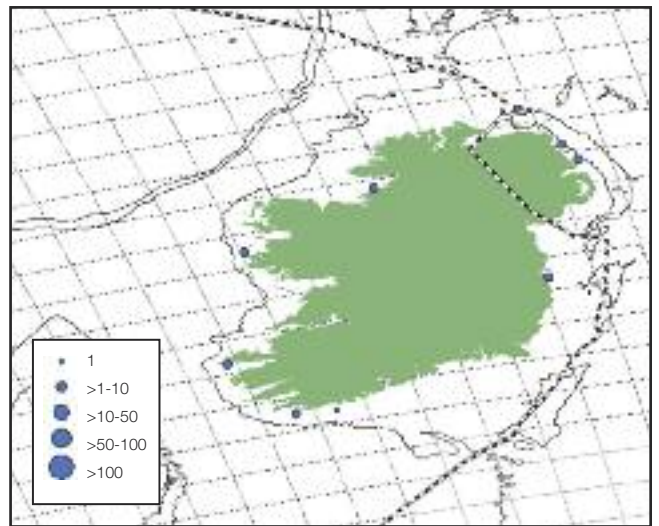


Figure 83. All effort related sightings (2001-2009).

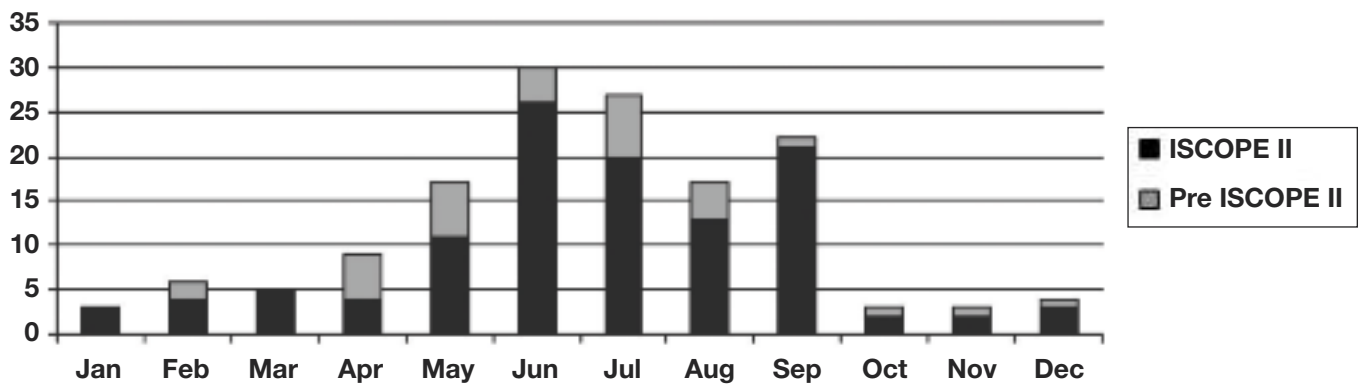


Figure 84. Monthly distribution of killer whale sighting records (n=146).



Long-finned pilot whales off Castlegregory, Co Kerry. **Photograph** © Simon Berrow/IWDG.

Long-finned Pilot Whale (*Globicephala melas*) **Píolótach Fadeiteach (Míol Píolótach)**

The long-finned pilot whale was regularly reported with 89 validated sightings (1.0%) of a total of 1,162 individuals. Most pilot whale sightings were from the shelf edge and in deep water beyond the continental shelf. They were less frequently recorded from inshore waters. Inshore sightings are biased towards the southwest and may be associated with live stranding events. Gregarious in nature, average group size of this second largest member of the dolphin family was 14. There were 161 stranding records of a total of 213 individuals including a number of mass live strandings. A mass stranding in 2001 of around 40 individuals in north Kerry was the largest

mass stranding of any species in Ireland since the 1960s. A second mass live stranding occurred in 2009 near the same site in north Kerry. Pilot whales have been stranded on all coasts but mainly along the western seaboard and between counties Kerry and Mayo. The number of strandings of this species has increased since the 1960s and has continued to increase over the last ten years. This trend has also been reported from Scotland and is consistent with other deep diving species. There was a peak in records between February and April which accounted for 41% of all records.

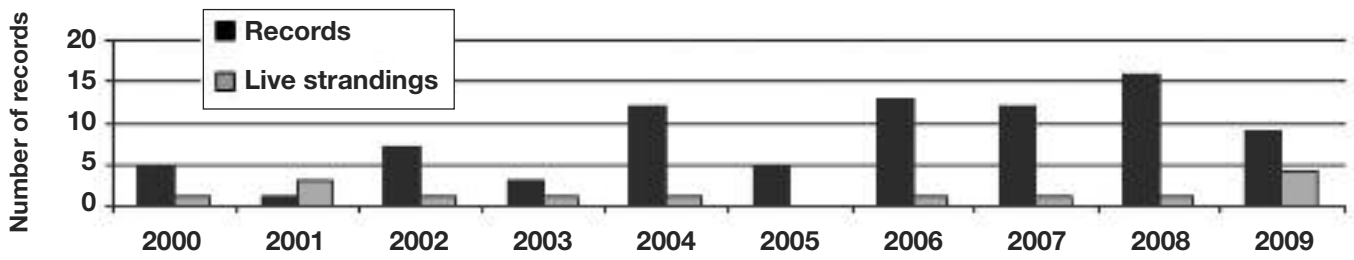


Figure 85. Yearly distribution of long-finned pilot whale records 2000-2009.

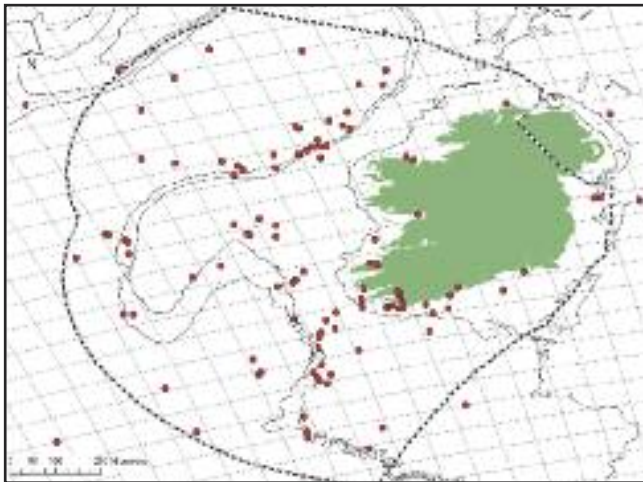


Figure 86. All IWDG casual sightings up to 2009.

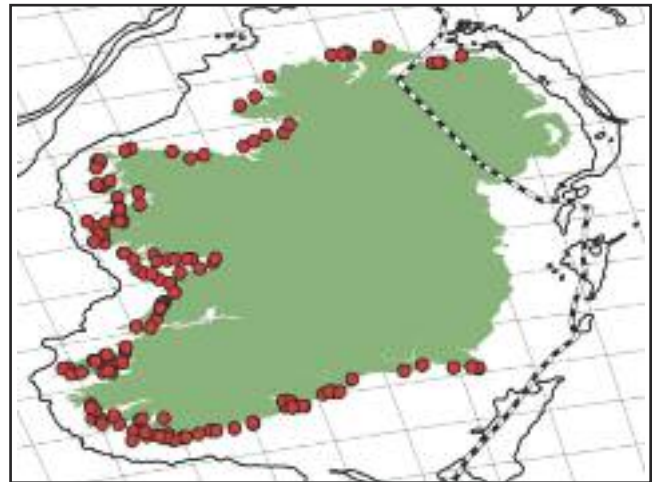


Figure 87. All stranding records up to 2009.

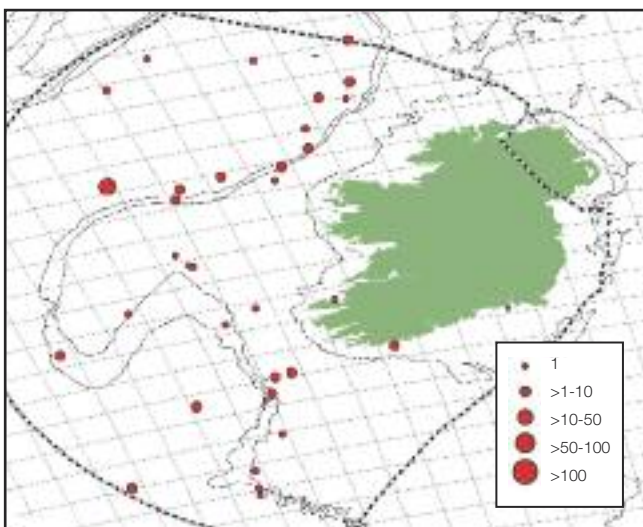


Figure 88. All casual sightings from ISCOPE II (2006-2009).

