

IRELAND. Progress report on cetacean research, June 2006 to May 2007, with statistical data for the *calendar year 2006*

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This report summarises information obtained from:

Name of agency/institute	Abbreviation (use in rest of report)	Contact e-mail address
Galway Mayo Institute of Technology	GMIT	JOANNE.OBRIEN@GMIT.IE
Irish Whale and Dolphin Group	IWDG	SIMON.BERROW@IWDG.IE
Irish Sea Fisheries Board	BIM	COSGROVE@BIM.IE
Marine Institute	MI	CIARAN.ODONNELL@MARINE.IE
National Parks & Wildlife Service	NPWS	DAVID_LYONS@ENVIRON.IE
Natural History Museum	NHM	NMONAGHAN@MUSEUM.IE
National Museum, Scotland, Edinburgh	NMS	J.HERMAN@NMS.AC.UK
Shannon Dolphin & Wildlife Foundation	SDWF	SIMON.BERROW@SHANNONDOLPHINS.IE
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1. SPECIES AND STOCKS STUDIED

A tabular format is most appropriate. Please indicate where in the report the species is mentioned and use IWC recommended names (see IWC, 2006, Annex L). For subsequent items, common names are preferred. e.g.:

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Humpback whale	<i>Megaptera novaeangliae</i>	NE Atlantic	2.1.1, 2.1.2, 3.1.1, 8
Fin whale	<i>Balaenoptera physalus</i>	NE Atlantic	2.1.1, 2.1.2, 3.1.1, 8
Minke whale	<i>Balaenoptera acutorostrata</i>	NE Atlantic	2.1.1, 2.1.2,
Sei whale	<i>Balaenoptera borealis</i>	NE Atlantic	8
Harbour porpoise	<i>Phocoena phocoena</i>	NE Atlantic	2.1.1, 2.1.2, 4.2, 4.3, 7.3.2, 8
Common dolphin	<i>Delphinus delphis</i>	NE Atlantic	2.1.2, 3.1.1, 4.2, 4.3, 7.1, 7.3.2, 8
Striped dolphin	<i>Stenella coeruleoalba</i>	NE Atlantic	4.3, 7.1, 7.3.2, 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	NE Atlantic	2.1.1, 2.1.2, 3.1.1, 8
Atl. white-sided dolphin	<i>Lagenorhynchus acutus</i>	NE Atlantic	4.3, 8
White-beaked dolphin	<i>L. albirostris</i>	NE Atlantic	8
Long-finned pilot whale	<i>Globicephala melas</i>	NE Atlantic	8
Risso's dolphin	<i>Grampus griseus</i>	NE Atlantic	2.1.1, 8
Killer whale	<i>Orcinus orca</i>	NE Atlantic	2.1.1, 5,
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	NE Atlantic	8
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	NE Atlantic	8
Sowerby's beaked whale	<i>Mesoplodon bidens</i>	NE Atlantic	4.3, 8
Sperm whale	<i>Physeter macrocephalus</i>	NE Atlantic	8

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

Monthly systematic surveys for small cetaceans (especially harbour porpoise and bottlenose dolphins) in Galway Bay (GMIT) and bottlenose dolphins in the Shannon estuary continue (UCC). In Galway Bay a total of four cetacean species were recorded during dedicated transects, with harbour porpoises being the most frequently sighted species, followed by bottlenose dolphins, common dolphins and minke whale (83% sighting success rate). Monthly land-based effort watches were carried out in Galway Bay from three sites. A total of 33 watches yielded 21 sightings of four cetacean species. Harbour porpoises were most frequently sighted species (83%), followed by bottlenose dolphins (7%), common dolphins (5%) and minke whale (5%).

Acoustic monitoring devices (T-PODs) have been deployed in Galway Bay and off Clare Island in Clew Bay since May 2006, to monitor the presence of harbour porpoise and dolphins (GMIT). The results obtained to date have highlighted Galway Bay as an area where porpoise activity is more common than any other cetacean species. They have been recorded in all months and in all seasons. Harbour porpoises are the most frequently detected species in Clew Bay but the number of dolphin detections in Clew Bay were greater than those logged in Galway Bay. Two TPODs have been deployed since June 2006 in the Shannon estuary to determine the use by bottlenose dolphins of a site of a proposed LNG gas terminal (SDWF).

