



# **Monitoring cetaceans in Irish waters**

**ISCOPE II (2006-2009)**

**Second Annual Report (May 2007-April 2008)**

**Prepared by**

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## ISCOPE II (2006-2008)

### Introduction

Irish waters provide some of the most important habitats for cetaceans (whales, dolphins and porpoises) in Europe. To date, 24 species have been recorded including some of the most rare and poorly understood whales in the world (Berrow, 2001). Two cetacean species, (harbour porpoise *Phocoena phocoena* and bottlenose dolphin *Tursiops truncatus*), are listed under Annex II of the EU Habitats Directive and are priority species for Natura 2000. This commits member states to nominate critical sites to protect their habitats. All cetacean species (baleen whales, dolphins, harbour porpoise and toothed whales) are listed as priority species for conservation in Northern Ireland. Conservation measures, including site designation, are constrained by lack of reliable data on the distribution and relative abundance of these and other cetacean species in Irish waters.

Monitoring these highly mobile and largely inaccessible animals and identifying critical habitats is difficult and many countries have developed stranding and sighting schemes for this purpose. Data obtained through a cetacean stranding schemes have recently been recognised as a Marine Environmental Impact Indicator and “an important tool for describing trends in cetacean numbers and distribution” (Boelens *et al.* 2004).

As a network of marine protected areas (MPAs) is created around the coast of Ireland, the issue of monitoring Annex II species outside of MPAs has been raised. All Annex II marine mammal species will spend considerable time outside of MPAs designated for their protection and most of the populations involved will reside exclusively outside of MPAs. Thus a system of monitoring these species throughout their range in Irish waters is essential not only to monitor species but also identify sites, which might qualify for MPA status. Distribution and abundance data are also important for addressing management issues such as the impact of fisheries bycatch to supporting marine tourism.

The IWDG stranding and sighting schemes, established in 1991, provide a baseline for All-Ireland cetacean recording scheme and enables agencies and government departments to fulfill obligations under many national and international agreements, including Natura 2000, ASCOBANS, OSPAR and the recently published Northern Ireland Biodiversity Strategy and National Biodiversity Plan. These data are essential to contribute to Local Biodiversity Action Plans and Species Action Plans which are expected to be implemented over the next few years. Cetacean recording is an essential marine component of national biological recording initiatives such as that co-ordinated by the Centre for Environmental Data and Recording (CEDaR) in Northern Ireland and the new Biological Records Centre in the Republic. Under both the Northern Ireland Biodiversity Strategy and National Biodiversity Plan, a conservation assessment of all Annex II and IV (all cetaceans) is required and the data gathered under ISCOPE II is essential in the formulation of this assessment.

In 2003, the IWDG initiated the Irish Scheme for Cetacean Observation and Public Education (ISCOPE), which aimed to promote better awareness and knowledge of cetaceans (whales, dolphins and porpoises) in Irish waters, by encouraging public participation in cetacean recording. ISCOPE has proved very successful and the IWDG

are building on the success of this initiative by continuing to expand the recording network and improve data management.

The objectives of ISCOPE II are to:

- 1) continue to raise awareness of cetaceans in Irish waters,
- 2) further encourage participation in biological recording,
- 3) organize training workshops to improve cetacean identification and recording skills,
- 4) continue and expand quantified effort watches at selected sites,
- 5) exploit “platforms of opportunity” to increase seasonal and geographic coverage of offshore habitats,
- 6) maintain cetacean sightings and strandings databases
- 7) develop indices for monitoring population status and relative abundance
- 8) collaborate with other projects attempting to integrate marine data-sets

### **Administration**

ISCOPE II was started on 1 May 2006. Deliverance of the objectives of is overseen by a Steering Committee. During the reporting period we welcomed Cliona O’Brien, Wildlife Officer with the Heritage Council to the Steering Committee. The full Steering Committee is presented in Appendix I. The ISCOPE II budget was managed by George Delaney of the IWDG and expenditure for the period 1 May 2007 to 30 April 2008 are presented.

In order to achieve these objectives the work schedule has been divided into four work packages. Those responsible for each workpackage are identified.

#### Work package 1

Task: Encourage and train the public and agencies to record cetaceans in Irish waters.

Responsibilities: Simon Berrow and Padraig Whooley

#### Work package 2

Task: To carry out quantified effort monitoring

Responsibilities: Pádraig Whooley (Sightings), Mick O’Connell (Strandings) and Simon Berrow

#### Work package 3

Task: Carry out cetacean surveys on Ships of Opportunity (ShOPs)

Responsibilities: Dave Wall

#### Work package 4

Task: Maintain cetacean database and develop monitoring indices

Responsibilities: Simon Berrow, Mick O’Connell (Strandings) and Pádraig Whooley (Sightings)

## Work package 1

### Encourage and train the public and agencies to record cetaceans in Irish waters

#### Tasks:

- 1.1 promote ISCOPE II, including participation at national and regional exhibitions,
- 1.2 continue to organise and deliver courses on recording and species identification,
- 1.3 encourage greater participation from government agencies who are regularly at sea
- 1.4 develop procedures to ensure feedback to observers
- 1.5 improve and reprint recording forms as required

Following the last Annual Report, the Steering committee requested that we presented promotional events, training courses and public talks separately. These are listed below.

1.1 We have promoted ISCOPE II at (Table 1).

We have had stalls at three large events during the reporting period on both the east and west coast (Table 1a). We have taken a stand at the Irish Skipper expo in Galway 7-8 March 2008. There have been nine public talks, seven in the Republic all along the west and southwest coast and one in Co Antrim (Table 1b).

**Table 1a: Large-scale events at which ISCOPE II was promoted 1 May– 31 October 2007**

Date	Event	Location	County	Who delivered	Attendance
20 May	Fingal Biodiversity Day	Fingal	Dublin	DW	2000
10 June	World Oceans Day	Galway	Galway	SB/RC	1000
11 Nov	Science Fair	Sligo I.T.	Sligo	MO'C	3000
7-8 March	Irish Skipper Exhibition	Galway	Galway	PW/DW/MO'C/SB	4500

SB= Simon Berrow, RC = Randall Counihan, IE= Ian Enlander, DW= Dave Wall, MO'C=Mick O'Connell, PW= Pádraig Whooley

**Table 1b: Public talks at which ISCOPE II was promoted 1 May 2007– 30 April 2008**

Date	Event	Location	County	Who delivered	Attendance
15 June	Whitehead	Whitehead	Antrim	PW/SB	15
17 July	Killarney National Park	Killarney	Kerry	MOC	36
1 Aug	Courtmacsherry Harbour Festival	Courtmacsherry	Cork	PW	25
7 August	Killarney National Park	Killarney	Kerry	MO'C	36
16 August	Library	Dingle	Kerry	MO'C	30
22 August	Connemara National Park	Letterfrack	Galway	SB	25
27-28 Oct	Connemara Sea Week	Letterfrack	Galway	SB/PW	70
8 Nov	Martin Ryan Institute	Galway	Galway	SB	80
11 Nov	Science Fair: 2 talks	Sligo I.T.	Sligo	MO'C	25 & 50
29 March	Knockreer House	Killarney	Kerry	PW	40

SB= Simon Berrow, MO'C= Mick O'Connell, DW= Dave Wall, PW= Pádraig Whooley

We have recently have been contacted by the International Volvo Yacht Race which will visit Galway in May 2009. We have discussed potential events and promotion and will develop this later in the year.

## 1.2 Courses on species identification

Five one-day courses have been held during the reporting period with a total attendance of 152 people. The two Howth course were organised by CFT and targeted the diving and sailing community. At least 8 dive clubs had members attending the courses.

**Table 1c. ISCOPE courses on species identification 1 May 2007– 30 April 2008**

Date	Event	Location	County	Who delivered	Attendance
24 June	ISCOPE Training Course	Kilrush	Clare	SB	12
22 July	ISCOPE Training Course	Ballycastle	Antrim	IE	35
6 October	CFT Scientific Committee	Howth	Dublin	SB	30
15 Feb	Garretstown Surf School	Kinsale	Cork	PW	35
5 March	BIM staff training	Galway	Galway	SB	15
5 April	CFT Scientific Committee	Howth	Dublin	SB	25

SB= Simon Berrow, IE = Ian Enlander, PW= Pádraig Whooley

## 1.3: Encourage government agencies

The Garda Sub-Aqua Unit were presented with complimentary copies of IWDG Guide to Whales and Dolphins of Ireland and cetacean recording forms. The IWDG have been in communication the Loughs Agency in Northern Ireland including training of their staff and have provided advice on survey and recording methodologies and have supplied them with free laminated identification guides and sighting forms. The one day course with BIM was attended by their sea-going staff and we also continued to supply the Marine Institute FATs with recording forms and have received a number of sighting records from the Irish sea.

The IWDG have had a long relationship with the Maritime Squadron, through a project called Whalelog. This was developed further during 2007 with additional funding from the Heritage Council under the Wildlife Grants 2007 (Berrow, 2007). Since 1996 the IWDG have received 39 sighting records of seven different species of whales and dolphins. Many of these sightings were accompanied by some fantastic images, including of fin whales, pilot whales and dolphins. The number of records peaked in 1998 at the start of WhaleLog but tailed off over the last 10 years with just one or two records per annum. WhaleLog 2007 has rekindled the interest within the Air Corps. The most frequently reported species were bottlenose dolphin, long-finned pilot whale, sperm whale and fin whale followed by common and Atlantic White-sided dolphin. There was also one record of the rarely observed Northern bottlenose whale. Most records were of unidentified dolphin (28%) and unidentified whales (23%). During this project we managed to accompany five flights, one per month between July and October and one in December with four IWDG personnel. Although no sightings were made, mainly due to poor weather conditions (low cloud and strong winds) during flights the IWDG gained invaluable

experience. We identified a number of issues regarding cetacean recording and some interesting areas worth developing including claims that the radar will pick up large schools of dolphins in favourable sea conditions. We also present proposed survey methodology for future flights.

On November 22 SB was invited to the Coastal Zone management Unit in Clonakilty, Co Cork to give a presentation on cetacean management issues including recording schemes.

The IWDG hosted a Marine Mammal Observers Course in July aimed at implementing new NPWS guidelines for acoustic surveys but this course included species identification and recording, which should encourage additional sightings outside implementing mitigation measures.

In May the IWDG had a meeting with BIM and Fáilte Ireland about developing a Marine Wildlife Tour Operators Course. This would include cetacean identification and recording. We have recently delivered a pilot course on Cape Clear Island, Co Cork in May 2008 which was part funded by Udúras and BIM.

IWDG are partners in the Bio-Recorders Network proposal prepared by Shane Wolsey and submitted to EHS to encourage greater biological recording in Northern Ireland and the border counties (see Appendix II).

#### 1.4: Develop procedures

Under a Heritage Council Wildlife Grant we have developed the relationship between the IWDG and the Maritime Squadron including reviewing and improving procedures for recording cetaceans.

#### 1.5: Recording forms

We edited and reprinted the casual sighting form (10,000 copies).

## Work package 2

### To carry out quantified effort monitoring

#### Tasks:

- 2.1 continue to encourage collection of sightings and strandings records
- 2.2 encourage those people who regularly collect casual sightings data to carry out effort watches
- 2.3 carry out at least one watch per month during the same week from eight sites in the Republic of Ireland identified by the NPWS as key monitoring sites
- 2.4 carry out at least one watch per month at the two harbour porpoise cSACs (Roaringwater Bay and Blasket Islands).
- 2.5 liaise with EHS about regular monitoring of two key sites in Northern Ireland coinciding with potential SACs for harbour porpoise

#### Progress during ISCOPE II:

##### 2.1 Stranding and Sighting records

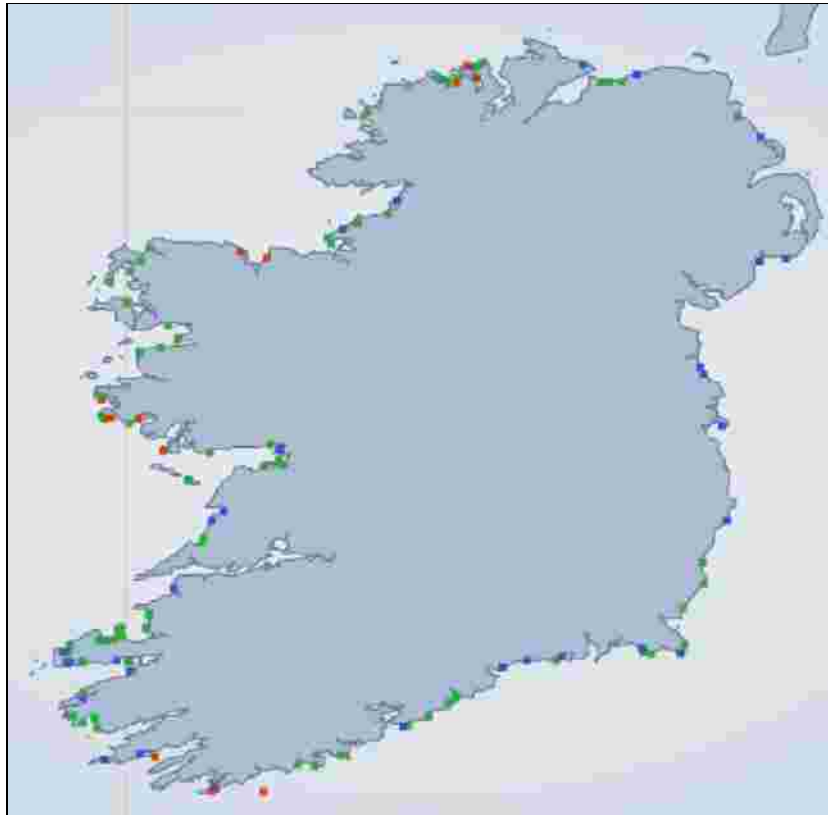
We received a total of 1,562 sighting and 144 stranding records during the period from 1 May 2007 to 30 April 2008 (Table 2). Records were received in all months with a peak in December (Strandings) and August (Sightings). Effort watches were also carried out throughout the year with a peak in July.