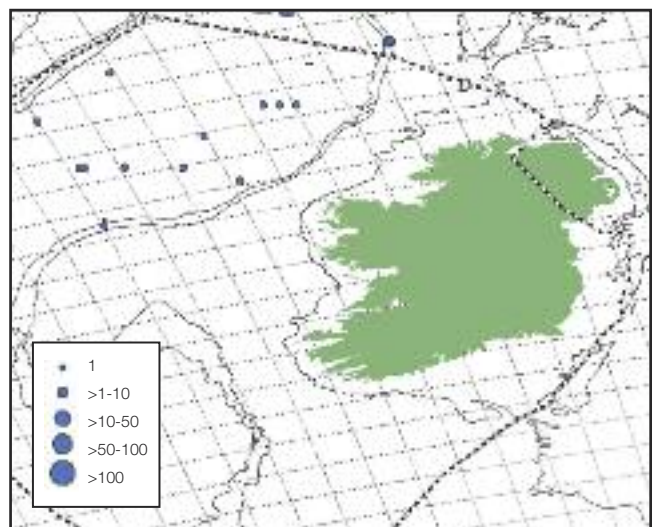


Figure 89. All effort related sightings (2001-2009).



Harbour porpoise, River Bann, Co Derry. Photograph © Geoff Campbell.

Harbour Porpoise (*Phocoena phocoena*)

Muc Mhara

The harbour porpoise was the most frequently reported species sighted in Ireland with 3,731 sightings, representing 37% of all records. The total number of animals reported was 15,400 individuals with an average of 4.1 animals per sighting. They were the most widespread of any species in Ireland, observed in all inshore waters around the entire coastline. Almost all records were within 10km of the coast and they were only very occasionally reported in offshore waters. Most records (52%) were reported between June and September, but this is likely to reflect seasonal effort, as at several well watched sites harbour porpoise sightings can remain high into

autumn and early winter. The lowest abundance was in the spring, when it is thought that this species may move offshore to calve. It was also consistently the most frequently stranded species in Ireland. They have stranded on all coasts but there are concentrations along the south and east coasts. There was a peak during the winter from December to March which accounted for 50% of all stranding records. Stranding records showed a consistent trend, with around thirty records per annum. There was a noticeable decrease in records in 2005 and 2006. They occasionally live strand.

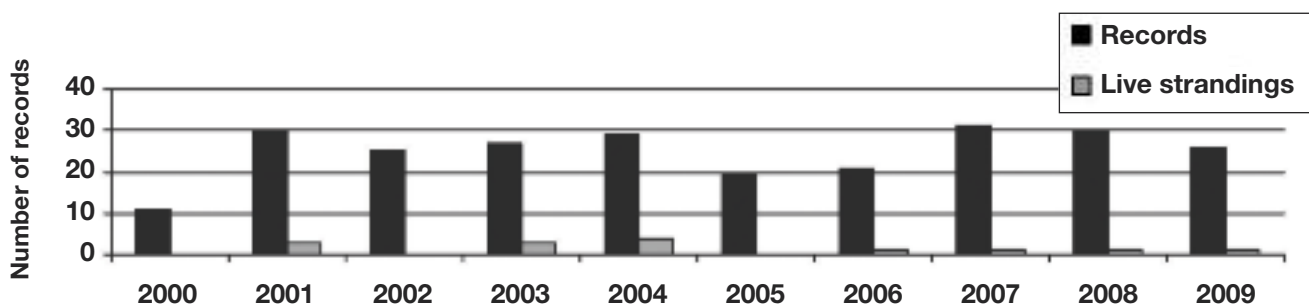


Figure 90. Yearly distribution of harbour porpoise records 2000-2009.

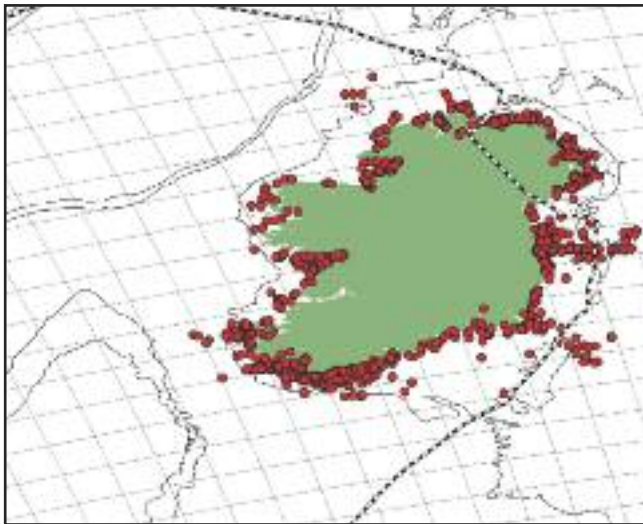


Figure 91. All IWDG casual sightings up to 2009.

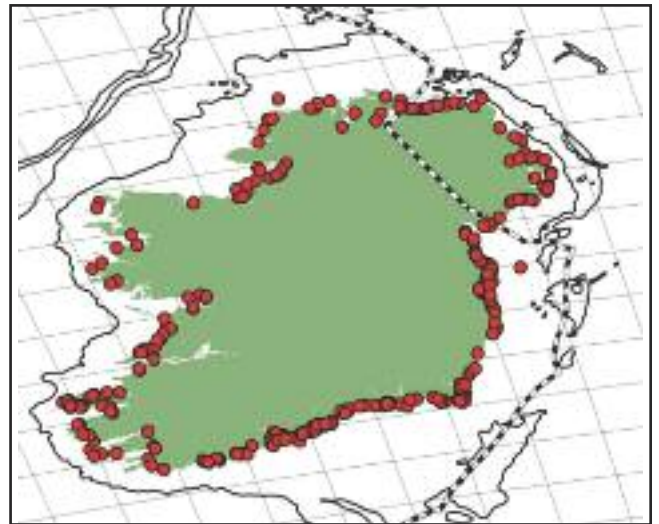


Figure 92. All stranding records up to 2009.

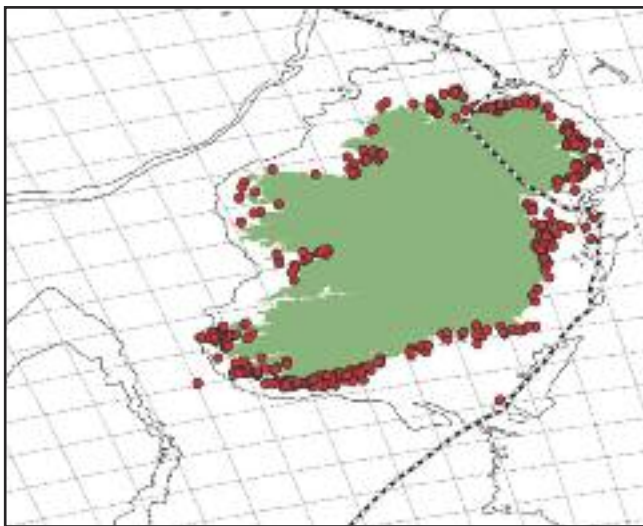


Figure 93. All casual sightings from ISCOPE II (2006-2009).

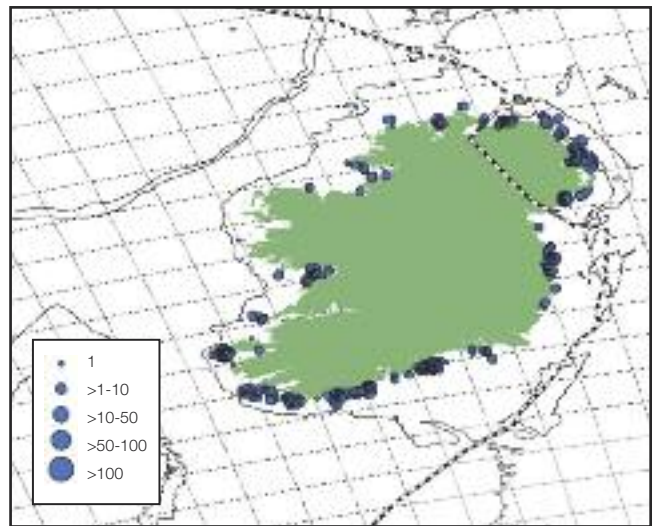


Figure 94. All effort related sightings (2001-2009).

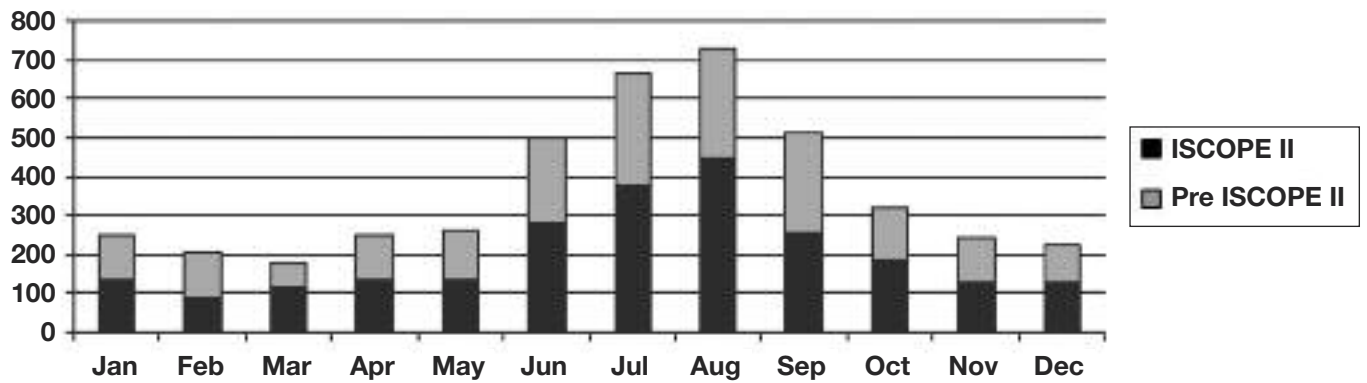


Figure 95. Monthly distribution of harbour porpoise sighting records (n=4,353).