The IWDG received 387 cetacean sightings made during 382 systematic land-based effort watches from 32 sites from all coastal counties in 2006. The IWDG also received 792 casual cetacean sightings reported by members of the public in 2006. All watches and sightings were validated and available on www.iwdg.ie.

Target species	Date	Area	No. of sightings	Contact person/institute and references
Harbour porpoise	01.01.2006-01.01.2007	Galway Bay	31	J. O'Brien (GMIT)
Harbour porpoise	01.01.2006-31.12.2006	All Ireland	185	P. Whooley (IWDG)
Common dolphin	01.01.2006-31.12.2006	All Ireland	40	P. Whooley (IWDG)
Bottlenose dolphin	01.01.2006-01.01-2007	Galway Bay	3	J. O'Brien (GMIT)
Bottlenose dolphin	01.01.2006-31.12.2006	All Ireland	15	P. Whooley (IWDG)
Risso's dolphin	01.01.2006-31.12.2006	All Ireland	5	P. Whooley (IWDG)
Killer whale	01.01.2006-31.12.2006	All Ireland	1	P. Whooley (IWDG)
Minke whale	01.01.2006-31.12.2006	All Ireland	77	P. Whooley (IWDG)
Fin whale	01.01.2006-31.12.2006	All Ireland	15	P. Whooley (IWDG)
Humpback whale	01.01.2006-31.12.2006	All Ireland	4	P. Whooley (IWDG)

2.1.2 Opportunistic, platforms of opportunity

Whale-watching vessels operating out of west Cork were used as platforms of opportunity to look at cetacean diversity and habitat use off southwest Ireland (IWDG, UCC). On 12 trips carried out by the IWDG on three different operators, fin whales were observed on 64% of trips off west Cork. Common dolphins, harbour porpoise and minke whales were also commonly seen (UCC). SDWF continued to accompany commercial dolphin tour boats in the Shannon estuary with 48 trips monitored during 2006. Details of 421 trips were also recorded by the Shannon estuary whalewatching operators and submitted to SDWF. A cargo vessel operating between Galway city and the Aran Islands was accompanied from June to October, 2006 (GMIT). The Marine Institutes Research Vessels the *R.V. Celtic Explorer* and *R.V. Celtic Voyager* were also used as platforms of opportunity when carrying out work in Galway Bay. Harbour porpoises were the most frequently sighted species from this survey method. The IWDG have continued to record cetaceans from three ferry routes across the Irish and Celtic Seas.

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Fin whale	Celtic Sea	Photo-id; sightings	observers	whalewatching vessel	P. Whooley (IWDG)
Humpback whale	Celtic Sea	Photo-id; sightings	Observers	whalewatching vessel	P. Whooley (IWDG)
Bottlenose dolphin	Shannon estuary	Photo-id	Scientists	whalewatching vessel	S. Berrow (SDWF)
Harbour porpoise and Bottlenose dolphin	Galway Bay	Line transect Photo-id	Scientists	ferry	J. O'Brien (GMIT)

2.2 Analyses/development of techniques

Give brief details of any analyses of data carried out, with references where appropriate. A summary table of sightings and associated effort may be included (see below).

NA

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Provide this in the form of a table, e.g.

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Fin whales	Dorsal fin	Celtic Sea	5	Y	25	P. Whooley (IWDG)
Humpback whale	Fluke	Celtic Sea	0	Y	6	P. Whooley (IWDG)
Common dolphin	Dorsal fin	Celtic Sea	c20	N	30-40	P. Whooley (IWDG)
Bottlenose dolphin	Dorsal fin	Galway Bay	30	Y	30	J. O'Brien (GMIT)
Bottlenose dolphin	Dorsal fin	Shannon estuary	61	Y	200	S. Berrow (SDWF)
Bottlenose dolphin	Dorsal fin	Shannon estuary	135	Y	433	S. Ingram (UCC)
Humpback whale	Fluke	Cape Verde	14	Y	80	S. Berrow (IWDG)
Rough-toothed dolphin	Dorsal fin	Cape Verde	6	N	na	S. Berrow (IWDG)
Pan-tropical Spotted dolphin	Dorsal fin	Cape Verde	c.10	N	na	S. Berrow (IWDG)
Short-snouted Spinner dolphin	Dorsal fin	Cape Verde	c.10	N	na	S. Berrow (IWDG)
Short-finned pilot whale	Dorsal fin	Cape Verde	2	N	na	S. Berrow (IWDG)
Bottlenose dolphin	Dorsal fin	Cape Verde	1	N	na	S. Berrow (IWDG)