**Table 2. Number of biological records received during May 2007 to April 2008**

Data	2007								2008				Total
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
Stranding records	12	5	5	13	14	13	6	22	15	12	12	15	<b>144</b>
Sighting records	98	167	211	308	232	128	128	49	63	52	36	90	<b>1562</b>
Effort watches	46	36	50	49	39	32	28	22	24	26	26	35	<b>413</b>
Sightings (effort watches)	43	41	53	84	69	37	40	24	22	21	13	39	<b>486</b>
Effort sites watched	23	17	20	22	17	19	18	14	15	16	21	20	

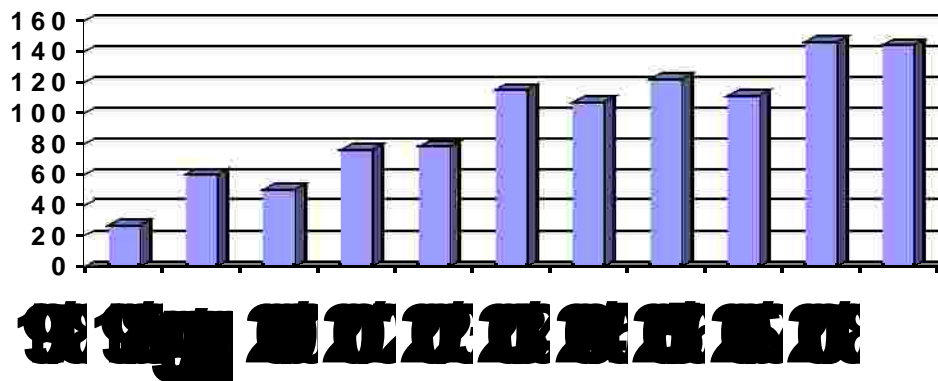
#### *Stranding Records*

Between 1 May 2007 and 30 April 2008, the IWDG received records of 144 stranding incidents involving 148 cetaceans, plus 3 strandings of basking sharks and 2 of loggerhead turtles. Records were received from all coasts with clusters in Béara, Co Cork, West Kerry, Galway Bay and in North Donegal (Fig 1). The number of strandings per annum appears to be reaching a plateau (Table 2). This may indicate that we are recording all stranded animals or the coverage by the recording network has peaked. Interestingly we are increasingly receiving multiple and independent reports of the same stranded animals and we will report on this in future reports as it could be a measure of recording efficiency.



**Figure 1. Location of recorded strandings (1 May 2007 – 30 April 2008)**

Eleven species of cetacean were recorded with harbour porpoises being the most frequent (25.7%) followed by common dolphins (17.4%) and pilot whales (16.0%). Most strandings involved single animals and no mass strandings were reported during this period.



**Figure 2. Number of stranding records 1997/98 - 2007/08 (1 May - 30 April)**

On 28 December 2007, two separate fin whale stranding records were received by the IWDG, from Roundstone, Co. Galway and Ballinskelligs, Co. Kerry. Although live stranded, both animals died shortly afterwards. On 13 January, a third fin whale was recorded stranded (dead) at Bere Island, Co. Cork. These events were unusual for Ireland and these three fin whales, which stranded over a two-week period represent 10.3% of the total of only



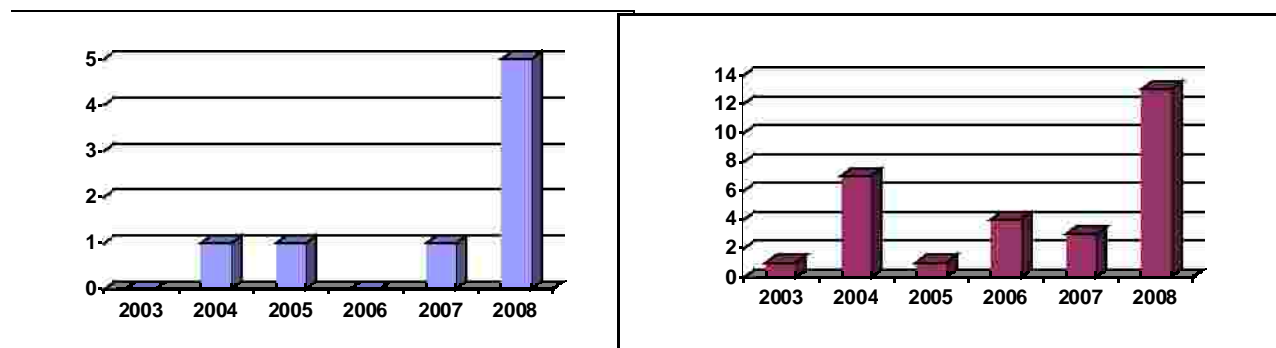
29 confirmed fin whales on the IWDG stranding database. Prior to 28 December 2007, there had been no stranding records for this species on the Irish coast since 15 July 2003.

**Table 3. Cetacean strandings by species 1 May 2007 – 30 April 2008**

	CSp	DSp	WSp	BwSp	Awsd	Bnd	Cd	Cbw	Fw	Hp	Mw	Pw	Rd	Sd	Wbd
Events	3	13	5	3	13	4	25	2	3	37	2	23	1	9	1
Individuals	3	13	5	3	13	4	27	2	3	37	2	23	1	11	1

CSp = Cetacean species, DSp = Dolphin species, WSp = Whale species, BwSp = Beaked whale species, Awsd = Atlantic white-sided dolphin, Bnd = Bottlenose dolphin, Cd = Common dolphin, Cbw = Cuvier's beaked whale, Fw = Fin whale, Hp = Harbour porpoise, Mw = Minke whale, Pw = Pilot whale, Rd = Risso's dolphin, Sd = Striped dolphin, Wbd = White-beaked dolphin.

During the period from 1 January 2008 to 30 April 2008, the IWDG received an unprecedented number of stranding records of pilot whales and beaked whales. Reports were received of 13 pilot whale and 5 beaked whale (2 of which were identified as Cuvier's beaked whales) strandings representing 24% and 9.3% respectively of the total number of cetacean stranding records received during this time. Compared to previous years, these beaked whale strandings were about 8.3 times higher than average while the numbers for the pilot whales were 4.6 times what would be expected (Figs. 3a and 3b).



**Fig 3a. Number of beaked whale and 3b. pilot whale strandings during January to April 2008**

Most of the animals were in an advanced state of decomposition when washed ashore and were presumed to have died at sea in the preceding few weeks. These events in Ireland have been mirrored by similar unprecedented strandings in the UK. Between 13 January 2008 and 14 April 2008, 12 Cuvier's beaked whales, five Sowerby's beaked whales, one unidentified beaked whale and 10 pilot whales were stranded on the coast of Scotland and Wales. As in the case of the Irish strandings, most of the animals were in an advanced state of decomposition and were estimated to have died some time around mid January. While concerns have been raised over the effects of mid frequency sonar, the cause(s) of death of these cetaceans has not been established to date (see Appendix III for submitted paper). This event demonstrates the effectiveness of the IWDG Stranding Scheme in identifying unusual events in real time.

At the first Annual report Committee meeting we were asked to expand the discussion on post-mortem examination of stranded cetacean, involving the use of regional veterinary laboratories and local authority vets including a potential sampling strategy. This is presented in Appendix IV.

## Sighting Records

During the present reporting period we received 1,562 sighting records of 15,641 cetaceans, from effort and casual watches combined comprising fourteen species. This compares with 1,523 sighting records of 14,396 animals of 13 species, for the same period in 2006/7. These figures represent a 2.5% increase in all sightings from the previous 12 months. Of these sightings, 1,409 (90.3%) were classified to species level while the remaining 152 (9.7%) records were downgraded to a non-species specific category. These compare to 89.9% of all sightings, which were classified to species level during the previous 12 months.

Most sighting records were of harbour porpoise (34.8%) followed by common dolphin (16.2%), minke whale (14.7%), bottlenose dolphin (13.4%) and fin whale (7.2%). We also had records of Risso's dolphin (1.7%), pilot whale (1.1%), humpback whale (0.4%), killer whale (0.3%), Atlantic white-sided dolphin (0.2%), white-beaked dolphin (0.1%), northern bottlenose whale (0.1%) and sperm whale (0.1%). In 2007/8 the lowest number of sightings (36) were recorded in March, which compared to the peak month, August with 308 sightings (Table 2). This was similar to the previous 12 months.

## 2.2 Key Monitoring sites

We have identified 14 inshore monitoring sites (3 in Northern Ireland) where we attempt to obtain at least one effort watch per month. These watches are carried out with a strict protocol in an attempt to reduce some of the variables. At the two cSAC sites (Castle point and Sleah Head) observers were paid to carry out this commitment. Since January 2008, an additional observer is funded to cover Downpatrick Head, Co Mayo as this site was not getting full coverage and it is important geographically as it fills an area between Galway and Sligo Bay. It can be seen from Table 4 that good seasonal coverage has been achieved at most sites.

**Table 4. Location and number of effort watches carried out at key inshore monitoring sites**

		2007							2008						
No.	Location	County	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
1	Howth Head	Dublin	2	1	2	2	1	1	1	1	1	2	1	1	16
2	Hook Head	Wexford	1	1								1	1	1	5
3	Ram Head, Ardmore	Waterford	6	3	5	4	5	5	5	4	2	6	3	5	53
4	Galley Head	Cork	2	1	1	3	1	1	1	1	2	2	1	2	18
5	Castlepoint	Cork	1	1	1	1	1	1	1	1	1	1	1	1	12
6	Slea Head	Kerry	10	8	7	11	11	4	5	1	2	1	2	6	68
7	Loop Head	Clare	1		1	2	1	2	1	1	1	2	1	1	14
8	Black Head	Clare	1	1	1	1		1	2		1		1	1	10
9	Downpatrick Head	Mayo				1		1				1	1	1	5
10	Malin Beg	Donegal										1	1	1	3
11	Dunree Head	Donegal	1				1	1	1	1	1	1	1	1	9
12	Ramore Hd, Portrush	Antrim	3	4	7	2	3	1	1	1	2		1	2	27
13	Portmuck (x2), Islandmagee	Antrim	1	1	1			1	1	2	3	1	1		12
14	Bloody Bridge	Down	2	3	2	3	3	2	1	3	2	2	2	2	27

The combined watches (280) from the 14 key sites represent 68% of the total of all effort watches carried out in Ireland in 2007/8, which is unchanged from 2006/7. Of the 11 key inshore monitoring sites in the Republic, we achieved 79% of our targeted monthly watches, out of a total of 132 watches, based on one per month over 12 months. This compares with 70% for the previous 12-month period. We achieved 100% (or more) effort watches at the following 6 sites: Howth Head, Ram Head, Galley Head, Castlepoint, Sleah Head, and Loop Head. Both Ram Head and Sleah Head have maintained in excess of three times their monthly watch quota. Over the 12 months we did not reach 100% target at 5 sites: Hook Head, Black Head, Downpatrick, Malin Beg and Dunree, achieving 32 of a possible 60 watches (53.3%). There has however been a marked reversal of this situation and since Jan–May 2008 we have achieved 95% of our overall target. In the three months March–May 2008, 100% of effort watches have been carried out. This has been achieved by a combination of more “active management”, provision of optics and in one instance and contracting out coverage at one site.

Two primary observers (at Howth Head and Black Head) have where necessary been provided with top range spotting scopes, funded out of Heritage Council wildlife grants. An additional scope belonging to NPWS has been lent to IWDG for use at Downpatrick Head, Mayo. Probably the most important factor in improving coverage has been improved communication between primary observers and the IWDG. They have been put on a group email list, and are sent a group communiqué at the start of each month, reminding them that their watch needs to be done, and requesting that PW be informed once that watch is carried out. Watches are entered on a spreadsheet once done, thus enabling us to track, which sites have been covered and which remain to be done. These weekly reminders are sent until 100% coverage is achieved. These emails are also a good opportunity to update the observers on what’s been seen at other sites and can be extremely effective in alerting the team of potential weather windows in the days ahead, which some of the less experienced observers have found very helpful. Observers are reminded to advise us if they feel they will not be able to carry out a watch, thus giving us ample time to find a replacement. This approach has given the individuals a greater sense that they are part of a team, and what they are doing has a strong conservation value.

We are confident that we can maintain this coverage in the final year of ISCOPE II and beyond.

### 2.3 Other effort watches

We have received effort watches from an additional 33 sites in seven counties (Table 5). Some sites such as Bray Head, Co Wicklow and Grey Point and Newcastle, Co Down have good coverage while others are watched less regularly. These additional watches are very useful in identifying areas, which may have important inshore habitats or seasons for cetaceans and compliment the inshore monitoring.

**Table 5. Location and number of effort watches carried out at key inshore monitoring sites**

		2007										2008				
No.	Location	County	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	
1	Bray Head	Wicklow	1	1		2		1	1	1	1	1	1	2	12	
2	Brownstown Head	Waterford				1									1	
3	Ballycotton	Cork	1												1	
4	Power Head	Cork							1			1		1	3	
5	Roche’s Point	Cork	1												1	
6	Old Head Kinsale	Cork				1	1	2	1						5	
7	Seven Heads	Cork				1								2	3	
8	Cape Clear Island	Cork		1	3	1									5	
9	Mizen Head	Cork					1								1	
10	Crow Head, Beara	Cork	2				1							1	4	
11	Dursey, Beara	Cork	1		2	1									4	
12	Black Ball Hd, Beara	Cork		1		2								1	4	
13	Fair Head, Beara	Cork						1							1	
14	Valentia Island	Kerry	2		1	2	1								6	
15	Blasket Islands	Kerry	1				1								2	
16	Clogher Head	Kerry			1										1	
17	Inish Mor, Aran Islands	Galway						1					1	1	3	
18	Mullaghmore More	Sligo			1										1	
19	St. John’s Pt.	Donegal			7							2			9	
20	Tory Island	Donegal	2												2	
21	Garron Point	Antrim				1									1	
22	Torr Head	Antrim					1								1	
23	Murlough bay	Antrim			1										1	
24	Runkerry Point	Antrim						1	1		1				3	
25	Black Head	Antrim		1					1	1	1		1		5	
26	Groomspoint	Down			1										1	
27	Grey Point, Belfast Lough	Down	1	4	3	2	3	4	2	1	2		2		24	
28	Donaghadee	Down				1									1	
29	Newcastle	Down	1	3	2	4	3	1	1	3	2	1	1	1	23	
30	Copeland Islands	Down	2												2	
31	St. John’s Pt.	Down											1		1	
32	Kearney Pt., Ards Peninsula	Down		1											1	
33	Cloghan Head	Down											1		1	

- 2.3 There are two candidate Special areas of Conservation for harbour porpoise at which we carry out land-based monitoring: Roaringwater Bay, Co Cork and Blasket Islands, Co Kerry

#### Roaringwater Bay

A total of 36 hours of watch effort has been completed from Castle point with 42 sightings to date. Coverage during the reporting period was good with coverage in all months (Table 6). Sightings are low but consistent with harbour porpoise recorded in nine ths. Minke whale (9 sightings), fin whale (3 sightings and common dolphin (2 sightings) have also been recorded.