Effort watches

In 1991, the Irish Whale and Dolphin Group established a cetacean sighting scheme throughout the island of Ireland, which included the collection of land-based effort related sightings data from a diverse range of contributors including members of the public and the research community. In this scheme the time spent looking for cetaceans was recorded, along with the environmental conditions.

Under ISCOPE, the constant effort recording scheme was incorporated into the Inshore Cetacean Monitoring Programme through developing a systematic methodology with strict protocols. Around 30% of all land-based sightings now have associated effort.

The IWDG receives data from effort watches from 50-60 sites per annum, and 14 of these sites were chosen for the Inshore Cetacean Monitoring Programme as they provided good geographical coverage. These sites are watched each month in suitable sea conditions. Information from other sites is useful in identifying areas which may have important inshore concentrations of cetaceans at certain times of year.

Species recorded

Eight species have been recorded by the Inshore Cetacean Monitoring Scheme (Table 1). Four of these species (harbour porpoise, short-beaked common dolphin, bottlenose dolphin and minke whale) have been recorded at a wide range of sites, with harbour porpoise occurring at all sites. Other species such as fin and humpback whales are restricted to the south and southwest sites.

The most species were recorded at Galley Head, followed by Sleas and Ram Heads. Portmuck Island, with five species, was the most diverse site in Northern Ireland. Overall, cetacean abundance was greatest in the southern region, with similar abundance in eastern and western regions and least abundance in the northern region.

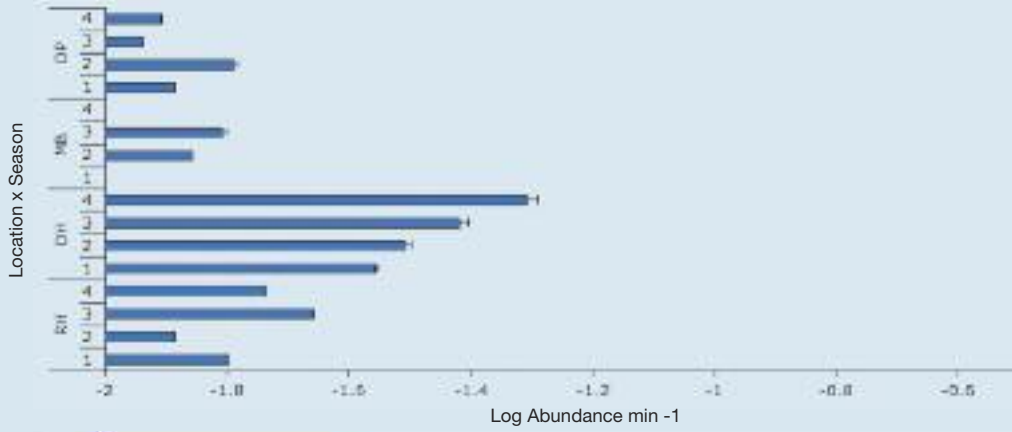
Cetacean abundance varied significantly depending on location, year and season. At a finer scale, analysis indicated that cetacean abundance varied between seasons within the same locations, and varied between years within the same locations, but not within seasons between years, i.e. the

Table 1. Occurrence of each species* recorded during effort watches at key effort watch sites.

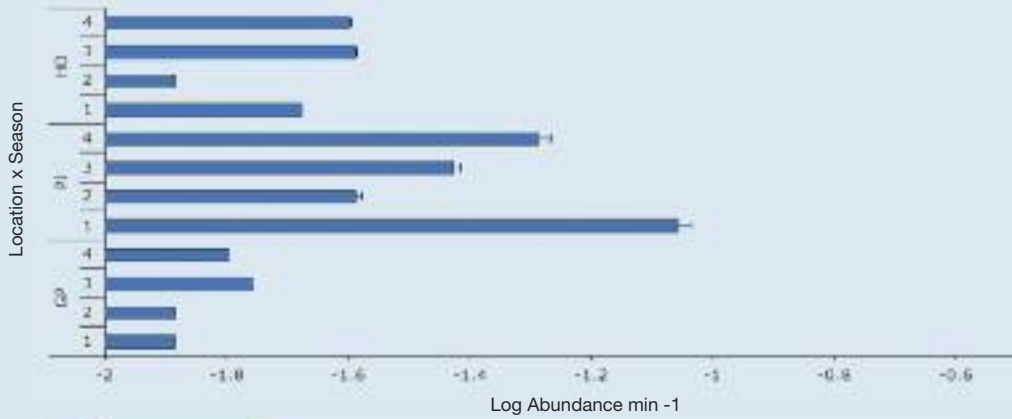
Site	HP	CD	BND	RD	KW	MW	FW	HW
Howth Head, Co Dublin								
Hook Head, Co Wexford								
Ram Head, Co Waterford								
Galley Head, Co Cork								
Castle Point, Co Cork								
Slea Head, Co Kerry								
Loop Head, Co Clare								
Black Head, Co Clare								
Downpatrick, Co Mayo								
Malin Beg, Co Donegal								
Dunree Head, Co Donegal								
Ramore Head, Co Antrim								
Portmuck Island, Co Antrim								
Bloody Bridge, Co Down								

*HP = Harbour porpoise, CD = Common dolphin, BND = Bottlenose dolphin, RD = Risso's dolphin
KW = Killer whale, MW = Minke whale, FW = Fin whale, HW = Humpback whale

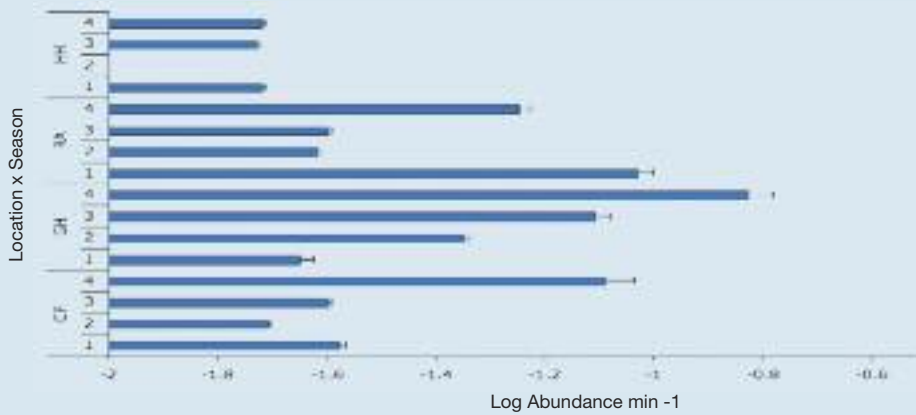
(a) North sites



(b) East sites



(c) South sites



(d) West sites

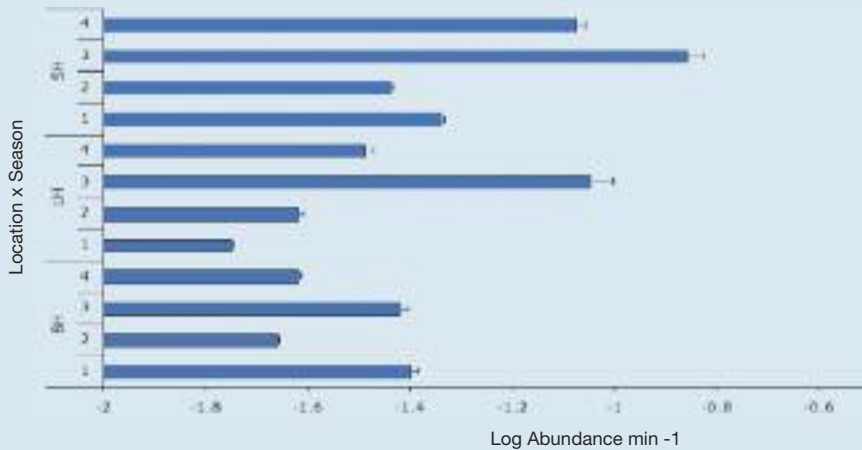


Figure 96. Mean log abundance/min at each location by season. Data shown are separated to indicate differences within region **(a)** north, **(b)** east, **(c)** south and **(d)** west. Season data shown are **1** = Winter, **2** = Spring, **3** = Summer, and **4** = Autumn. **Location abbreviations:** Ramore Head (RH), Dunree Head (DH), Malin Beg (MB), Downpatrick (DP), Grey Point (GP), Portmuck Island (PI), Howth Head (HO), Castle Point (CP), Galley Head (GH), Ram Head (RA), Hook Head (HH), Black Head (BH), Loop Head (LH) and Slea Head (SH). Data for species and year are pooled. Sightings of -2.0 indicate no sightings. Number of sightings increase as values tend towards 0. Error bars indicate one standard error.

seasonal trends were consistent between years. Also, there was no significant variation in this seasonal abundance within sites, suggesting that these seasonal trends were also consistent at all sites within a region.