**Table 6. Sighting rates from Castle point (2007) and (all years)**

Month	Hours	Sightings	avg/hr	Animals	avg/hr
January	1.7	0	0	0	0
February	1.7	0	0	0	0
March	1.7	1	0.6	2	1.2
April	1.7	1	0.6	1	0.6
May	1.7	1	0.6	1	0.6
June	1.7	0	0	0	0
July	1.7	1	0.6	1	0.6
August	1.7	3	1.8	4	2.4
September	1.7	2	1.2	5	3
October	1.7	4	2.4	12	7.2
November	1.7	5	3	9	5.4
December	1.7	0	0	0	0
January	1.7	2	1.2	9	5.4
February	1.7	0	0	0	0
March	1.7	1	0.6	2	1.2
April	1.7	0	0	0	0

Month	Hours	Sightings	avg/hr	Animals	avg/hr
January	5.3	5	0.9	19	3.6
February	4.6	1	0.2	3	0.6
March	5	5	1	12	2.4
April	5.4	1	0.2	1	0.2
May	4.3	2	0.5	3	0.7
June	4.3	4	0.9	7	1.6
July	4.3	1	0.2	1	0.2
August	4.3	5	1.2	10	2.3
September	5.3	4	0.8	7	1.3
October	3.3	7	2.1	15	4.5
November	3.2	7	2.2	29	9.2
December	3.2	0	0	0	0

### Slea Head

A total of 431 hours of watch effort has been completed from Slea Head with 436 sightings to date. Coverage during 2007 was good with effort in all months (Table 7). Harbour porpoise have been recorded in all months, minke whale in 10 months and common dolphin in nine months.

**Table 7. Sighting rates from Slea Head (2007-2008) and (all years)**

Month	Hours	Sightings	avg/hr	Animals	avg/hr
January	4.3	10	2.3	24	5.5
February	1.7	2	1.2	5	3
March	3.7	3	0.8	8	2.2
April	1.7	12	0.7	80	4.7
May	1.7	12	0.7	58	3.4
June	13.3	16	1.2	133	10
July	12	13	1.1	132	11
August	19.7	38	1.9	804	40.9
September	18	43	2.4	551	30.6
October	8.7	9	1.3	47	7
November	8.3	9	1.1	46	5.5
December	1.7	1	0.6	2	1.2
January	3.3	3	0.9	6	1.8
February	1.7	0	0	0	0
March	3.3	1	0.3	3	0.9
April	10	8	0.8	65	6.5

Month	Hours	Sightings	avg/hr	Animals	avg/hr
January	21.3	19	0.9	69	3.2
February	15.2	10	0.7	70	4.6
March	25.9	16	0.6	76	2.9
April	42.8	29	0.7	106	2.5
May	38.2	30	0.8	98	2.6
June	29.7	33	1.1	195	6.6
July	34.8	42	1.2	259	7.5
August	50.4	84	1.7	1363	27
September	50.4	75	1.5	950	18.8
October	42	43	1	200	4.8
November	29.8	25	0.8	81	2.7
December	25.8	13	0.5	64	2.5

The IWDG, in collaboration with GMIT, carried out an extensive survey of the Blasket Islands cSAC under contract to the NPWS (Berrow *et al.* 2007). This survey recorded 44 sightings of harbour porpoises

resulting in an abundance estimate of  $303 \pm 76$  (95% CI 186-494). In addition there were seven sightings of common dolphin and five minke whale sightings within the cSAC.

IWDG data from six effort sites were recently used as part of a PhD project at GMIT. Comparisons were made at a number of sites using randomly selected watches during 2006 and 2007. Sighting rates varied between sites with Black Head in Galway Bay reporting the highest rate followed by Sleah Head, Co Kerry (Table 6).

**Table 6. Relative abundance estimates of harbour porpoises from around Ireland (IWDG data), including data from Galway Bay (From O'Brien et al. Unpublished Report)**

Location	County	No. of watches	Total time (minutes)	Total Individuals	Relative abundance ( $P \text{ hr}^{-1}$ )
Slea Head	Kerry	35	4565	128	1.68
Castlepoint	Cork	16	1315	25	1.14
Galley Head	Cork	19	1300	13	0.59
Ram Head	Waterford	24	2690	12	0.27
Ramore Head	Antrim	18	2035	17	0.5
Black Head	Clare	31	3100	110	2.11
Fanore	Clare	24	2400	38.5	0.96
Spiddal	Galway	19	1900	32.5	1.01

2.5. A review of cetacean records from Northern Ireland including recommendations concerning potential candidate Special Areas of Conservation was carried out.

#### **Review of the effects of wind strength on the number of cetacean sightings reported to IWDG**

In order to explore the potential reasons behind a drop in sightings during 2006 an examination of historical wind data records was carried out to determine the influence of wind strength on seasonal sighting records. Average monthly wind speed data was obtained from Met Éireann for the weather stations at Belmullet, Cork Airport, Dublin Airport and Malin Head which provides good coverage of the west, south, east and north coasts. Records were obtained for 2006 and 2007 to determine if average monthly wind-speed was of a sufficient resolution to provide adequate comparison. Data presented here covers 1 May 2006 to 30 November 2006 and 1 May 2007 to 30 November 2007.

Mean wind-speeds from four weather stations are shown. Sea-state 2 occurs when wind-speed is 6 knots or less. This mean wind-speed was only recorded along the south coast in October 2007 (Fig 4b). Average wind-speeds off the northwest (Belmullet) were greater during 2006 compared to 2007 and generally similar from May-August in both years off the south coast (Cork), May-September of the east coast (Dublin) and June-September off the north coast (Malin Head). Most sighting records are made from June to July and if we look at this period then we can see that generally wind speed was greater during 2006 compared to 2007 which suggests poor weather during this period may have contributed to the lower sightings submitted to the IWDG during summer 2006.

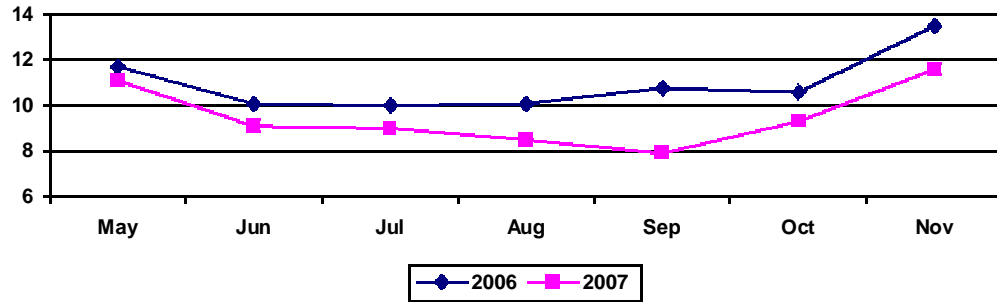


Fig 4a. Average monthly windspeed (knots/hour) from Belmullet

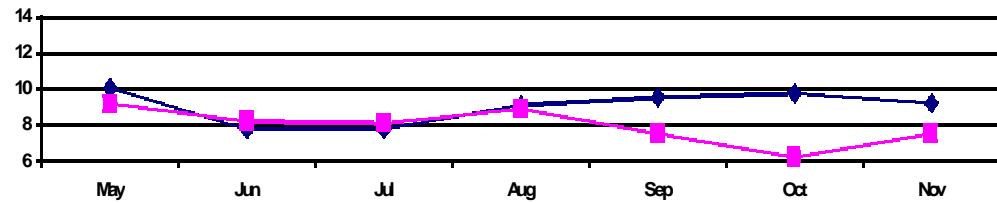


Fig 4b. Average monthly windspeed (knots/hour) from Cork Airport

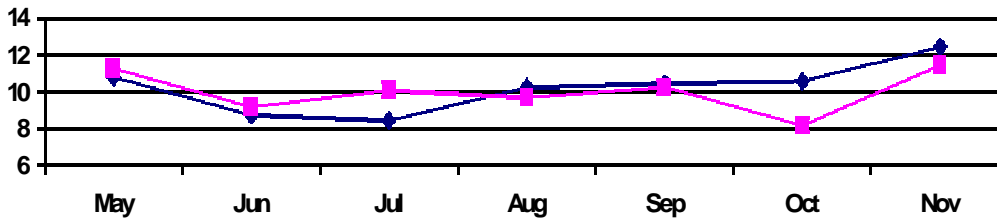


Fig 4c. Average monthly windspeed (knots/hour) from Dun Airport

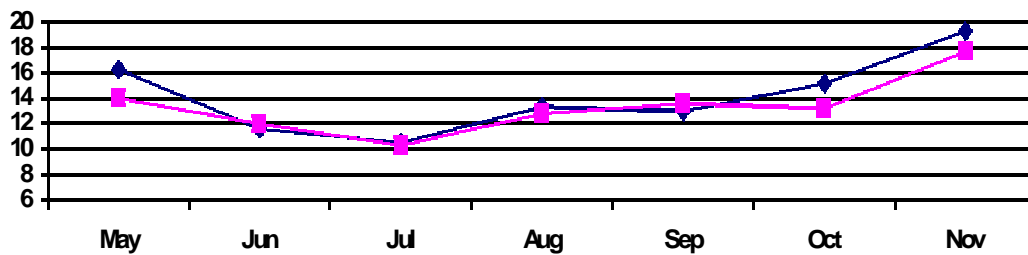


Fig 4d. Average monthly windspeed (knots/hour) from Malin Head

### Trends in observer recording

In order to explore the watching trends of individual observers, the number of effort watches carried out per annum over a six-year period since commencement of ISCOPE is shown in Figure 5. They were Andrew Malcolm (Ram Head), Pádraig Whooley (Galley Head), Mick O'Connell (Slea Head), Simon Berrow (Loop Head) and Joanne O'Brien (Black Head).

This analysis shows considerable variation in the watching behaviour of dedicated observers. It can be seen from Figure 5 that there was less variability between years in numbers of watches at sites when lower numbers

of watches were carried out. There was more likely to be a fall off in watches if the site was initially watched with greater frequency but this effort was hard to maintain. It also shows that a similar lower number of watchers from those directly involved in the ISCOPE project. In the case of J. O'Brien, whose watch effort was largely driven by her 3<sup>rd</sup> level studies, we see a shorter watch period with typically lower numbers of watches year on year. From the perspective of ISCOPE we encourage a regular effort over a longer period and observers are encouraged to do this rather than carry out a large number initially which cannot be maintained.

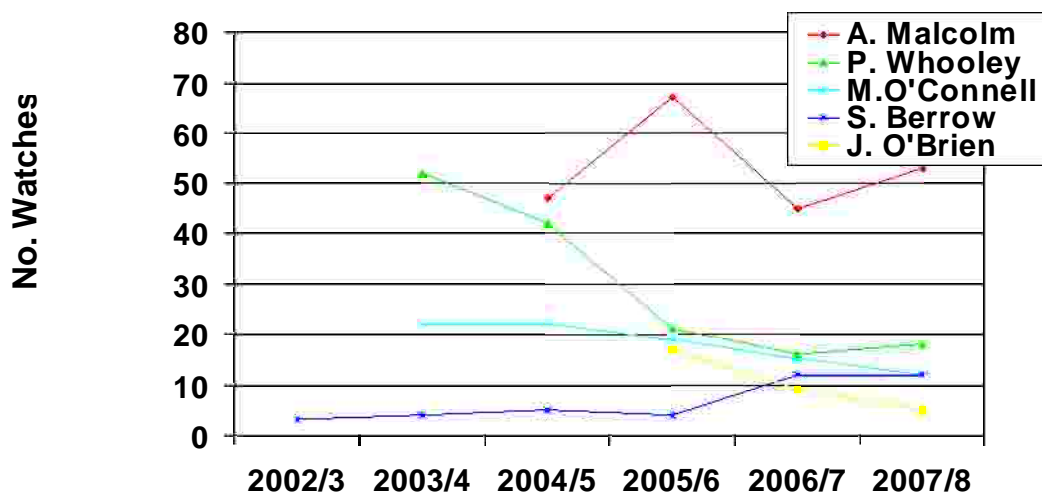


Fig 5. Number of effort watches per year from five key observers



## Work package 3

### IWDG Ship Surveys

#### Tasks:

- 3.1 to target seasons and areas with historically poor coverage
- 3.2 carry out four months of cetacean surveys on ships of opportunity each year
- 3.3 avail of opportunities on state research, commercial, naval and other vessels
- 3.4 consolidate existing ferry surveys and establish a new route from Northern Ireland
- 3.5 provide resources and training to volunteers willing to undertake ship surveys on behalf of the IWDG
- 3.6 encourage volunteers to avail of opportunities on Irish foreign vessel observer programme in Irish waters
- 3.7 Publish/Review Ship Survey data

#### Progress during ISCOPE II:

3.1 Surveys conducted so far under ISCOPE II have targeted high priority areas for large whales (southwest herring acoustic survey), areas with low survey effort e.g. continental shelf slopes and canyons (FSS deep water survey and NIOZ Canyons survey) and seasons with low survey effort (Rockall trough oceanographic survey and northwest herring acoustic survey). With the onset of the GMIT/IWDG SeaChange project PReCAST' in March 2008, it is proposed to focus ISCOPE ship survey effort on the Irish Sea covering all seasons, there are a number of justifications for this:

1. Although there is good seasonal data from ferry survey in the Irish Sea, there is a need to conduct surveys in order to fill the gaps between these ferry routes, which only cover a fraction of the Irish Sea area.
2. Focusing on the Irish Sea area will allow for use of scientists who have less time or less experience than is needed for offshore surveys on the west coast due to the fact that: i) surveys are usually of shorter duration or have regular port calls, ii) weather conditions are typically less severe than on the Atlantic coast and iii) species diversity is lower than on the Atlantic coast.