Cetacean numbers have varied over time, with the greatest numbers observed in 1999 and the fewest in 1993 and 2001. However, the total number of watches prior to 2005 was generally low, so the data must be treated with caution. In the years since 2002 the mean sighting rate of cetaceans has been relatively consistent, irrespective of the increase in overall effort. This suggests that present watch effort is sufficient to establish overall trends in cetacean abundance in Irish coastal waters and is actually greater than required.

Sightings in 2001 were poor despite similar, albeit low, overall sightings effort to 1999 and 2000. Sighting rates from 2002 to 2009 were quite consistent, with peaks in 2003 and 2007. These peaks suggest that cetacean abundance was greater inshore during these years.

Site summaries

Sighting rate increased along the south and southwest coasts before declining in the northwest and increasing slightly along the north coast. A similar trend occurred with the number of animals per hour watched. However, both sighting rate and animal abundance were less than expected off Castle Point, which probably reflected that this site looks into a bay (Roaringwater Bay cSAC) rather than looking into the open ocean. Relative abundance off Ramore Head, Co Antrim, was also slightly less than might be expected from adjacent sites.

Howth Head, Co Dublin

Howth Head is a headland northeast of Dublin city. Originally an island, it is connected to the mainland via a narrow strip of land and forms the northern boundary of Dublin Bay, roughly corresponding to Killiney Head in the south of the bay. At the watch site, water depth off the headland drops rapidly to 35m. The first watch from this site was carried out in June 1994. Since then, a total of 134 watches have been completed up to 2009 with 187.1 hours of watch effort. Sightings were made on 79 watches (59%) and 79 sightings were made in total. All

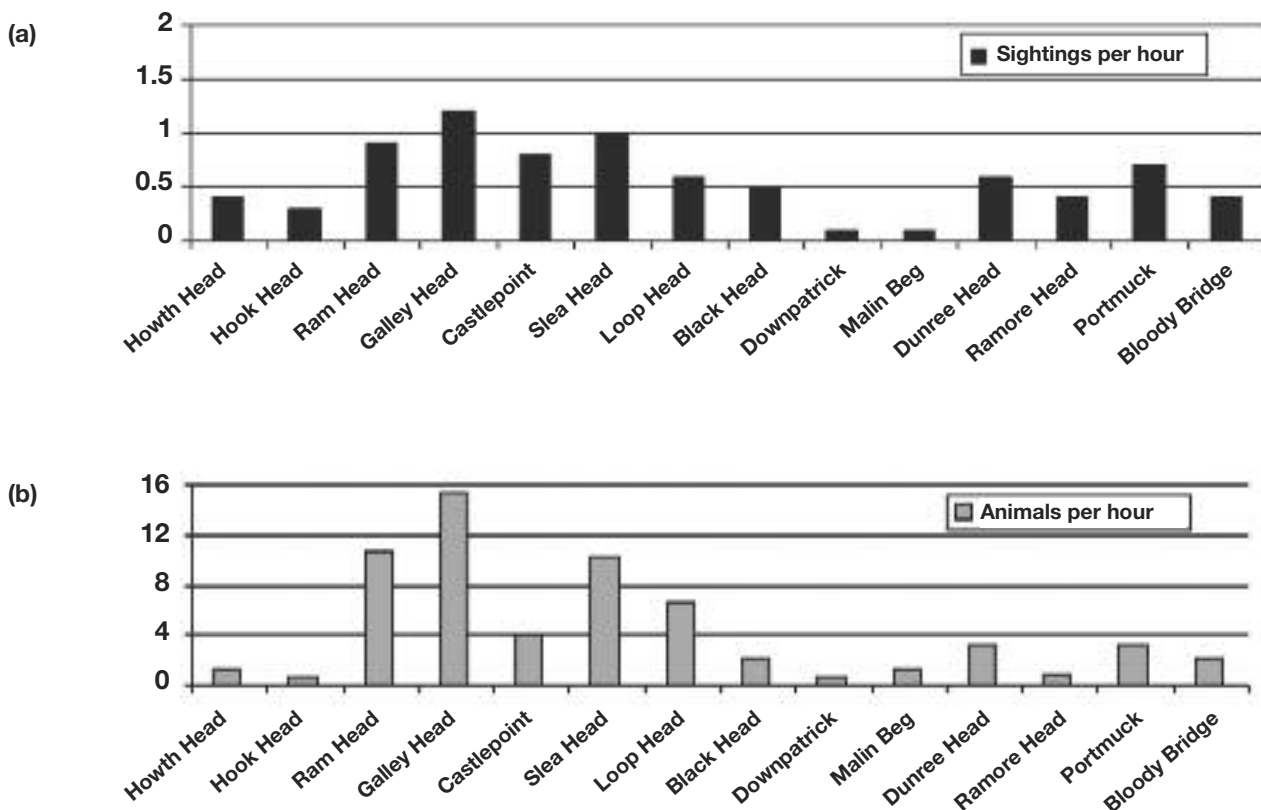


Figure 97. Cetacean sighting rate per hour (a) and relative abundance (b) for all species in all sea conditions combined.

were of harbour porpoise except for one sighting of six bottlenose dolphins and one sighting of a single minke whale. Over the last five years, harbour porpoise have been recorded throughout the year except in May and June, which reflects a general decline in sightings inshore of harbour porpoise during this period, which is thought to be associated with calving. The proportion of watches with sightings has declined from more than 80% between 1994-96 to 40-60% between 2005-2009 but has increased each year from 2005 to 2009.

Of the 134 watches recorded, 26 were carried out in sea-state 3 and 18 in sea-state 4. These records were eliminated from the analysis. A Kruskal-Wallis test was carried out on the mean sighting rate of harbour porpoise across years 1994-96 and 2005-09. This showed that the mean sighting rate was not significantly different despite a reduction in sighting rate during the latter period. This change may have been influenced by changes in observers at this site. However, although the proportion of watches with sightings of harbour porpoises has increased between 2005 and 2009, there was no significant difference in sighting rate over the last five years.

Hook Head, Co Wexford

Hook Head is a headland on the Hook peninsula, located on the east side of the estuary of the Three Sisters rivers (the Nore, Suir and Barrow). Hook Head is the oldest lighthouse in Ireland and one of the oldest in Europe still operating. At the watch site, water depth off the headland drops gently to 35m. Watches have been carried out from Hook Head since July 2002 but only in years 2005-2006, 2008 and 2009 has there been a reasonable level of watch effort. There have been 42 watches carried out, with a total of 21 sightings made on 15 watches (36%). No sightings were reported in 2008. At least five species have been recorded, with harbour porpoise (53%) the most frequently recorded, followed by short-beaked common dolphin (19%), and single sightings of minke, fin and humpback whales. There was insufficient data for further analysis.

Ram Head, Co Waterford

Ram Head is a small headland on the east side of Youghal Bay on the border between counties Cork and Waterford. It provides excellent views into the Celtic Sea. The watch site



WhaleWatch Ireland Day, Howth Head, Co Dublin, 2008. **Photograph** © Dave Wall/IWDG.

water depth off the headland drops gently to 30-40m. This is presently one of the best watched sites in Ireland, with a total of 269 watches carried out since August 2004. Sightings were recorded on 167 watches (62%). The proportion of watches with sightings has remained remarkably high and consistent, ranging from 68% to 86% of watches each year, with a slight peak in 2007. Of the 367 sightings made, most (37%) were of harbour porpoise, followed by short-beaked common dolphin (28%), fin whale (16%) and minke whale (5%). Another three species – bottlenose dolphin (2 sightings), Risso's dolphin (3 sightings) and humpback whale (9 sightings) – were also recorded. Harbour porpoise and short-beaked common dolphin have been reported in all months over the last five years, minke whales from April to November and fin whale mainly from November to February. There has been an increase in the proportion of watches with harbour porpoise and short-beaked common dolphin sightings and a decline in minke whales, while fin whale sightings are quite consistent. There were 117 watches carried out in sea-state ≥ 3 , which have been removed from the analysis. Sighting rates for harbour porpoise have increased significantly and were significantly elevated in 2007 and 2009. Short-beaked common dolphin sighting rates also increased significantly through the survey period. The sighting rate for fin whale was stable over the last six years. Fin whales were recorded in each year surveyed, with an increase in sighting rate in 2005, but this was not significant. The numbers of sightings of other species were too few for analysis.

Galley Head, Co Cork

Galley Head Lighthouse is situated on the Galley Head in the very heart of west Cork at about 130 feet above sea level, overlooking Red Strand to the east and the Long Strand to the west. At the watch site, water depth off the headland drops rapidly to 20-25m, then slopes gently to 40-50m. The first watch from Galley Head was carried out in August 1993 but watching started systematically in 2003. Between 1993 and 2009 a total of 178 watches were carried out. Sightings were recorded on 134 of watches (75%) with 269 sightings made of at least eight species. The harbour porpoise was the most frequently recorded species (30%), followed by short-beaked common dolphin (19%) and fin and minke whale (both 16%). There were also six sightings of humpback whale, four of Risso's dolphin and single sightings of bottlenose dolphin and killer whale. Harbour porpoise were recorded in all months except December to February, short-beaked common dolphin and minke during summer and autumn and fin whale from

August to January. The proportion of watches with sightings has declined from around 80% during 2003-2007 to 40-50% in 2008 and 2009. Sea-state 3 or more was reported on 38 watches, but when removed, the trend was still apparent, with lower sighting rates during the last two years. There was a significant decrease in sighting rates for harbour porpoise, although the rate for 2004 was significantly greater than 2008, which reflects the overall decline. Even though sample sizes between 2006 and 2008 were small, the trend from 2003 to 2005 with larger samples sizes was consistent. There was a decrease in sighting rates of short-beaked common dolphin, but this was not quite significant. Sighting rates for fin whales were significantly different over the period 2003-2009, but although the rate in 2004 was elevated it was not significantly elevated compared with other years. Minke whale sighting rates were consistent throughout the period 2003-2008. Why there was a decline in harbour porpoise sightings at Galley Head, which was not recorded at adjacent sites, is not clear and only further monitoring will show if this trend is consistent.

Castle Point, Co Cork

Castle Point is on the north side of Roaringwater Bay. It offers the only vantage point overlooking Roaringwater Bay, which is designated as a candidate Special Area of Conservation (cSAC) for harbour porpoise. Water depth in the inner bay is relatively shallow, at 20-30m. Surveys started at this site in January 2005. Since then, 56 watches have been carried out with sightings made on 32 (56%) of watches. The proportion of watches with sightings has been quite consistent, with an increase in 2006, which probably reflects the low number of watches (6) rather than a real increase in abundance. From a total of 72 sightings, at least four species have been recorded from Castle Point, with harbour porpoises (64%) the most frequently recorded species followed by minke whale (18%), short-beaked common dolphin (10%) and fin whale (4%). Harbour porpoise were recorded throughout the year, short-beaked common dolphins were recorded during winters 2006, 2008 and 2009 and minke whales in summer and autumn 2006-2008. Three sightings of a total of six fin whales were all made on the same day in November 2007. Sighting rates for harbour porpoise were very consistent, with no evidence of a change over the survey period.

Slea Head, Co Kerry

Slea Head offers a fantastic vantage point overlooking the southern end of Blasket Sound and across to the Blasket Islands cSAC, which is designated for harbour porpoise. At

the watch site, water depth off the headland drops rapidly to 30-40m. Sleea Head is the most frequently watched site in Ireland, with 293 watches carried out since 1999. A total of 564 sightings have been made of seven species. The proportion of watches with sightings is very consistent and remarkably high, especially since 2004 when the number of watches per annum increased dramatically. Sightings were recorded on over 80% of watches carried out in sea-state 2 or less. Harbour porpoise (42%) was the most frequently observed species, followed by minke whale (34%), short-beaked common dolphin (13%), bottlenose dolphin (4%), Risso's dolphin (1%) and fin whale (two sightings). Harbour porpoise have been recorded throughout the year, with minke whales recorded from March to December, short-beaked common dolphin from February to October, Risso's dolphins during the summer and bottlenose dolphins sporadically. There were 106 watches in sea-state ≥ 3 which were removed from the analysis. The proportion of watches carried out in sea-state ≤ 2 with sightings of harbour porpoise was also high, though this has declined over the last two years. The proportion of watches with minke whales increased through 2004 to a peak in 2007 before a decline since 2008, while the

proportion of watches with short-beaked common dolphin sightings also peaked in 2007 and 2008 and declined in 2009. There were no significant differences in sighting rates of harbour porpoises between 2004 and 2009 nor of short-beaked common dolphins between 2006 and 2009. There was a significant variation in sighting rates of minke whales between 2004 and 2009, with an elevated sighting rate in 2007.

Loop Head, Co Clare

Loop Head extends to the west with the approaches to the River Shannon to the south and the Atlantic seaboard of Co Clare to the north. The Shannon plume where the River Shannon mixes with the Atlantic can be clearly seen extending to the west. Water depth drops rapidly to 60-70m. The first watch from Loop Head was carried out in January 1994 but coverage has been good since 2006. Since then, 89 watches have been carried out with sightings on 60% of watches. A total of 78 sightings have been recorded of at least six species. Most sightings were of bottlenose dolphin (31%), short-beaked common dolphin (27%), minke whale (18%) and harbour porpoise (13%), with single sightings of Risso's



Whalewatching at Ram Head, Co Waterford, February 2005. **Photograph** © Pádraig Whooley/IWDG.

dolphins and a humpback whale and two sightings of large whale sp. Bottlenose dolphins were recorded in most months, with short-beaked common dolphins and minke whale mainly in the late summer and autumn. The proportion of watches with sightings varied considerably, with no sightings on effort in 2001 and only one watch with sightings in 2004. This is due to the low number of watches carried out in these years. Where there was a good number of watches, the proportion on watches with sightings is quite consistent. There were 20 watches carried out in sea-state 3 or greater and these have been excluded from the analysis. A Kruskal-Wallis test was carried out on the sighting rate for bottlenose and short-beaked common dolphins. There was a significant increase in the sighting rate of bottlenose dolphin between 2003 and 2009, with the increase since 2007. There was no significant change in the sighting rate of short-beaked common dolphin between 1999, 2003 and 2005-2009. There were too few sightings to carry out a similar analysis on other species. The proportion of watches from Loop Head with sightings of bottlenose dolphins increased dramatically during 2009. Of the 16 watches carried out in all sea-states, bottlenose dolphins were recorded on 11 (69%). No harbour porpoises were recorded during 2009 despite good sea conditions.

Black Head, Co Clare

Black Head is a low-lying limestone headland at the northwest tip of the Burren, Co Clare. Water depth off the headland drops quickly to 25m, causing a local upwelling. A small lighthouse is situated at the site, which is popular with shore anglers. Ninety watches have been carried out from Black Head since January 1996. Coverage has been good since 2005. Sightings were recorded on 69% of watches overall. A total of 74 sightings have been recorded. Most (77%) were of harbour porpoise, with bottlenose (9%) and short-beaked common dolphin (8%) also occurring. The proportion of all watches and those in sea-state <2 with sightings was quite consistent, with peaks evident in 2006, 2007 and 2009. Harbour porpoise have been recorded throughout most of the year with short-beaked common and bottlenose dolphin sporadically. There were 11 watches carried out in sea-state ≥ 3 which have been excluded from the analysis. There was no significant change in sighting rates between 2002 and 2005-2009 or from 2005-2009.

Downpatrick Head, Co Mayo

Downpatrick head is a significant headland on the rugged

north Mayo coast. It extends into the sea just to the west of Killala Bay and provides an excellent site for monitoring the presence of cetaceans along this coast. Water depth off this rocky headland falls rapidly to 50-60m. There have been 47 watches carried out at Downpatrick Head since March 2005, with sightings on 23% of watches in all sea conditions. Despite this low sighting rate, four species have been recorded. Of the eleven sightings, there were three each of bottlenose dolphins and harbour porpoise and four minke whale single sightings with a single sighting of Risso's dolphin. There were 20 watches carried out in sea-state 3 or more, leaving 27 watches in sea-state 2 or less. This was too little data to carry out any further analysis.

Malin Beg, Co Donegal

Malin Beg is situated on the Slieve League peninsula at the most westerly point of Co Donegal. To the south is Donegal Bay. Although quite low-lying for the area, it provides a great watching site into the Atlantic. Water depth at the watch site falls rapid to 40-60m. Since the first watch in April 2004, 34 watches have been carried out from Malin Beg with no watches since August 2008. There have been only five sightings in total: three harbour porpoise sightings and two sightings of short-beaked common dolphin. Over one-half of watches (56%) were carried out in sea-state ≥ 3 , which may explain the low sighting rate. The small number of sightings and the low number of watches carried out in sea-state ≤ 2 means it is not feasible to carry out any further analysis of the data from this site.

Dunree Head, Co Donegal

Dunree Head is a small headland that extends into Lough Swilly about halfway between Dunaff Head and Buncrana. It is a popular site as an old military barracks occurs with a visitor centre. It is a good location for recording species which might enter Lough Swilly. The water depth off Dunaff Head drops quickly to only around 20m. Dunree Head in Lough Swilly has been watched since February 2005. Since then, 45 watches have been carried out, with 42 sightings, all of which bar five were of harbour porpoise (88%). Two bottlenose dolphin sightings were made in 2008 and one in 2009. There was one short-beaked common dolphin and one minke whale sighting in 2009. Harbour porpoise have been recorded in all months, with an annual occurrence of between 71-83% of watches. Eleven watches were carried out in sea-state ≥ 3 . There has been no change in sighting rates of harbour porpoise in sea-state ≤ 2 between 2005 and 2009.