**Table 7. Ship surveys conducted under ISCOPE-II from May – October 2007**

Survey	Dates	Ship	Survey Areas*
NIOZ Canyons Survey 2007	28/5/07 - 11/6/07	R.V. Pelagia	SS, CS
MI/FSS Deepwater Survey 2007	8/9/07 - 20/9/07	R.V. Celtic Explorer	SS, NW
MI/FSS Southwest Herring Acoustic Survey 2007	6/10/07 - 23/10/07	R.V. Celtic Explorer	SW, S
CEFAS Irish Sea Plankton Survey 2008	22/2/08 – 2/3/08	R.V. Cefas Endeavour	E

\* Survey Areas: SS – Shelf Slopes & Canyons; SW – Southwest; NW – Northwest; RB – Rockall Bank; CS – Celtic Sea

3.2 Ships surveys: We have carried out three ship surveys during the reporting period (Table 7) and a summary of sightings is shown in Table 9.

**Table 8. Summary of effort and sightings recorded during ISCOPE-II ship surveys from May-October 2007**

Survey	No. Days	Total Hrs	<3 Hrs	Species	No. Sightings	No. Individuals
NIOZ Canyons Survey 2007	16	61.2	9.2	White-sided dolphin	2	25
				Pilot Whale	2	23
				UnID Cetacean sp.	1	1
				Common Dolphin*	4	70
				Fin Whale*	11	16
				Sowerby's Beaked Whale*	1	5
				Striped Dolphin*	3	161
				UnID Dolphin sp.*	1	20
				UnID Whale sp.*	4	4
Deepwater Survey 2007	13	69.2	27.3	Common Dolphin	1	3
				Pilot Whale	5	126
				Fin Whale	2	2
				Beaked Whale sp.	2	3
SW Herring Acoustic Survey 2007	18	127	83.8	Bottlenose Dolphin	1	4
				Pilot Whale	1	16
				Risso's Dolphin	2	30
				Harbour Porpoise	3	9
				Common Dolphin	53	2126
				Fin Whale	3	5
				Minke Whale	13	15
				Humpback Whale	1	1
				UnID Dolphin sp.	20	211
				UnID Whale sp.	2	2
				UnID Cetacean sp.	1	5
Cefas Irish Sea Plankton 2008	10	20.28	6.6	Harbour Porpoise	2	7

\* Indicates sightings recorded outside the Ireland & UK region.

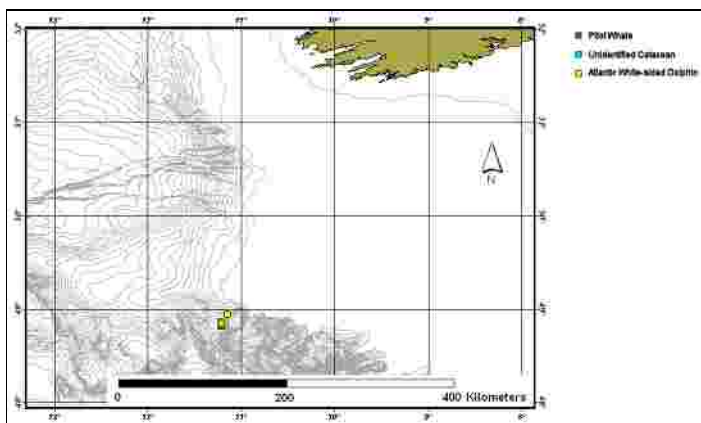


Figure 5: Cetacean sightings during the NIOZ Canyons Survey

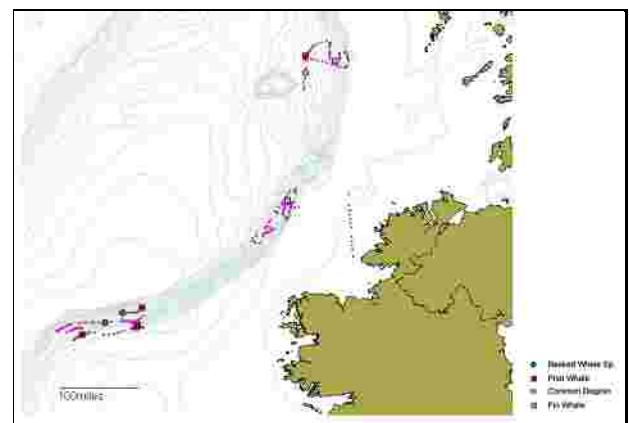


Figure 6: Cetacean sightings during the 2007 Deep Water Survey

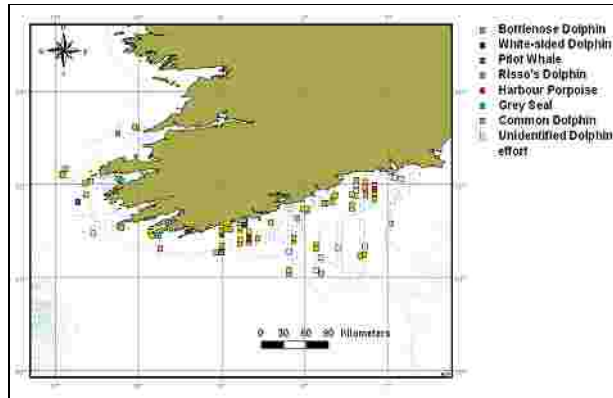


Figure 7a: Dolphin sightings during the 2007 Herring Acoustic Survey

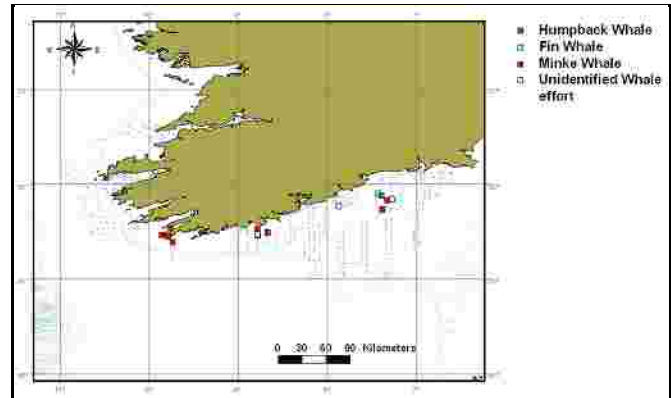


Figure 7b: Whale sightings during the 2007 Herring Acoustic Survey

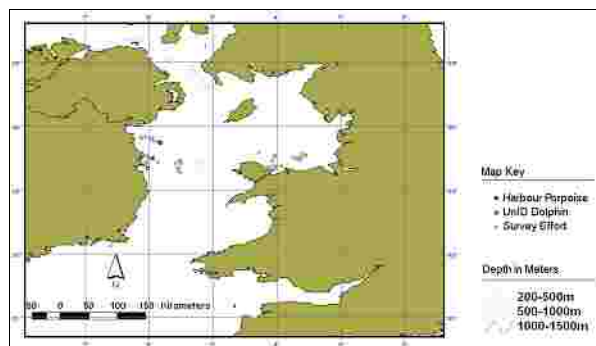


Figure 8: Cetacean sightings during the CEFAS Irish Sea Plankton survey

Accumulated survey effort under ISCOPE II is currently 110 days behind target. However as the effective start date for ship surveys under ISCOPE II is September 2006, the effective deficit is 60 days. Additional loss of survey effort resulted from the RV Celtic Explorer being out of commission between December 2007 and March 2008 – resulting in a number of planned surveys being cancelled. We are proposing a completion date for ship surveys under ISCOPE II by September 2009. In order to achieve this deadline and to ensure enough survey effort is conducted to achieve the survey effort target we have recently appointed an ISCOPE Ship Survey Coordinator. Clare Murray has been successful and she will be responsible for conducting three months of survey effort in 2008/2009 in addition to co-ordinating and additional three months of survey effort by IWDG surveyors up to the end of April 2009. This would leave an additional two months of survey effort to be completed between April 2009 and September 2009.

3.3 In April, following a meeting with the Irish Naval Service, a formal request was submitted to the Minister for Defence for permission to conduct cetacean surveys on board Naval Service Vessels. The meeting with the navy was very positive and it is hoped that official approval will be obtained in the near future. This will allow for survey effort to be conducted during naval service patrols on the Irish Sea. Contact has also been made with the Agri-Food and Biosciences Institute in Northern Ireland who operate the RV Corystes with a view to placing surveyors on board during

research cruises within Northern Irish waters and the Irish Sea. The cruise schedule for 2008 provides a number of opportunities for surveyors in Northern Irish waters.

- 3.4 Ferry surveys: The ferry surveys programme on the Irish Sea continues with three routes currently being surveyed: Larne/Cairnryan, Dublin/Holyhead and Rosslare/Pembroke. With the onset of the GMT/IWDG SeaChange project 'PreCAST' in 2008 it has been necessary to prepare for a change in management style for the ferry surveys.

In Northern Ireland the existing survey team are confident of covering the Larne-Cairnryan route for a further 12 months. One issue on this route is the short duration of actual survey time achieved on the route, especially where the captain is fussy and delays access to the bridge. A possible solution to this would be to commence surveys on the Belfast-Stranraer route with Stenaline (which also uses a slower vessel). This route offers the prospect of 4 hours survey time each way, while achieving continuity of geographical coverage. An additional option being explored is the prospect of setting up surveys on a long-haul route from Belfast to England in partnership with a UK ARC partner (e.g. MarineLife). The viability of both these options depends upon recruiting more survey volunteers.

On the Dublin-Holyhead and Rosslare-Pembroke routes a call, which went out to local members in the surrounding counties, received a positive response to the extent that all survey positions are now filled at least two months ahead of time. To facilitate the proper running of the surveys it has been necessary to return to a fixed date format for the surveys with survey dates booked 12 months in advance. In addition a number of additional survey leaders have been trained up.

IWDG involvement in the Pan-European Atlantic Research Coalition continues. A review of ARC data sets and their potential for use in regularly reporting on the conservation status of cetaceans in UK and Northwest European waters was recently completed for JNCC (see section 3.7). It is hoped that this will help develop the network further. ARC partners held a meeting at the ECS conference in the Netherlands next year to discuss this and other developments. In addition ARC held a meeting with Tim Dunn of JNCC with regard to enabling ARC data to be used within the JNCC Joint Cetacean Protocol project.

- 3.5 Provide resources: With the new laptop and GPS unit funded by the Heritage Council in use on the Dublin-Holyhead route for the past year, it has proved a useful tool in reducing the post-survey workload of the survey leader. Unfortunately problems in obtaining an adequate GPS signal are delaying the full use of the system on the Rosslare route. It is hoped that a new type of GPS receiver, which has been ordered, will help solve this problem.
- 3.6 The IWDG conducted two surveys under the Foreign Research Vessel Observer Scheme during the current reporting period. Additional survey opportunities are being identified on an ongoing basis. The IWDG is now informed of research cruises planned by foreign vessels in Irish waters as

and when the notifications come in. This will allow for better planning of survey effort on board foreign research vessels in Irish waters.

- 3.7 The IWDG was involved in a review of ARC data sets and their potential for use in regularly reporting on the conservation status of cetaceans in UK and Northwest European waters that was recently completed for JNCC. A poster presenting the results of an analysis of the seasonal distribution and relative abundance of harbour porpoise and common dolphin on the Irish Sea will be presented at ECS 2008 in the Netherlands. It is hoped to follow this soon after with a paper on the same topic. A summary of the findings of the ARC report is included below:

*ARC was established in 2001 as a pan-European collaborative approach to the monitoring of cetacean status using low-cost survey methods. There has been a steady growth in ARC membership, and currently there are nine partners from three UK and six European countries. The partners are Aberdeen University (Scotland), Sociedad Ambar (Spain), Irish Whale and Dolphin Group (Ireland), Marinelife (Biscay Dolphin Research Programme) (UK), NORCET (Scotland), Organisation Cetacea (Orca) (UK), Plymouth to Santander Marine Survey (England), Rugvin Foundation (Netherlands), Sea Trust (Wales). Additionally, Oceanopolis (France) have recently been invited to join.*

*ARC partners aim to work together by combining data from their annual ferry survey programmes. These surveys tend to operate at least monthly during the summer months, with a more patchy level of effort in the winter. In all instances, ARC partners carry out both inshore and offshore surveys on ferries that have regular 'fixed' routes. These routes can be considered as transects, a method, which is widely used in monitoring animal abundance across a range of taxa.*

*The scale of recording effort by ARC partners is immense, and is thought to be one of the most important developments in cetacean survey/monitoring to have occurred in northwest Europe in recent years. Current combined survey activity per annum equates to undertaking a minimum of 165 ferry trips over 310 days by ~150 volunteer surveyors travelling 150,000 km and seeing ~20 cetacean species during a total of ~70,000 km of survey effort along 7550 km of ferry routes.*

*ARC surveys started in 1993, by 2003 14 routes were being monitored and currently there are 17 active ferry routes. Spatial coverage is wide-scale with every UK ICES fishing area sampled by at least one route. It is estimated that collectively, the ARC partners hold a database of 15,000-20,000 cetacean records, collected since 1993, with several thousand new records added per annum. Survey effort is equally impressive, with an estimate in excess of half a million kilometres completed. Eleven cetacean species are regularly recorded by ARC ferry surveys in UK waters, with coverage particularly good for Harbour Porpoise (encountered on all current routes), Minke Whale, Bottlenose Dolphin and Common Dolphin.*

*The level of species and area coverage is likely to increase, as ARC partners are actively seeking to expand their monitoring activities, with at least five new survey routes planned. An investigation into the methods employed by the ARC partners highlights that there*

*is a good deal of consistency, with key sightings and effort data collected by all groups on a monthly basis. Recording is carried out by teams of observers, usually composed of at least one very experienced observer and data quality is generally considered high.*

- 3.8 Several requests for data obtained under the Ship Surveys Programme were received during the current reporting period, these include:

<b>Organisation</b>	<b>Project</b>	<b>Data Sent</b>
JNCC	JCP Irish Sea Data Study	Ferry Survey sightings & effort from Irish Sea
CCW	CCW Marine Mammal Mapping	Ferry Survey sightings & effort from Welsh Waters
Aberdeen University	Marine Mammals & Climate Change	Ship survey sightings & casual sightings
Coleraine University	Marine Ecosystem GIS Modelling	Common Dolphin sightings from southwest coast

## **Work package 4**

### **Maintain cetacean database and develop monitoring indices**

#### **Tasks**

- 4.1 Validate all sighting and stranding records
- 4.2 Update and maintain database
- 4.3 Source historical and unpublished records including those stored outside of Ireland
- 4.4 Derive monitoring indices
- 4.5 Develop website and database
- 4.6 Develop co-ordination and data sharing with CeDaR in Northern Ireland
- 4.7 Liaise with the Biological Records Centre to assist the development of biological recording systems in the Republic of Ireland

#### **Progress during ISCOPE II:**

- 4.1 Between 1 May 2007 and 30 April 2008 the IWDG received 1,562 sighting records and 144 stranding records which were validated and the database populated.
- 4.2 A questionnaire to IWDG members strongly reported that regularly (at least weekly) updating of the website was essential. During periods where a large volume of sightings are received the Sightings Co-ordinator has undertaken to update with a range of interesting records from around the country to keep readers informed. All records will then be validated and uploaded when time allows.
- 4.3 This has largely been achieved for data within Ireland and it is thought repatriation of data from outside of Ireland would be better achieved through the office on the National Biodiversity Data Centre. It was agreed by the Steering Committee to reallocate this funding towards supporting the Stranding Co-ordinator.
- 4.4 We completed (June 2007) the Conservation Assessment for National Parks and Wildlife Service as part of their reporting to the EU on implementation of the Habitats Directive. We completed a second draft on the review of cetacean records in Northern Ireland in January 2008. These were considerable bodies of work carried out under ISCOPE II.
- 4.5 We have appointed a new webmaster (Brendan Carton) as Padraic Moran has started a two-year post-doc in Cambridge, England. Padraic is available for any database development or troubleshooting under the ISCOPE II project however no further upgrade is planned during Year 2 of ISCOPE II.
- 4.6 No contact with CEDaR
- 4.7 The IWDG were represented (SB, DW, PW) at the Joint Irish Cetacean Database meeting in Cork in June and October and the UK Joint Cetacean Protocol meeting in Dublin in October 2007. The IWDG

were invited by the National Biodiversity Data Centre to contribute to the twice-yearly NBDC Newsletter by submitting a review of sightings and strandings. First Newsletter due out during the first half of 2008.

IWDG responded to a Questionnaire as part of the County Mayo LBAP and also made a submission to the Dun Laoghaire-Rathdown LBAP and North Bull Island Management Plan recommending the recording of both cetacean sightings and strandings in their jurisdictions. IWDG were interviewed as part of an MSc project on biological data recording under the BIOCHANGE project.

The IWDG completed a sighting data audit form as part of the Joint Cetacean Protocol study in the Irish sea to assess the feasibility of combining datasets from the UK and Ireland to address Habitats Directive reporting requirements.

### **Deliverables and Targets**

As many resources including promotional and recording material are already available from ISCOPE, the target deliverables are aimed more at specific areas and better interpretation of the data.

The project deliverables include:

- i) **Target 10 newspaper articles, 10 radio interviews and two TV items per annum.**
- ii) Target 40,000 website requests per month and 1,200 members by the end of 2009.
- iii) Target to record 200 strandings and 1750 sightings per annum by 2009.
- iv) *More extensive geographical and seasonal sightings effort in waters >12nmls of the*
- v) **monthly effort watches at 10 key sites (including the two harbour porpoise cSAC)**
- vi) **monthly effort watches at two sites in Northern Ireland**
- vii) Develop a procedure to derive annual monitoring reports for Annexed species and within cSAC
- viii) **Present results from ISCOPE at one national and one international conference per annum**
- ix) **Participate in international research consortiums**
- x) *Work with state agencies and academic institutions to formalise a National Cetacean database*
- xi) *Prepare a review for Northern Ireland with recommendations for MPAs*
- xii) **Prepare a draft conservation assessment of all cetacea species recorded in Irish waters**
- xiii) **Continue to participate in the SEA process**

(bold indicates completed or nearly completed)



### Media coverage

An indicative list of media articles and coverage is shown in Table 9. Two prime news items were shown on RTE 1 including a piece about the IWDG/GMIT survey of harbour porpoise in the Blasket Islands cSAC with good footage of harbour porpoise. Lunge feeding fin whales were featured in a piece on RTE 1 about the occurrence of large baleen whales off West Cork.

**Table 9. Indicative list of media coverage during May to September 2007**

Date	Media	Subject	Who
3 May	Connemara Community Radio	General sighting information	PW
15 May	Marine Times	Regular column	PW
30 May	West cork People	Regular column	PW
31 May	Irish Examiner	Fin whale activity	PW
5 July	TV3	Failete Ireland “islands” series	PW
25 July	Donegal Radio	Tory dolphin and whale watching	PW
13 July	RTE Radio 1	10,000 <sup>th</sup> cetacean sighting to IWDG	SB
3 August	Seascapes, RTE Radio 1	Fin and humpback whales	PW
4 August	West cork People	Regular column	PW
	Connemara Community Radio	General IWDG news	SB
August	RTE 1	News (at 6 pm)	SB
15 September	Irish Times (Michael Viney)	Harbour porpoise and Marine Protected Areas	SB
26 October	All papers	Ireland's 1 <sup>st</sup> International Humpback whale match	PW
October	RTE 1	News (at and 9pm)	PW
4 November	Liffey Sound FM	Work of ISCOPE & IWDG	DW
5 Nov	RTE Radio 1 Seascapes	Fin whales and satellite tagging	PW
19 Nov	RTE 1 TV News (6:00 & 9pm)	Fin whales in West Cork, Tom Mc Sweeney report	PW
5 Dec 2007	Marine Times	Sighting summary, fin whales off south coast	PW
January	Daily Mail	Fin whale strandings	MO'C
6 Jan 08	British Wildlife Mag.	Text and Fin whale images to publication	PW
6 Feb 2008	Marine Times	Sighting summary	PW
February	UK Media	Irish Ferries press release on Irish Sea wildlife	DW
9 April	Kerryman	Stranded dolphin	MO'C
13 Apr 2008	Marine Times	Sighting summary	PW
18 April	Mooney RTE 1	Managing Sociable dolphins	SB
20 April	Sunday Independent Related articles in local papers in Donegal and Derry.	Unprecedented beaked/pilot whale strandings	MO'C

SB= Simon Berrow, DW= Dave Wall, MO'C=Mick O'Connell, PW= Pádraig Whooley

### Website

The system we use to monitoring the use of the website has changed to AWStats web statistics. This method is consistent from January 2007 so although numbers cannot be compared to ISCOPE I the trend is still relevant. The data in Fig 9 suggests the use of the website has become consistent with occasional peaks associated with media attention of a specific issue such as a live stranding.

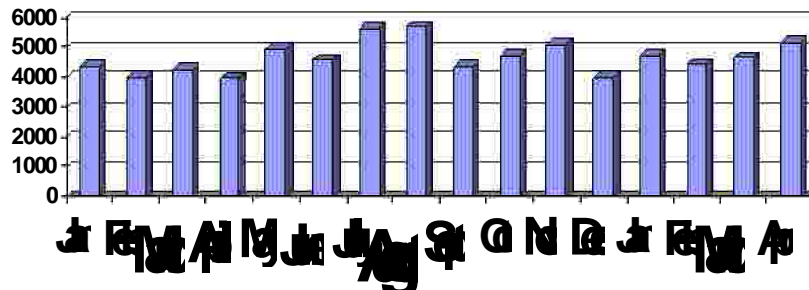


Figure 9. Unique visitors January 2007 to April 2008

There was a peak in August of all parameters associated with using the site (unique visitors, number of visits, pages, hits etc) with a decline from September to March. If we look at the pages most used we find iscope/sighting pages are those most visited as well as species profiles. This might explain the drop during the winter as the number of sighting records declines during this period.

We have experienced some difficulties in uploading bulk records onto the new SQL system. IWDG webmaster Brendan Carton has proposed the use of XML in database management (see (Appendix V). This concept has recently been sent for consideration to the National Biodiversity Data Centre as part of the Joint Irish Cetacean database initiative and was well received by the centre database manager.

The key search phrases and keywords show the name Iris le and Dolphin Group or IWDG scores highly indicating that people had heard of the name and were searching for us on the internet. This suggests that many visitors to the site are interested in Irish cetaceans and not just stumbling on the site.

Table 10: Website details for the period May 2007 to April 2008

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
May 2007	4953	7689	51446	241067	1.69 GB
Jun 2007	4580	7874	52268	237335	1.72 GB
Jul 2007	5653	9433	62029	267524	2.01 GB
Aug 2007	5672	10211	68930	281086	2.37 GB
Sep 2007	4337	8300	41359	169030	1.45 GB
Oct 2007	4734	9798	47030	190263	1.57 GB
Nov 2007	5091	10568	58627	260560	2.52 GB
Dec 2007	3976	8720	44940	182619	1.51 GB
Jan 2008	4761	10543	51640	216055	1.68 GB
Jan 2008	4761	10543	51640	216055	1.68 GB
Feb 2008	4437	9296	43985	181750	1.54 GB
Mar 2008	4660	10211	47278	177187	1.44 GB
Apr 2008	5176	11422	59993	260586	1.93 GB

### Presentations

1. The IWDG were invited to a workshop in Dublin called PROFET by the Killybegs Fishermen's Organisation on the role of an NGO in the new EU Technical Fishing methods. Although of marginal interest to ISCOPE II, it shows that IWDG have a good working relationship with the fishing industry.
2. The IWDG were invited to present a paper on Marine Protected Areas, including the Irish Whale Sanctuary, at a seminar in Stralsund, Germany on 30-31 October.
3. Two posters were presented at the European Cetacean Society conference in Egmond aan Zee, Netherlands in March 2008. One covered the deployment of a Deep POD and one on the photo-identification of fin whales off the south coast of Ireland. An oral presentation was also delivered on the results of acoustic deterrent trials on common dolphins.

### Publications

1. The IWDG were significant contributors to a recent publication by Atlantic Research Coalition called A review of ARC data sets and their potential for use in regularly reporting on the conservation status of cetaceans in UK and adjacent (Northwest European) waters.
2. The galley's for the 2007 Stranding Report and Additional Unpublished stranding records have been signed off and they will appear in the first Irish Naturalists' Journal of 2008 (Appendix VI).

### Strategic Environmental Assessment and Other Issues

1. IWDG were represented on the IOSEA 2 process for the Porcupine Bank, the final report of which was issued in August 2007. The IWDG is also represented on IOSEA 3 and is the only group that is not a state body/agency or industry.
2. Dolman, S.J. Reid, R.J. Barley, J.P. Deaville, R. Jepsen, M. O'Connell, M. Berrow, S.D. Penrose, R. Pinn, E. Stevick, P. Calderan, S. Robinson, K.P. Doyle, T.K. Brownell, R.L. and Simmonds, M.P. (2008) A preliminary note on the unprecedented strandings of 45 deep-diving odontocetes on UK and Irish coasts between January and April 2008. IWC SC/60 E5.
3. IWDG provided advice to EHS on mitigation measures for cetaceans during marine extraction.

### Accounts

During this period George Delaney prepared ISCOPE II accounts. A breakdown of expenditure for the period May 2007 to April 2008 and the annual funding allocated is shown in Table 11. During the period we spent €58,000 of a budget of €66,850 leaving €8,850 underspent. There was an overspend on website upgrade which was carried over from last year, leaving €850 available for the present year. We have purchased two laptops, a hard drive and GPS Receivers for the Ships Surveys.

The underspend in Task 1 Promotion and Training courses is due to additional monies being raised by charging for courses. This meant monies were not always drawn down from the ISCOPE II budget. It can be seen from Tables 1a-c that we achieved our targets on courses and promotional events but the spend on the budget does not

reflect this as additional revenue was brought in from these courses. It was agreed by the Steering Committee that in future any revenue received from these courses will not be credited into the ISCOPE II accounts.

During this reporting period it was agreed to replace the Task 4.3 "Sourcing historical records" with funding for the Stranding Co-ordinator. At the Interim meeting it was agreed to fund effort watches from North Mayo. Monies for this were taken from the underspend in Telephone/Sundries and are now shown under SAC Monitoring.

The major under-spend is in Task 3 Ship Surveys. In order to ensure we get full coverage during the three year ISCOPE II period we have awarded an independent contractors agreement with the IWDG (worth €12,000) to Clare Murray to carry out ship surveys and co-ordinate this task for the remainder of the project. This is due to Dave Wall being taken on under the joint IWDG/GMIT project PReCAST. It was also agreed by the Steering Committee to focus on the Irish Sea and Northern Irish waters under ISCOPE II for the remainder of the project. Funding is available for at least six months survey time (three months to be carried out by CM) and three months by additional surveyors. This also gives new surveyors offshore experience, which is essential for bringing through new surveyors. Dave Wall will still manage Clare but she will be responsible for ensuring coverage in the Irish Sea. This contract starts in June 2008.

Presentations on the work of ISCOPE were made at the European Cetacean Society conference in the Netherlands in March, which was a suitable venue for dissemination of results.

The IWDG have all accounts audited each year. Full set of accounts for ISCOPE II can be supplied on request.

## **References**

Berrow, S. (2007) WhaleLog 2007. Final Report to the Heritage Council for Wildlife Grant Number 15290.