Ramore Head, Co Antrim

Ramore Head is the end of a one mile long basalt peninsula that the town of Portrush rests on. The headland rises around 30-60m from where you can see Portrush and the Skerries to the east and Inishowen on the Donegal mainland to the west. Water depth is quite shallow, dropping gently to 25-30m. Since January 2004, a total of 151 watches have been carried out from Ramore Head. There have been 89 sightings, with harbour porpoise by far the most frequently observed (91%), followed by minke whale (5%) and Risso's dolphin (1%). Harbour porpoise were recorded in eleven months, only not recorded in January. They occurred in between 45 and 90% of months each year. Bottlenose dolphins were only recorded on two occasions in 2009 and Risso's dolphin in July 2007, with minke whales recorded on two occasions, both in the summer. The proportion of watches with sightings has remained quite consistent, with a small peak in 2006. Since the first year, when sightings were made on only 20% of watches, the encounter rate has been quite consistent with sightings on between 33-68% of watches. Fourteen watches were carried out in sea-state ≥ 3 and these were removed from the analysis. There was no significant change in sightings rates, and although there was an increase in 2006 it was not significant.

Portmuck, Co Antrim

Portmuck is situated on the northeast side of Islandmagee. It has good views across the North Channel and the Maidens. Cetaceans moving through this channel entering and leaving the Irish Sea should be detected in good sea conditions. Water depth drops off steeply to over 100m. Since December 2003 a total of 67 watches were carried out, with 42 in sea-state ≤ 2 . A total of 69 sightings were recorded, mainly harbour

porpoise (93%) but also short-beaked common, bottlenose and Risso's dolphins and minke and killer whales. Harbour porpoise were recorded on between 67 and 100% of watches carried out each year and were recorded in all months. All other species were only rarely recorded. Bottlenose dolphins were only recorded in November 2004. Interestingly, both single sightings of Risso's dolphin and killer whale were recorded on the same watch in June 2006. Twenty-five watches were carried out in sea-state ≥ 3 which, when removed, do increase the robustness of the data. Sighting rate was consistently high and possibly increasing in recent years though there were very few watches between 2003-05 in sea-state ≤ 2 . There has been no change in sighting rates from 2004 and 2006-2008.

Bloody Bridge, Co Down

Bloody Bridge is a low-lying promontory near Newcastle, "where the Mountains of Mourne sweep down to the sea." It provides a good vantage point into Dundrum Bay. Water depth drops gently to around 25m. There have been 112 watches carried out from Bloody Bridge since November 2003. Sightings effort has been very high since 2006, with 77% of watches carried out over this period. Over one-half (53%) of watches had sightings. Of the 70 sightings made, 91% were of harbour porpoise, which were recorded in all months. Bottlenose dolphin and minke whale sightings were very rare. There were three sightings of unidentified dolphins. The proportion of watches with sighting was consistent, with a peak in 2006. Nineteen watches were carried out in sea-state ≥ 3 and were excluded from the analysis. There was no significant change in the sighting rate of harbour porpoise between 2004 and 2008.



Portmuck, Co Antrim. **Photograph** © Ian Enlander/IWDG.

Species review

Harbour porpoise

The harbour porpoise was the most widespread and frequently recorded species in the Inshore Cetacean Monitoring Programme. They were recorded at all sites, in all regions and throughout the year. The fewest observations were in the spring, except in the south where the minimum was during the winter. Although harbour porpoise were the

most frequently recorded species, there was considerable variability within the data and pronounced local differences within regions. This may be influenced by sea-state as, even in sea-state 2, harbour porpoise can be difficult to observe, especially if there is a swell. There was a consistent seasonal variation in relative abundance on south and east coasts between 2004 and 2008 and low numbers in the north and west in 2004, rising to consistent levels in subsequent years. There has been a steady increase in abundance in the north.

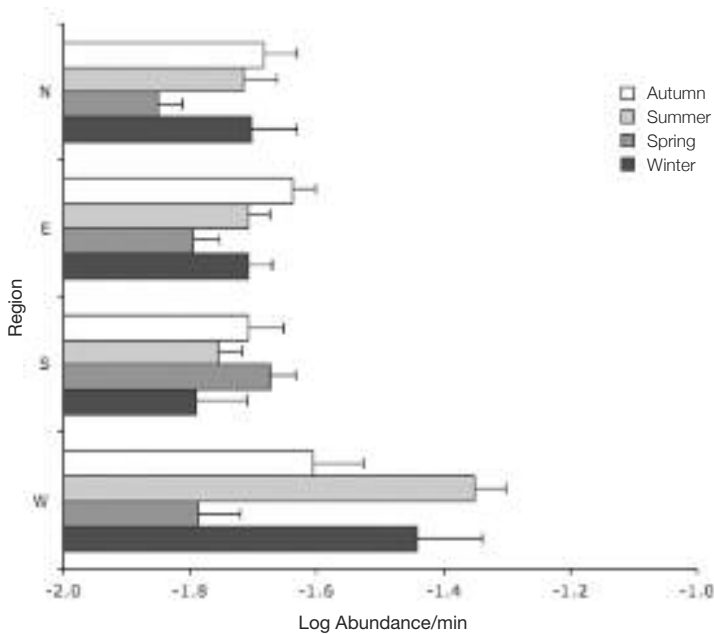


Figure 98. Seasonal abundance (\pm SE) of harbour porpoise in four regions in each of the four seasons.



Harbour porpoise, Blasket Islands, Co Kerry.
Photograph © Randall Counihan/IWDG.

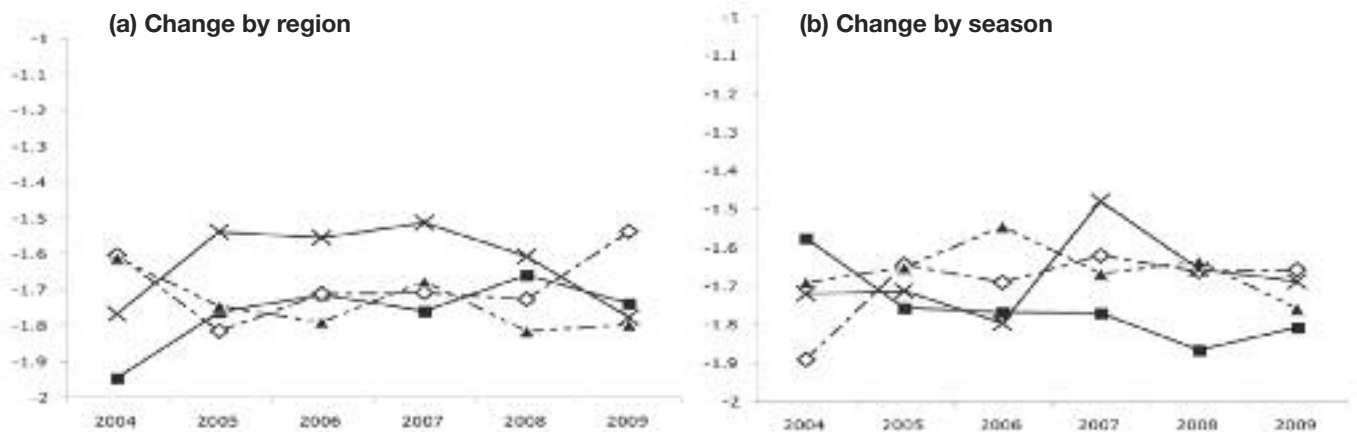


Figure 99. Change in harbour porpoise abundance (log abundance/min \pm SE) by (a) region and (b) season, over time (years). **Squares** = north and spring, **diamonds** = east and winter, **triangles** = south and summer, and **crosses** = west and autumn for (a) and (b) respectively.

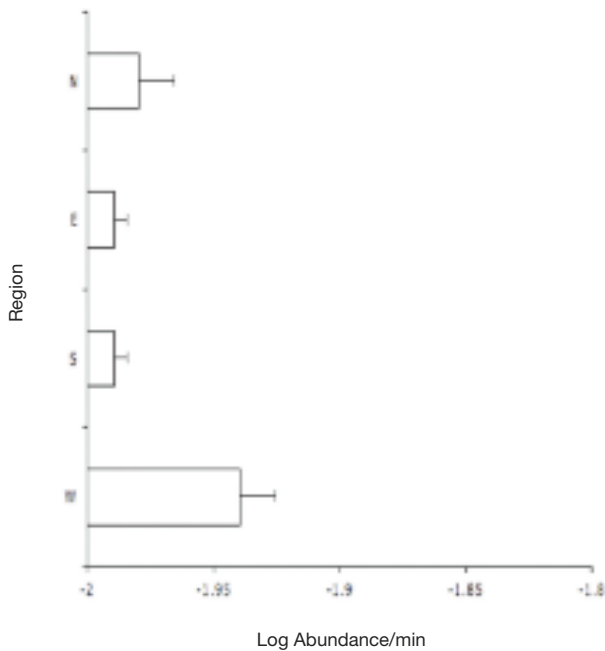


Figure 100. Abundance (\pm SE) of common bottlenose dolphin in each region.