**Table 11. Summary accounts of expenditure (May 2007 to April 2008) and available for the period May 2007- April 2008**

Task	Who	Item	Spent	Allocated	Available
<b>Manager</b>	SB	(12 days @ 200 pd)	2400	2400	0
		Printing final report	-	-	-
<i>Sub-total</i>			<b>2,400</b>	<b>2,400</b>	<b>0</b>
		Telephone @ 300 per month	2450	3600	1150
		Sundries (incl. postage) @ 300 per month	2450	3600	1150
		Equipment	2435	2000	-435
		Insurance	2304	2500	196
		Printing	939	1000	61
<i>Sub-total</i>			<b>10,578</b>	<b>12,700</b>	<b>2,122</b>
1.1/2.1	All	Promote ISCOPE (10 days @ 200 pd)	392	2000	1608 <sup>1</sup>
1.2/2.2	All	Training courses (12 days @ 200 pd)	2685	2400	-285
		Travel expenses @ 400 per month for 9 months	3449	3600	151
<i>Sub-total</i>			<b>6,256</b>	<b>8,000</b>	<b>-1,744</b>
2.4	Con	Monitor cSACs (24 days at 200 pd)	5400	4800	-600
		Expenses @ 50 pd	1350	1200	-150
<i>Sub-total</i>			<b>6,750<sup>2</sup></b>	<b>6,000</b>	<b>-750</b>
3.1	DW/JB	Field work @ 3000 per month (for 4 months)	6925	12000	5075
	DW	Expenses @ 250 per month (for 4 months)	184	1000	816
	DW/CR	Co-ordinate ferry surveys (4 days @ 200 pd)	800	800	0
3.2	DW	Data entry and reporting (6 days @ 200 pd)	585	1200	615
<i>Sub-total</i>			<b>8,494</b>	<b>15,000</b>	<b>6,506</b>
4.1	PW	Validate records @ 200 pd <sup>1</sup>	6825	7200	375
4.2	PW	Maintain database @ 200 pd <sup>1</sup>	6839	6800	-39
4.3	SB	Conservation Assessment (10 days @ 200 pd)	2000	2000	0
4.4	MO'C	Validate and upload stranding records <sup>3</sup>	2165.8	2000	-165
<i>Sub-total</i>			<b>17,830</b>	<b>18,000</b>	<b>170</b>
<b>Others</b>					
Dissemination	All	Presentation at conferences/seminars	2,440	1,500	-940
Website	PM	Website and database management (5 days @ 400 pd)	850	850 <sup>4</sup>	0
Accounts	GD	12 days @ 200 pd	2,400	2,400	0
<b>Total cost</b>			<b>57,998</b>	<b>66,850</b>	<b>8,852</b>

<sup>1</sup> Underspend due to additional funds raised by talks

<sup>2</sup> Additional site in Mayo monitored from February 2008

<sup>3</sup> Replaced Sourcing historical records and based on c150 stranding records per annum and 20 minute handling time

<sup>4</sup> Overspend of 1150 in 2007, thus available funds are €850 for 2007

## **Appendix I: ISCOPE Steering Committee**

### **Members**

Environment and Heritage Service (Northern Ireland):

Gary Burrows

Irish Whale and Dolphin Group:

Simon Berrow (ISCOPE Co-ordinator)  
Mick O'Connell (Strandings Co-ordinator)  
David Wall (ShOPs Co-ordinator)  
Pádraig Whooley (Sightings Co-ordinator)

Heritage Council:

Cliona O'Brien (from August 2007)

Marine Institute:

Michael O'Cinneide

National Parks and Wildlife Service:

David Lyons  
Eamonn Kelly

## **Appendix II: BioRecorders Proposal**

**Appendix III: Paper submitted to the International Whaling Commission Scientific Committee on Unprecedented number of stranded deep-diving species.**



**Appendix IV: Proposal for Determining the Cause of Death of Annex II species and other cetacean species in Irish waters**

Dr Simon Berrow and Mick O’Connell  
Irish Whale and Dolphin Group

Under the EU Habitats Directive, member states are required to monitor the incidental capture and killing of all Annex IV species (includes all cetaceans). For cetaceans, this can be achieved by post-mortem examination of stranded animals.

Stranded cetaceans are recorded as part of the Irish Whale and Dolphin Group (IWDG) Cetacean Stranding Scheme. This scheme has been running since 1991 and there has been a rapid increase in the number of individual records reported to the IWDG since the start of the present century (Berrow et al. 2005), which has been attributed to an increase in reporting effort rather than mortality (Berrow and Rogan, 1997). However the UK, which has been carrying out post-mortem examinations of stranded cetaceans since 1990, have reported a progressively increasing annual number of stranded cetaceans, which has been attributed to increasing numbers of strandings of common dolphins *Delphinus delphis* and harbour porpoises *Phocoena phocoena* (Jepson 2005).

Over the period 2000-2004, the most common cause of mortality of harbour porpoises in the UK were attack from bottlenose dolphins *Tursiops truncatus* (n=128), pneumonias due to combinations of parasitic, bacterial and fungal infections (n=102), entanglement in fishing gear (n=93) and starvation (n=74) (Jepson 2005). Bycatch was the most common cause of death (61.1%) of common dolphins in the UK (116 of 190 examined) (Jepson 2005). Of increasing concern is the incidence of gas bubble lesions in cetaceans, especially deep-diving species, which may be caused by decompression sickness following exposure to anthropogenic sound sources (Jepson et al. 2005).

The IWDG Cetacean Stranding Scheme can identify what species are likely to strand where, and in what condition. We suggest that this can be used to design a systematic sampling programme that will provide high quality data on the cause of death of a sample of stranded cetaceans in order to fulfill our obligations under the Habitats Directive and inform conservation managers.

**Trends in Cetacean Strandings in Ireland**

The number of stranding records reported to the IWDG has increased since 2000 with over 100 strandings now reported annually (Fig 1). The IWDG Cetacean Stranding Scheme records species, gender and length of each animal stranded. Condition is also recorded as Live/Very Fresh/Fresh/Poor/Very Poor. Very fresh is defined as “Animal looks like it may be still alive, Skin smooth and intact, eyes moist” and Fresh as “Skin intact but may be starting to dry out and peel. Skin colour begins to darken. Some scavenging”.

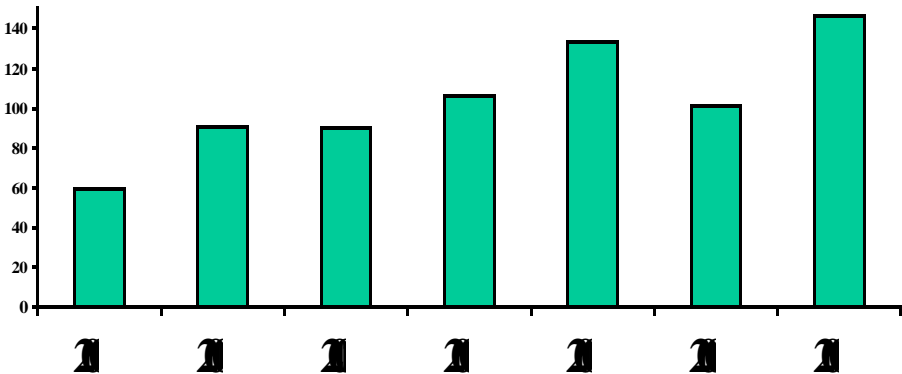


Figure 1. The number of published stranding records on the Irish coast from 2000-2006

For this proposal we have divided the coastline into four regions: **East** (Louth, Meath, Dublin, Wicklow and east Wexford), **South** (south Wexford, Waterford, Cork and south Kerry), **West** (north Kerry, Limerick, Clare and Galway) and **North West** (Mayo, Sligo, Leitrim and Donegal).

Table 1 shows the number, species and location of all strandings described as Fresh or Very fresh recorded in 2006 and Table 2 in 2007. For the purposes of this proposal, ‘very fresh’ includes cetaceans, which have live

stranded but died or were euthanased.

Table 1. The number of stranded cetaceans described as Fresh or Very fresh in 2006

Species	East		South		West		Northwest		Total
	Events	Ind	Events	Ind	Events	Ind	Events	Ind	
Common dolphin	1	1	10	10	2	2	3	3	16
Striped dolphin	1	1	4	7	1	1	2	4	13
Harbour porpoise	4	4	4	4	0	0	1	1	9
Northern bottlenose whale	0	0	2	2	0	0	2	2	4
White-sided dolphin	0	0	1	1	2	2	0	0	3
Bottlenose dolphin	0	0	1	1	2	2	0	0	3
White-beaked dolphin	0	0	0	0	0	0	1	1	1
Humpback whale	0	0	0	0	1	1	0	0	1
Sperm whale	0	0	0	0	0	0	1	1	1
Sowerby's beaked whale	0	0	0	0	0	0	1	1	1
Unidentified beaked whale	0	0	0	0	1	1	0	0	1
Total	6	6	22	25	9	9	11	13	53

**Note: these figures apply to events and not individuals. A stranding event may involve more than one animal.**

Table 2. The number of stranded cetaceans described as Fresh or Very fresh in 2007 (to end of September)

Species	East		South		West		Northwest		Total
	Events	Ind	Events	Ind	Events	Ind	Events	Ind	
Common dolphin	0	0	8	8	3	3	2	2	13
White-sided dolphin	0	0	1	1	1	1	3	3	5
Harbour porpoise	2	2	1	1	1	1	0	0	4
Striped dolphin	0	0	2	3	0	0	1	1	4
Pilot whale	0	0	1	1	0	0	2	2	3
White-beaked dolphin	0	0	0	0	0	0	1	1	1
Sperm whale	0	0	0	0	0	0	1	1	1
Dolphin species	0	0	0	0	0	0	1	1	1
Cetacean species	0	0	0	0	0	0	1	1	1
Total (to end sept)	2	2	13	14	5	5	12	12	33

**Note: these figures apply to events and not individuals. A stranding event may involve more than one animal.**

We contend that post-mortem examinations should be carried out by veterinary surgeons, who are qualified to determine the cause of death of an animal. Such vets could be sourced from the Department of Agriculture Regional Vet Labs. Regional Vet labs are well spread around the country and could receive cetaceans from the counties listed:

Vet Lab Region

Celbridge: Cos Louth, Meath, Dublin, Wicklow  
 Kilkenny: Cos Wexford, Waterford  
 Cork: Cos Waterford, Cork, Kerry  
 Limerick: Cos Kerry, Limerick, Clare  
 Athlone: Cos Galway  
 Sligo: Cos Mayo, Sligo, Leitrim, Donegal

If five animals were examined each year at each laboratory then within 3-5 years a sample size of 60-100 could be achieved in readiness for the next reporting round – the EU on the implementation of Habitats Directive (2014). While significantly more than 20 cetaceans are likely to strand in suitable condition in any given year, not all will be available for post mortem due to difficulties with accessibility and delays between the occurrence and reporting of particular strandings. Some species are too large to transport and this would necessitate post mortem being carried out on site.

In the early 1990s, there was a lot of interest from regional vets in this proposal and demonstration post-mortems on cetaceans were carried out at Cork and Sligo Vet labs by UK based vet Thijs Kuiken. Some labs e.g. Cork Regional Vet Lab have frequently undertaken post-mortems on marine mammals and published findings (Power and Murphy, 2002).

### Questions to be asked ?

It is important that it is clearly understood what issues or questions are to be investigated through post-mortem examination. Auxillary projects such as recording diet, reproductive state, parasites and toxicology (incl. Brevo-toxins) could also be facilitated.

These questions might include:

1. What are the most common sources of mortality of Annex II cetacean species (bottlenose dolphins and harbour porpoise) ?
2. What are the most common sources of mortality of the most frequently stranded small cetacean species (e.g. harbour porpoise, common dolphin, striped dolphin, atlantic-white-sided dolphin) ?
3. Is gas bubble lesion a cause of death of deep diving species (sperm and beaked whales)?

### **Procedure**

1. If a species of interest in a region of interest is reported to the IWDG then the IWDG would contact the local Vet Lab to see if it is convenient for a post-mortem to be carried out.
2. If a vet is available, the IWDG through its network of local contacts will organize transport of the animal to the Vet lab. Many of these contacts are NPWS Conservation rangers who would have access to 4-wheel drive vehicles and other useful equipment.
3. Alternatively, on occasion it may be more advisable that the postmortem be undertaken at or near the site of stranding.
4. If no vet is available the IWDG could try a different vet lab or record the basic biological parameters (species, gender, length) as part of the cetacean monitoring scheme and collect a skin sample for the Irish Cetacean Tissue Bank at the Natural History Museum.
5. The IWDG will manage the project, working closely with the Regional Vet Labs and produce an Annual report on Progress

### **References**

- Berrow, S.D. and Rogan, E. (1997) Cetaceans stranded on the Irish coast, 1901-1995. *Mammal Review* 27(1), 51-76.
- Berrow S., Wall D. and Rogan E. (2005) Recording stranded cetaceans in Ireland. *Proceedings of Workshop on Strandings Networks, 19th Annual Conference, European Cetacean Society, La Rochelle, France.*
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- Power, E.P. and Murphy, S. (2002) "*Staphylococcus aureus* septicemia in a killer whale" *The Veterinary Record*, **150** 819.

## Appendix V: Wildlife Survey Reporting Language: Overview

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Version: 0.02

Status: Draft

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#### § [The Need for a Reporting Language](#)

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#### § [Transforming XML](#)

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#### § [The Web Interface and XML](#)

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#### Introduction

#### **The Need for a Reporting Language**

The development of a Joint Irish Cetacean Database means that historical cetacean observation data stored in different databases needs to be transferred to, or mirrored at a central repository. New observation data from a variety of sources also needs to be reported.

An XML-based reporting language will facilitate data transfer, allow transparency and minimise the risk of time-consuming errors during data import. Further, the language can also be used to describe data extracted from the central repository.

#### **XML, the Extensible Markup Language**

#### **What is XML?**

XML provides a framework for structuring data in platform-independent way. The W3C states:

*Extensible Markup Language (XML) is a simple, very flexible text format derived from SGML (ISO 8879). Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.* [ref:<http://www.w3.org/XML/>]

XML is license-free, platform-independent and well-supported. An ecology of software tools and libraries have been developed including editors, validators and parsers; many of them open-source software (OSS) and free to use in commercial or non-commercial environments [ref:<http://xml.apache.org/>].

The format of an XML document, and the ranges that values in that document may assume, can be stipulated in a schema document [ref:<http://www.w3.org/XML/Schema>, <http://relaxng.org/>].

#### **Advantages of XML over XLS / CVS**

XML is an open standard, with information in human-readable text form with additional markup embedded to allow the automated extraction of semantic content. The structure and content of an XML document may be controlled through validation against a schema. Microsoft's XLS (Excel Spreadsheet) format, on the other hand, is a proprietary, machine-readable binary format. XLS spreadsheets can be exported to a more tractable comma-separated CVS format, but issues regarding the identity of data columns and how they map to database table fields remain. Some control over content of an XLS spreadsheet may be afforded by way of macros, but again this would be proprietary and non-portable.

Working with CVS-formatted data tends to be time-consuming and error-prone, whereas XML-formatted information is less ambiguous, with content more clearly defined.

#### **Transforming XML**

XML documents lend themselves to conversion into other formats, like PDF, via Extensible Stylesheet Language (XSL) transformations. The application of this transformation language makes the XML format very adaptable [ref:<http://www.w3.org/Style/XSL>].

A common application would be to transform a raw XML document into a HTML web page that can be displayed cleanly in a browser; another is to transform into SQL *insert* statements that can be executed by a relational database engine (*see below*).

### **Importing XML into Relational Databases**

XML is well supported by database vendors:

§ Oracle provides a high-performance, native XML storage and retrieval technology in the form of XML DB

[ref:<http://www.oracle.com/technology/tech/xml/xmldb/index.html>]

§ Microsoft has SQLXML to provide XML support for its SQL Server database

[ref:<http://msdn.microsoft.com/en-us/library/aa286527.aspx>]

§ MySQL has improved XML support from version 5.1

[ref:<http://dev.mysql.com/tech-resources/articles/mysql-5.1-xml.html>]

A range of other import / export solutions are available, whether it be via XSL transformation into SQL insert statements, the Java JAXB package or the Hibernate object-relational mapping (ORM) library, to name a few. [ref:[http://en.wikipedia.org/wiki/Data\\_binding](http://en.wikipedia.org/wiki/Data_binding)]

### **The Web Interface and XML**

Should a Web Interface for reporting or for querying be required, the XML language will allow efficient integration with XForms technology [ref:<http://www.w3.org/TR/xforms/>].

### **Extending XML for Cetacean Reporting Applications**

Defining an XML language suitable for cetacean survey reporting is not a major task, given the work that has been done on database entities and relationships: we can leverage this database analysis to create an XML schema against which our reporting language documents can be validated. Contributing databases can be provided with a well-defined document format which should then be used for data export to the JICD, making the export process much less error prone than it would be otherwise.

## Appendix VI: Accepted stranding report for the Irish Naturalists' Journal

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### Cetacean Notes

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#### Records from the Irish Whale and Dolphin Group for 2007

Compilers: **Mick O'Connell** and **Simon Berrow**

Irish Whale and Dolphin Group, Merchants Quay, Kilrush, Co Clare.

All records below have been submitted with adequate documentation and/or photographs to put identification beyond doubt. The length is a linear measurement from the tip of the beak to the fork in the tail fin. Unless otherwise stated the animal was 'observed dead on the seashore on the given date. A new classification of 'striped or common dolphin' has been added to reflect the fact that these species are difficult to tell apart when skin colouration has faded and the upper palate has not been checked for the presence of grooves.

During 2007 we received 143 stranding records of 148 individuals. Twelve species were recorded with 24 records not identified to species level. As in previous years the common dolphin (27% of records) and harbour porpoise (21%) were the most frequently reported species. Striped dolphin records were low compared to 2006 with white-sided dolphin and pilot whales up on previous years. These latter species often associate because they tend to occur offshore on the edge of the continental shelf where they feed predominantly on squid. Only one beaked whale (Cuvier's beaked whale) was reported in 2007 compared to eight in 2006.

One of the most striking results from 2007 was the number of live strandings with 28 events (20% of total stranding records) involving nine species. This compares with 20 live strandings of nine species in 2006 and 6 live strandings of four species in 2005. Two fin whales were included in the live strandings, both of which were small individuals and live stranded on the same day but in locations 185km apart. There were only two previous records of live stranded fin whales for Ireland, one in 2001 the other in 2003 and there have been no other stranding records of this species since 2003. There were also eight live strandings of white-sided dolphins. The increase in live strandings may be due to better recording as re-floated animals often remain unrecorded leaving no evidence of the event. It will be interesting to see if this trend in live strandings continues.

#### **Fin whale *Balaenoptera physalus* (Linnaeus 1758)**

Unsexed. c.9m. Live stranded and died on 28 December 2007 at Glen Pier, Ballinskelligs, Co. Kerry (V375685). Derry Doyle, Michael Herrmann, Jana Kunze.

Female. 6.56m. Live stranded and died on 28 December 2007 at Letterdyfe Shore, Roundstone, Co. Galway (L727412). Rob Holloway, Conall Hawkins, Nicholas Griffin, Martin O'Malley, Rita Gately.

#### **Minke whale *Balaenoptera acutorostrata* Lacépède 1804**

Unsexed. c.8m. Found floating on 28 August 2007, 6km south of Union Hall, Co. Cork (W238218). Nic Slocum. [Sex not apparent from photograph]

#### **Cuvier's beaked whale *Ziphius cavirostris* Cuvier 1823**

Unsexed. c.6.5m. Found on 2 March 2007 at Lettergesh Beach, Co. Galway (L740639). Dorothy Cross.

#### **Sperm whale *Physeter macrocephalus* Linnaeus 1758**

Unsexed. 7.2m (excluding tail). Found on 22 March 2007 near Roonagh Point, Co. Mayo (L743802). Peter and Ann Osborne; Eoin McGreal (NPWS).

Male. c.14m. Live stranded and died on 26 April 2007 at Maghera, Falcarragh, Co. Donegal (B928351). John Craig.

**Harbour porpoise *Phocoena phocoena* (Linnaeus 1758)**

- Unsexed. 1.3m. Found on 11 January 2007 at Buncrana, Co. Donegal (C338319). Emmett Johnston (NPWS).
- Female. Found on 15 January 2007 at Kilmore Quay, Co. Wexford (S964032). Tony Murray (NPWS).
- Unsexed. c.1.5m. Found on 18 February 2007 at Brittas Bay, Co. Wicklow (T313829). Alon Bader.
- Unsexed. 1.25m. Found on 20 February 2007 at Little Is and Strand, Owenahinch, Co. Cork (W306350). John Headlam, Pádraig Whooley.
- Unsexed. 1.65m. Found on 25 February 2007 at Magheramore Beach, Co. Wicklow (T331870). Bobby Harnett.
- Unsexed. c.1.1m. Found on 3 March 2007 at Sandycove, Co. Dublin (56280). Orla McGovern, Dave Wall, Phyllis Ryan, Nick Channon.
- Male. 1.42m. Found on 7 March 2007 at Chour Beach, Co. Wexford (T095052). Tony Murray.
- Unsexed. Found on 3 April 2007 at Flaggy Shore, New Quay, Co. Clare (M251105). Sue Clarke, Pat Molloy.
- Unsexed. 1.2m. Found floating on 5 April 2007 near Doolin, Co. Clare (R051955). Ken O'Sullivan.
- Unsexed. 1.45m. Found on 15 April 2007 at Sandymount Strand, Co. Dublin (O199326). Eugene Archer, Phyllis Ryan.
- Unsexed. 1.5m. Found on 1 May 2007 at Beal Ban, Smerwick Harbour, Co. Kerry (Q355058)[or Q355059?]. Jill Crosher.
- Male. 1.3m. Found on 18 May 2007 at Cow Strand, Sherkin Island, Co. Cork (W017262). Sherkin Island Marine Station.
- Male. 1.3m. Found on 27 May 2007 at Kinnego Bay, Inishowen, Co. Donegal (C632459). Emmett Johnston (NPWS).
- Unsexed. c.0.9m. Found on 13 June 2007 at Ventry Strand, Co. Kerry (Q383002). Nick Massett.
- Female. 1.3m. Found on 24 June 2007 at Jameson's Beach, Howth, Co. Dublin (O251371). Damien Coady, Dave Wall.
- Unsexed. 0.84m. Found on 25 June 2007 at Curran Strand, Portrush, Co. Antrim (C880409). Helen White.
- Male. c.1.05m. Found on 31 July 2007 at Inch Beach, Co. Cork (W875600). Robert Murphy, Darragh Musgrave.
- Unsexed. 1.31m. Found on 3 August 2007 at Crag Beach, Lahinch, Co. Clare (R090862). Joanne O'Brien.
- Unsexed. c.0.9m. Found on 23 August 2007 at Portrush, Co. Antrim (C859409). Richard Stevens.
- Male. 1.02m. Found floating on 5 September 2007 in Galway Bay, Co. Galway (39215). Stephen Comerford, Joanne O'Brien.
- Unsexed. Found on 13 October 2007 at Dundrum Bay, Newcastle, Co. Down (J402333). Anne McComb.
- Unsexed. c.1m. Found on 16 October 2007 at North Beach, Brittas Bay, Co. Wicklow (T305818). Orla Gallagher, Paul Richards.
- Male. 1.2m. Found on 19 October 2007 at Ventry Strand, Co. Kerry (Q381001). Nick Massett.
- Unsexed. 1.78m. Live stranded and died on 27 October 2007 at Tullaghan Strand, Co. Leitrim (G783581). Bundoran Surf Company, Willie Britton, Mick O'Connell.
- Unsexed. Found on 31 October 2007 at Tramore Strand, Co. Waterford (S588009). Betty Twomey.
- Male. 1.53m. Found on 25 November 2007 at Ballybunion, Co. Kerry (Q862415). Mike Flahive, Mick O'Connell.
- Male. 1.55m. Found on 28 November 2007 at Ventry Strand, Co. Kerry (V379999). Nick Massett.

Female. 1.43m. Found on 6 December 2007 at Carnsore Point, Co. Wexford (T117037). Tony Murray.

Unsexed. 1.8m. Found on 10 December 2007 at Dinish Island, Castletownbere, Co. Cork (V685454). Clare Heardman.

Unsexed. 1.2m (excluding head). Found on 26 December 2007 at Garnish, Beara, Co. Cork (V522430). Sue Money.

Male. 1.5m. Found on 27 December 2007 at Bunanear, Annascaul, Co. Kerry (Q596002). Patricia Scully, Nick Massett.

#### **Long-finned pilot whale *Globicephala melaena* (Traill 1809)**

Male. 2.41m. Found on 3 March 2007 at Fahamore, Brandon Bay, Co. Kerry (Q608184). Sheena Fennell, Mick O'Connell.

Unsexed. c.5m. Found on 19 March 2007 at Seafield, Quilty, Co. Clare (R003741). Jim Martin, Simon Berrow.

Unsexed. c.4.5m. Found on 29 April 2007 at Castle Island, Roaring Bay, Co. Cork (V958296). Jim Brindley, Declan O'Donnell (NPWS).

Male. 5.3m. Found on 29 May 2007 at Loher Beach, Water ille, Co. Kerry (V495617). Rosemary Hill.

Unsexed. c.5m. Found on 17 June 2007 at Iniskeel, Clew Bay, Co. Mayo (L874952). Liam Naidoo.

Unsexed. c.5m. Found on 3 August 2007 at Glengad Beach, Rossport, o (F802407). Caoimhe Kerins, John Plummer.

Male. Live stranded and died on 15 August 2007 at Fanad Head, Co. Donegal (C214478). John McAteer (Tirconail Tribune).

Female. 4.54m. Found on 21 August 2007 at Cappagh Stra oghane, Co. Kerry (Q527132). Skin covered in lesions infested with lice (*Isocyamus delphinii*). Lila and Ben Fenton, Kevin Flannery (Dingle Oceanworld), Mick O'Connell.

Unsexed. c.6m. Found on 27 October 2007 at Knocklane, Sligo Bay, o. Sligo (G564444). Don Cotton, Richard Nairn.

Unsexed. c.5m. Found on 29 October 2007 at Kilshannig, Castlegreg o. Kerry (Q621190). Paul Gordon, Christian Brene.

Unsexed. Found on 23 December 2007 at Monatrea, Youghal, Co. Cork (X114775). Tom Power.

Unsexed. c.5m. Found on 26 December 2007 at Kilmore Quay, Co. Wexford (S957039). Jim Hurley, Kathy French, Eilis Ryan.

Unsexed. c.2.5m. Found on 28 December 2007 at Golden Strand, Achill Island, Co. Mayo (F695092). Liam Naidoo.

#### **White-beaked dolphin *Lagenorhynchus albirostris* Gray 1846**

Male. 2.25m. Found on 25 March 2007 at Bushfoot, Runkerry Point, Co. Antrim (C934427). Keith Fitzsimmons, Gary Burrows.

Female. 2.25m. Live stranded and died on 15 August 200 at Rougey, Bundoran, Co. Donegal (G818592). Fiona Farrell, Martin Granaghan, Joe McNulty.

#### **White-sided dolphin *Lagenorhynchus acutus* Gray 1826**

Male. 2.5m. Live stranded and died on 3 January 2007 at Buncrana, Co. Donegal (C339317). Paddy McCrossan (Inishowen Wildlife Club), Andrew Speer (NPWS),.

Unsexed. c.2m. Live stranded and died on 24 January 2007 at Ballyness Bay, Horn Head, Co. Donegal (B916338). Sandy Alcorn, Imelda Gallagher.

Unsexed. c.2.5m. Live stranded and refloated on 15 May 2007 at Clo ne, Co. Kerry (Q525124). Jax and Fiona Wood, Thomas Fitzgerald, Mick O'Connell.



Unsexed. c.2-2.5m. Live stranded and died on 16 May 2007 near Castlegregory, Brandon Bay, Co. Kerry (Q607184). Probably the same animal, which was refloated at Cloghane, Co. Kerry on the 15 May. Bob King (Waterworld Dive Centre).

Unsexed. 2.2m. Found on 1 June 2007 at Benone Strand, Magilligan, Co. Derry (C712364). Patrick Dennison, Richard Gillen.

Female. c.2m. Live stranded and died on 7 July 2007 at Downhill Beach, Portstewart, Co. Derry (C745364). Jim Allen, Mervyn Guthrie.