Common bottlenose dolphin

The common bottlenose dolphin is widespread and abundant in inshore waters and was recorded at eight of the 14 sites and in all regions. Greatest relative abundance was reported from Dunree Head, Downpatrick Head, Loop Head and Sleah Head, though data from Dunree and especially Downpatrick Heads were constrained by small number of watches relative to Loop and Sleah Heads. This shows that region is the main

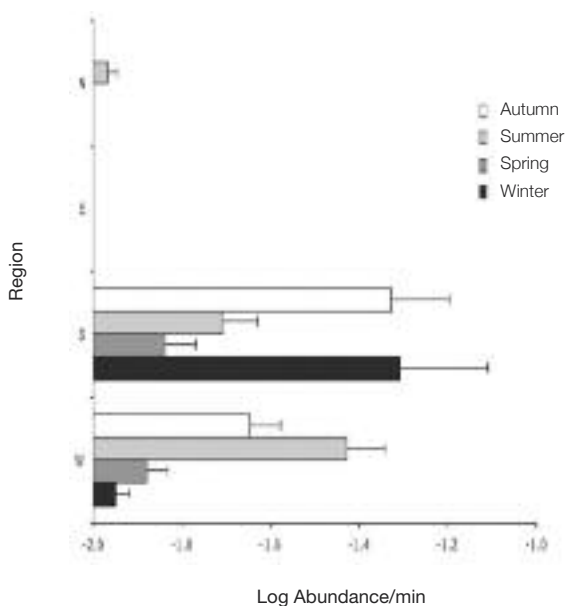


Figure 101. Abundance (\pm SE) of common dolphin in each region and season.

determinate of relative abundance and not season. Bottlenose dolphins were most likely to be observed in the west, with greatest relative abundance also observed in the west.

Short-beaked common dolphin

The short-beaked common dolphin was recorded at seven sites, with six of these between Hook Head and Loop Head and none in the east and at only one site in the northern region. Seasonal and regional trends were consistent across years. In the south, the abundance was similar in autumn and winter but greater than in spring and summer, which showed the lowest abundance. In the west, short-beaked common dolphins were more abundant in the summer, followed by autumn and spring, and were lowest in the winter. Short-beaked common dolphin numbers in the south and west varied greatly between locations. They were occasionally seen in the north, but only at Malin Beg. The greatest abundance of short-beaked common dolphins was in 2005 and 2007 off the south coast and in 2007 off the west coast. There were consistently high numbers in the southern region, with a yearly oscillation. Short-beaked common dolphin abundance has declined in the two regions they are regularly recorded in (south and west coast) during 2009 following a peak in 2007.

Risso's dolphin

Risso's dolphin was recorded at six sites. It was infrequently recorded but found off all coasts but only in small numbers. The highest relative abundance was off Downpatrick Head, Portmuck Island, Galley and Sleah Heads. Risso's dolphins were most commonly seen in summer and none were observed in winter. There was a seasonal component to Risso's dolphin abundance in all regions surveyed.

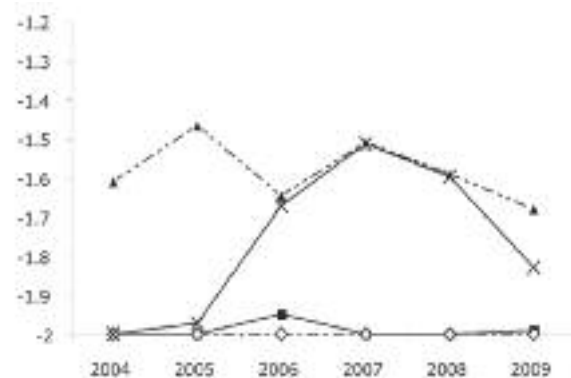


Figure 102. Change in common dolphin abundance (log abundance/min) by region over time (years). **Squares** = north, **diamonds** = east, **triangles** = south, and **crosses** = west.

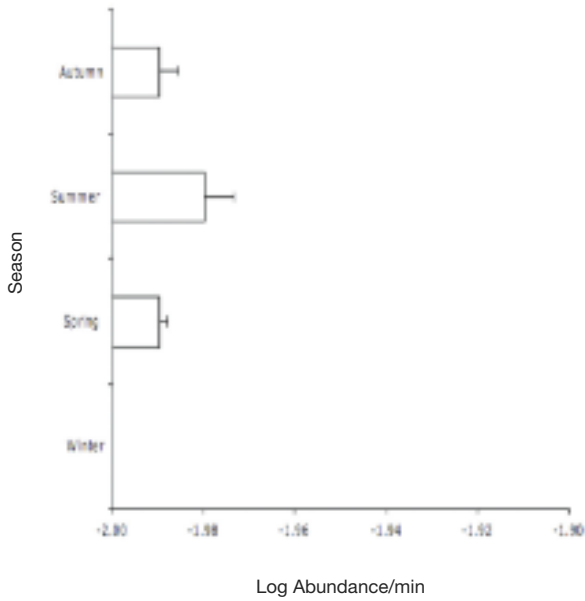


Figure 103. Abundance (\pm SE) of Risso's dolphin in each season.

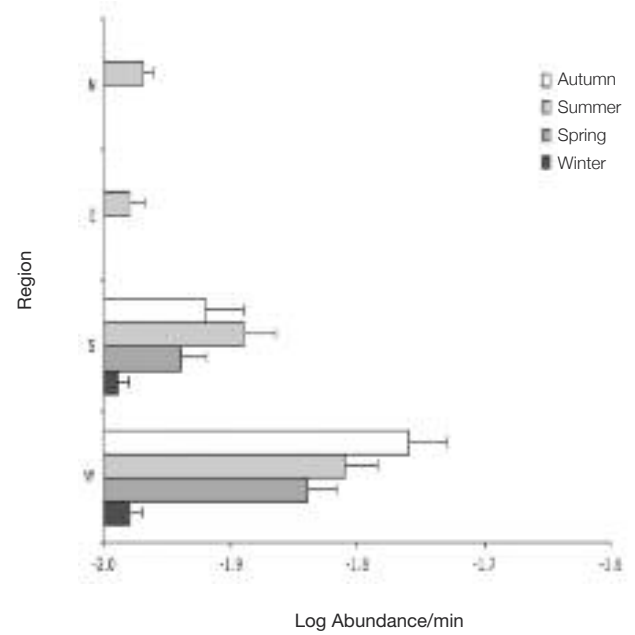


Figure 104. Abundance of minke whale in each region and season, and at each location.

Minke whale

The minke whale is the most frequently recorded baleen whale species in Ireland and was the second most widespread species recorded in the Inshore Cetacean Monitoring Programme. Greatest abundance was recorded in the west. Minke whales were also observed in the south and west during all seasons, although in fewer numbers in the south but

rarely seen in the north and east, and only in summer. There was little regional variation between north, east and southern sites, with few sightings recorded. Minke whales were most likely to be seen at Slea Head. In the west, there was an increase in abundance in 2004 and 2007 followed by a reduction in 2008 to below 2004 levels. Abundance in summer and spring oscillated between years.



Minke whale lunge-feeding off the coast of Cork. **Photograph** © Pádraig Whooley/IWDG.

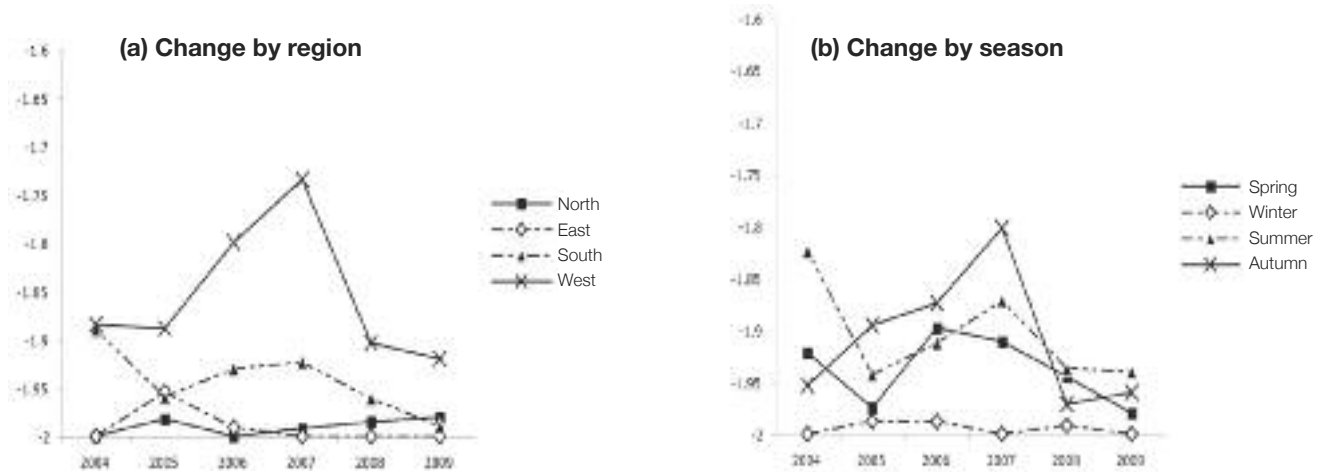


Figure 105. Change in minke whale abundance (log abundance/min) by (a) region and (b) season, over time (years). **Squares** = north and spring, **diamonds** = east and winter, **triangles** = south and summer, and **crosses** = west and autumn for (a) and (b) respectively.

Fin whale

Fin whales are increasingly being recorded inshore along the south and southwest coasts of Ireland. Within the Inshore Cetacean Monitoring Programme, fin whale sightings were restricted to sites between Hook and Sleat Heads. This seasonal and regional variation changes between years. The majority of fin whales were found on the south coast, with only one sighting in the west region, and mostly observed in

autumn and winter, rarely seen in spring and summer. Galley and Ram Heads were the best locations for sightings. There has been a steady decline in relative abundance since 2004 after a peak in abundance in the south in autumn 2004 with numbers greatly reduced in subsequent years. This may actually reflect an unusually high abundance in 2004 rather than a decline, as results from 2005-2009 were relatively consistent.

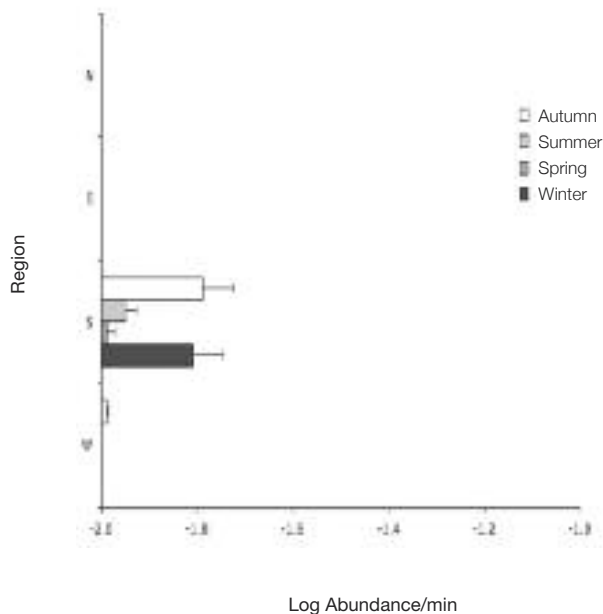


Figure 106. Abundance of fin whale in each region and season.

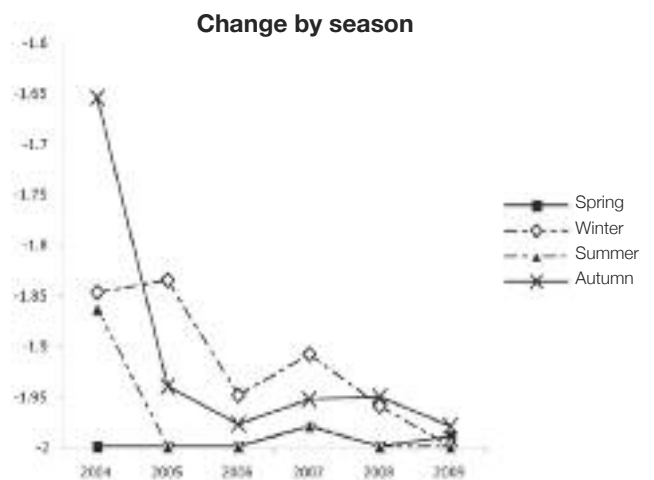


Figure 107. Change in fin whale abundance (log abundance/min) by season, over time (years).

Summary

The Inshore Cetacean Monitoring Programme has demonstrated its ability to detect the variability in the distribution and abundance of cetaceans in inshore waters around Ireland. Significant variations by region, season and year have been demonstrated for a number of species and at a number of watch sites. A longer time series is required to determine trends and thus status, but this review suggests the current Inshore Cetacean Monitoring Programme has sufficient resolution to monitor cetaceans along the coast.

The abundance of frequently recorded cetacean species was highly variable and dependent on several factors, including location, region, year and season. Variable data collection complicates and limits analyses as locations with the fewest data points dictate the power of the analyses and limit the

approaches that can be used. Thus every effort should be made to ensure that all locations are monitored consistently as outlined in the protocol. Data can be stratified by season; thus, if a monthly watch cannot be carried out, providing that three watches are carried out each season then coverage is maintained.

The analyses indicated detection rate and relative abundance were greatly reduced above sea-state 1. So it is essential that watches are carried out in sea-state 2 or less. Watches in higher sea-states may be acceptable to detect large species with large cues, such as fin whales, but these data will not be used for most sites and species.

The Inshore Cetacean Monitoring Programme will be a vital tool to monitor inshore cetaceans into the future.



Common dolphin off the coast of Cork, November 2007. **Photograph** © Pádraig Whooley/IWDG.

Conclusions

The IWDG Stranding and Sighting Schemes have developed rapidly in recent years under the ISCOPE initiative. Around 1,300-1,500 sighting records and 140-150 stranding records are now being submitted per annum. Around 30% of land-based sighting records have related effort (minutes watched). There has also been a rapid increase in offshore records under the Ship Survey schemes.

The cetacean recording schemes also serve to increase awareness and interest in cetacean recording. A sighting of a dolphin or whale can be a memorable event and, through reporting it to the IWDG, the observers get access to a wealth of information and a recording network of which they may previously have been unaware. Some of these casual observers will increase their involvement and contribute to the Inshore Cetacean Monitoring Scheme or carry out offshore surveys.

The use of these data for monitoring the distribution and abundance of cetaceans and determining their status can be difficult. Casual sightings, with no related effort, are the best way of recording rare species and identifying locations or seasons with increased abundance. This is often the first indication of a change in abundance or distribution of cetaceans in an area, for example Risso's dolphins off Co Wicklow or fin whales off the south coast. The recent increase in bottlenose dolphin activity off the north and east coasts was identified through the casual sighting scheme. Casual sightings are likely to be first evidence of any expansion of a species' range attributed to climate change.

The most useful sighting records are those with associated effort. These records can be used to identify important habitats and estimate abundance. Under ISCOPE, land-based watches are now organised with the Inshore Cetacean Monitoring Programme. This scheme will contribute hugely to our knowledge of cetaceans in Ireland and we hope to encourage more people to contribute.

A cetacean stranding scheme has been established in Ireland for nearly 100 years. However, it is probably only in the last

10-20 years that sufficient records have been received to use the data to analyse trends. It is not known what proportion of all the actual strandings that occur on the coast of Ireland are reported but the number per annum has plateaued out in recent years. Many strandings are reported from a number of sources, suggesting coverage is good. Stranding rates per kilometre of coastline could be investigated to see if there is consistency in the numbers reported.

An earlier review of stranding records suggested that they could be used to identify unusual events such as epizootics but could not be used to determine population or distributional trends. Since then, the number of stranding records received each year has increased considerably and now over 2,000 records are contained within the IWDG database. A fuller analysis using GLM models and multi-variate analysis of these records could identify some interesting trends. Recent reviews of stranding records from the UK have identified trends which have been associated with climate change and fisheries interactions.

The stranding scheme can provide significant additional information. Already the Cetacean Genetic Tissue Bank established in 2006 has provided samples for a number of studies both in Ireland and on continental Europe. Additional sampling or recording of lesions associated with bycatch, trauma, etc, could be incorporated as well as recovery of a sample of strandings for full post-mortem examination.

ISCOPE has been an important scheme for the IWDG and has made a significant contribution to state agencies' legal obligations both in the Republic and Northern Ireland. The cetacean recording schemes are working well, with rarely a week passing without some interesting records being received.

The IWDG will continue to work hard to ensure that these schemes are maintained and must try to use the data collected to produce policies and implement actions that will protect cetaceans and their habitats in Ireland.



Humpback whale off the west Cork coast, December 2008. **Photograph** © Pádraig Whooley/IWDG.



Andrew Malcolm on effort watch, Ram Head, Co Waterford. **Photograph** © Pádraig Whooley/IWDG.



Short-beaked common dolphins. **Photograph** © Cian Clarke.



The IWDG stand at the Fish Ireland exhibition, Killybegs, Co Donegal, 2006. Photograph © Simon Berrow/IWDG.



Killer whale ("Aquarius"). Broadhaven Bay, Co Mayo, July 2009. Photograph © Lieutenant Alan O'Regan (on the *LÉ Ciara*).

The Irish Whale and Dolphin Group (IWDG) was established in December 1990 and is an all-Ireland group dedicated to the conservation and better understanding of cetaceans (whales, dolphins and porpoises) in Irish waters through study, education and interpretation.

The Irish Scheme for Cetacean Observation and Public Education (ISCOPE) has been a major success for the IWDG. Under ISCOPE, the IWDG has developed cetacean stranding and sighting schemes which have become the envy of many countries throughout Europe and beyond. The *Irish Cetacean Review 2000-2009* presents a review of all records from the period to inform recorders, managers and policy makers.



Comhshaoil, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