Male. 2.6m. Live stranded on 10 July 2007 at Downings and, Co. Donegal (C106381). Refloated but found dead on the following day. Michael Bassett, Patricia Conlon, Martin Fleming, Nadine Lynch, Gary Moore, Richard Robinson.

Unsexed. c.2.5m. Found on 28 July 2007 at Inch, Co. Kerry (V648993). Carlsen Cloney (Inch Lifeguard), Mick O'Connell.

Unsexed. 2.3m. Found on 4 September 2007 at Scraggan Bay, Castlegregory, Co. Kerry (Q624191). Christian Brene.

Male. 2.4m. Live stranded on 6 September 2007, refloated and died on 7 September 2007, near Tracht Beach, Kinvara, Co. Galway (M358126). Brendan Dunphy, Sabine Springer, Karen Weeks.

Unsexed. Live stranded and died on 8 September 2007 at Keadue beach, Burtonport, Co. Donegal (B736181). Tony Boyle, John Rafferty.

Unsexed. c.2.8m. Found on 21 October 2007 at Carnlough Beach, Co. Antrim (D286177). Lindsey Carmichael.

Unsexed. c.2m. Found on 13 November 2007 at Ballyheigue, Co. Kerry (Q749259). Fergal Hatton

#### **Risso's dolphin *Grampus griseus* (Cuvier 1812)**

Male. 3.15m. Found on 1 October 2007 at Tinnabarna, Kilkridge, Co. Wexford (T214446). Linda and Jimmy Powell.

#### **Striped dolphin *Stenella coeruleoalba* (Meyen 1833)**

Unsexed. 2.37m. Found on 5 January 2007 at Gorteen Point, Roundstone, Co. Galway (L695373). Rob Holloway (NPWS).

Two males. 1.53m and 1.54m. Live stranded and died on March 2007 at Ballybunion, Co. Kerry (Q858412). Mike Flahive, Mick O'Connell.

Female. 1.45m. Found on 2 May 2007 at Ardnahinch Beach, Ballycotton, Co. Cork (W993660). Pat Smiddy (NPWS).

Male. 1.67m. Found on 3 May 2007 at Raghly Point, Co. Ligo (G582417). Don Cotton and Jean Dunleavy.

Male. 1.75m. Found on 17 August 2007 at Marble Hill Strand, Dunfanaghy, Co. Donegal (C071362). Andrew Speer (NPWS).

Two females. Adult and calf live stranded on 16 September 2007 at Tramore, Co. Waterford (X115764). Calf died, adult refloated. Andrew Malcolm, Michael Roche.

Male. Live stranded and died on 5 December 2007 at the Claddagh, Galway Bay, Co. Galway (M300244). Jamie Downes, Rita Gatley, Colette Lavin, Maeve Murray Sabine Springer, K. Sweeney, Garda Síochána.

#### **Common dolphin *Delphinus delphis* Linnaeus 1758**

Unsexed. 1.4m. Found on 2 January 2007 at Doogort, Achill Island, Co. Mayo (F701098). Lee Mc Daid (NPWS).

Unsexed. c.1.8m. Found on 2 January 2007 at Feoghanach, Co. Kerry (Q387096). Brian and Sara Millar.

Male. c.2m. Found on 7 January 2007 at Salthill, Co. Galway (M286240). Kate Keady-Walsh, Joanne O'Brien.

Male. 2.15m. Found on 13 January 2007 at Dooagh, Achill Island, Co. Mayo (F603046). John O'Shea.

Male. Found on 14 January 2007 at Ballyhealy Beach, Co. Wexford (T020049). Kevin McCormick, Tony Murray (NPWS).

Unsexed. 0.75m. Found on 26 January 2007 at Cragavad, Cultra, Co. Down (J419813). Marc Potts.

Male. 2.05m. Found on 7 February 2007 at Ardmore Boat ve, Ardmore, Co. Waterford (X194775). John King.

Male. 1.3m. Found on 11 February 2007 at Long Strand, Clonakilty, Co. Cork (W332337). Claire Pollock and Colin Barton.

Unsexed. c.1.5m. Found on 15 February 2007 at Barleycove, Mizen, Co. Cork (V766253). Rose Golding.

Two live stranded; one female 2.09m died, the other un sexed/unmeasured was refloated; on 19 February 2007 at Cromane, Co. Kerry (V697979). Kevin Flannery, Emer Rogan, Mick O'Connell.

Male. 1.43m (excluding tail). Found on 1 March 2007 at Kilmore Quay, Co. Wexford (S962038). Kevin McCormick, Tony Murray (NPWS).

Unsexed. 1.4m. Found on 2 March 2007 at Annestown, Co. Waterford (X484987). Andrew Malcolm.

Unsexed. 2.05m. Found on 12 March 2007 at Sruhír Strand, Co. Mayo (L743760). Eoin McGreal (NPWS).

Female. 1.38m. Found on 14 March 2007 at Inch Strand, Kerry (Q641004). Kate Moyna, Mick O'Connell.

Male. 1.51m. Found on 15 March 2007 at Inch Strand, Co. Kerry (Q639006). Kate Moyna, Mick O'Connell.

Unsexed. 2m (excluding tail). Found on 28 March 2007 at Black Strand, Smerwick Harbour, Co. Kerry (Q368059). Rob Christiaanse.

Unsexed. 1.75m. Found on 13 April 2007 at Rinville, Oranmore, Co. Galway (M357220). Frank Flanagan, Clare Murray, Joanne O'Brien.

Unsexed. 2.1m. Found on 16 April 2007 at Ferriter's Cove, Ballyferriter, Co. Kerry (Q328050). Aileen McConville, Nick Massett.

Unsexed. Skull found on 26 April 2007 at The Breaches, Kilcoole, Co. Wicklow (O313077). Niall and Noel Keogh.

Unsexed. Three animals live stranded and were refloated on 6 May 2007 at Cartron Point, Mullet Peninsula, Co. Mayo (F636213). Irene O'Brien (NPWS).

Male. 2.08m. Found on 8 May 2007 at New Quay, Co. Clare (M280122). Joanne O'Brien.

Male. 1.8m. Live stranded and euthanased on 16 May 2007 at Timoleague, Co. Cork (W484439). Rob Howe, Fran Wolstenholme, Padraig Whooley.

Unsexed. 1.2m. Found on 29 May 2007 at Loher Beach, Waterville, Co. Kerry (V493615). Rosemary Hill, Mick O'Connell.

Unsexed. 1.23m. Found on 12 August 2007 at Omeý Island, Co. Galway (L554559). David Lee.

Female. c.2m. Live stranded and euthanased on 20 August 2007 at Head Beach, Louisburgh, Co. Mayo (L838823). Shay Fennelly, Eoin McGreal (NPWS).

Unsexed. c.2m. Found on 20 August 2007 at Barrow Beach, Tralee, Co. Kerry (Q732192). Martin Gill, Erin O'Connell, Tralee Golf Club.

Male. 2.16m. Found on 3 September 2007 at Stradbally Strand, Castlegregory, Co. Kerry (Q584134). Kate O'Dwyer, Mick O'Connell.

Unsexed. 1.89m. Found on 4 September 2007 at Fermoy Strand, Castlegregory, Co. Kerry (Q552124). Kevin Flannery (Dingle Oceanworld), Mick O'Connell.

Male. 2.01m. Found on 9 September 2007 at Cuas Crome, Merciveen, Co. Kerry (V439822). Gerry Enright, Mick O'Connell.

Unsexed. 1.02m. Found on 11 September 2007 at Fermoyle and, Castlegregory, Co. Kerry (Q549124). Kate O'Dwyer, Mick O'Connell.

Unsexed. 2.04m. Live stranded and died on 19 October 2007 at Ballinskelligs, Co. Kerry (V436649). John Lyne, Rosemary Hill.

Female. 1.98m. Found on 24 October 2007 at Red Barn Strand, Youghal, Co. Cork (X087740). Pat Smiddy, Emer Rogan.

Unsexed. 1.88m. Found on 29 October 2007 at Waterville, Co. Kerry (V486667). Rosemary Hill.

Female. 1.68m. Live stranded on 6 December 2007 at Dooghmakeon Strand, Emlagh, Co. Mayo (L743805). Euthanased on the 7 December 2007. Barry Gaffney, Eoin McGreal (NPWS).

Female. 1.92m. Found on 8 December 2007 at Nemestown, Imore Quay, Co. Wexford (S987033). Jim Hurley.

Male. 1.8m. Live stranded and euthanased on 10 December 2007 at Fox Point, Barnatra, Co. Mayo (F767330). Sue Callaghan (NPWS), John Carey, Leonard Floyde, Lee Daid (NPWS), Belmullet Gardai.

Unsexed. Found on 16 December 2007 at Ballytrent Beach, Carnsore, Co. Wexford (T135084). David Shannon, Tony Murray (NPWS).

Male. 1.47m. Found on 18 December 2007 at Ballinesker, Curracloe, Co. Wexford (T121299). Kevin McCormick, Tony Murray (NPWS), Paddy O'Sullivan.

#### **Bottle-nosed dolphin *Tursiops truncatus* (Montagu 1821)**

Unsexed. 3.2 - 3.35m. Found on 2 January 2007 at An Caladh Mór, Inis Maan, Aran Islands, Co. Galway (L951065). Fergal Waldron.

Female. c.3.4m. Found on 24 January 2007 at Curran Strand, Portrush, Co. Antrim (C864407). Jim Allen.

Male. 2.35m. Found on 11 March 2007 at Waterville, Co. Kerry (V485672). Rosemary Hill, Mick O'Connell.

Unsexed. Found on 18 March 2007 at Dunfanaghy, Co. Donegal (C044370). Elizabeth McKenna.

Unsexed. Skull found on 5 September 2007 at Trawalua Strand, Co. Sligo (G693551). Edel Costello, Don Cotton, Jean Dunleavy.

Unsexed. c.3m. Live stranded and refloated on 15 December 2007 at Marble Hill Strand, Dunfanaghy, Co. Donegal (C031377). Richard Harshaw, Robin Law, Frank Sorrs.

Unsexed. Found on 18 December 2007 at Inishlyre, Clew Bay, Co. Mayo (L913869). Shay Fennelly, Joe Gibbons, Rhoda Twombly.

Female. 2.32m. Found entangled in beach set drift net on 21 December 2007 at Ventry Strand, Co. Kerry (V375997). David Chippendale.

#### **Striped or common dolphin**

Male. 2.22m. Found on 2 January 2007 at Cross Beach, Belmullet, Co. Mayo (F639306). Irene O'Brien (NPWS).

Unsexed. c.2m. Found on 18 February 2007 at Sherkin Island, Co. Cork (W018265). Robbie Murphy (Sherkin Island Marine Station).

Unsexed. 2.16m. Found on 15 March 2007 at Carnsore Point, Co. Wexford (T110046). Tony Murray (NPWS).

Male. 2.13m. Found on 29 September 2007 at Waterville, Co. Kerry (V483675). Rosemary Hill.

Unsexed. c.1m. Found on 10 November 2007 at Dog's Bay, Ballyconneely, Co. Galway (L689387). Zoe Popper.

Unsexed. c.1.7m. Found on 24 November 2007 at Ardamine Strand, Co. Wexford (T203570). Gavin O'Sé.

#### **Unidentified dolphin**

Unsexed. Found on 23 January 2007 near Cahore Point, Co. Wexford (T224459). Skeletal. Eugene Brennan.

Unsexed. Found on 23 January 2007 near Cahore Point, Co. Wexford (T221452). In poor condition but beak present. Eugene Brennan.

Unsexed. Skull, tail stock and tail fluke found on 26 February 2007 at Lecanvey Pier, Co. Mayo (L894832). Lorraine Shelley.

Unsexed. c.2m. Skeletal. Found on 14 March 2007 at Dog's Bay, Roundstone, Co. Galway (L692381). Rob Holloway (NPWS).

Unsexed. Live stranded on 19 August 2007 at Sandy Bay, Castlegregory, Co. Kerry (Q621152). Refloated before it could be identified. Waterworld Dive Centre, Jamie Knox Watersports.

Unsexed. c.2m. Live stranded and refloated on 22 August 2007 at Tra Mor, Sheephaven Bay, Co. Donegal (C108359). Irish Seal Sanctuary.

Unsexed. c.2m. Found on 22 September 2007 on the south shore of Eddy Island, Co. Galway (M338161). Micheline Sheehy-Skeffington, Sabine Springer.

Unsexed. c.1.7m. Found on 2 December 2007 at Ballinrannig, Smerwick Harbour, Co. Kerry (Q375052). Carlsen Cloney, Sara Millar.

Unsexed. <1.8m. Found on 21 December 2007 at Dundrum Bay, Newcastle, Co. Down (J409338). Anne McComb.

Unsexed. c.2m. Found on 28 December 2007 at St. Finan's Bay, Ballinskelligs, Co. Kerry (V389684). Declan Sullivan.

#### **Unidentified baleen whale**

Unsexed. c.6.3m (excluding head and tail). Found on 30 September 2007 at Trawalua Strand, Co. Sligo (G686536). Don Cotton, Jean Dunleavy.

Unsexed. c.3m. Found on 10 November 2007 at Sherkin Island, Co. Cork (W025246). Robbie Murphy.

#### **Unidentified whale species**

Unsexed. Found on 14 September 2007 at Little Turk Sound, Clifden Bay, Co. Galway (L573530). Dorothy Cross, John Towler.

Male. c.8m. Found on 12 December 2007 at Tra Huston, Lettermullen, Co. Galway (L834221). Martin Mannion, Padraic de Bhaldraithe, Galway County Council.

#### **Unidentified cetacean species**

Unsexed. c.4m. Found on 10 January 2007 at Ballyteigue Burrow, Kilmore Quay, Co. Wexford (S961034). Niall Durnan, Jim Hurley.

Unsexed. Found on 12 February 2007 at Carnsore Point, Co. Wexford (T112046). Tony Murray (NPWS).

Unsexed. c.1.5m. Live stranded and died on 6 July 2007 at Tra Mor, Sheephaven Bay, Co. Donegal (C107355). Pete Smith.

Unsexed. 2.6m. Found on 1 October 2007 at Murvey Machair, Yconneely Bay, Co. Galway (L617420). Rob Holloway.