Photo-ID was carried out by the IWDG from whalewatching vessels in the Celtic Sea. The primary area for this research has been in County Cork, although in January and February 2007 this work extended east towards County Waterford. Naturally occurring physical features such as nicks on dorsal fins and skin pigmentation were used to recognise individual fin whales. To date 25 individual fin whales and six humpback whales have been identified in Irish waters. Four fin whales (28%) in 2006 were intra-annual re-sightings and three (12%) were inter-annual re-sightings. The IWDG have also photo identified six humpback whales, five of which (83%) are re-sightings, and four of these (66%) are inter-annual re-sightings. All humpback whales are identified by using the ventral surface of the tail-fluke. Members of the IWDG carried out a yacht-based survey of the Cape Verde between March and April 2006. Humpback whale fluke images were submitted to the North Atlantic Humpback Whale Catalogue at Bar Harbour Maine. Images of five other species suitable for photo-identification were lodged with INDP in Mindelo on Sao Vicente.

Photo-id of bottlenose dolphins was carried out from dolphin watching boat in the Shannon estuary as part of ongoing tour boat monitoring (SDWF) and as part of a project to derive abundance estimates (UCC). Bottlenose dolphin photo-id was also carried out during monthly systematic surveys in Galway Bay. A catalogue of c30 individuals now exists for this area (GMIT).

3.1.2. Artificial marking data

NA

3.1.3 Telemetry data

NA

3.2 Analyses/development of techniques

Give brief details of any analyses of marking data carried out (e.g. times/distances to resightings, biological parameters, etc.) with references where appropriate.

NA

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples (summary only)

No biopsy sampling occurred this year.

4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches

A small number of samples were obtained from bycatch programmes.

Species	Area/stock	Tissue type(s)*	No. collect	Archived (Y/N)	No. analysed	Contact person/institute
Common dolphin	N.E. Atlantic	Liver, skin, blubber etc	1	Y	1	UCC/BIM
Harbour porpoise	N.E. Atlantic	Liver, skin, blubber etc	2	Y	2	UCC/BIM

*e.g. liver, skin, blubber ovaries, etc.

4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Common dolphin	N. Atlantic	Liver, skin, blubber etc	3	Y	3	UCC
Harbour porpoise	N. Atlantic	Liver, skin, blubber etc	1	Y	1	UCC
Striped dolphin	N. Atlantic	4 Full pm, 2 skin/teeth	6	Y	4	UCC
Atl. white-sided dolphin	N. Atlantic	Liver, skin, blubber etc	1	Y	1	UCC
Sowerby's beaked whale	N. Atlantic	Liver, skin, blubber etc	1	Y	1	UCC

*e.g. liver, skin, blubber etc.

Towards the end of 2006, a National Irish Cetacean Tissue Bank has been established in the Natural History Museum, Dublin under a collaboration between the NHM and the IWDG. The IWDG will supply tissue samples through its stranding scheme to the Museum, which will store these samples. A Management Panel comprising members of the NHM, IWDG, NPWS, Trinity College, Dublin and the IWC will review any requests for samples. As use of samples is destructive it is important that any uses are screened for scientific validity and usefulness. To date only samples for genetic analysis have been collected.

4.4 Analyses/development of techniques

NA

5. POLLUTION STUDIES

Samples are stored for contaminant analysis, but at present, no dedicated sampling or analytical programme exists. POPS from killer whale samples have recently been examined (McHugh et al., in review).

6. STATISTICS FOR LARGE CETACEANS

6.1 Corrections to earlier years' statistics for large whales

NA.

6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

NA

6.3 Anthropogenic mortality of large whales for the calendar year 2006

6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

No information was received on this topic.

6.3.2 Fishery bycatch of large whales

No information was received on this topic.

7. STATISTICS FOR SMALL CETACEANS

It was first agreed to include this information in a Commission resolution in 1976 (IWC, 1977, p.31)). Furthermore, in 2005 (IWC, 2006, Annex J) it was agreed that these data should be brought into line with those

reported for large cetaceans. **Therefore, this Section should be completed using the same guidelines as given in Section 6 above, *Statistics for large cetaceans*.**

7.1 Corrections to earlier years' statistics for small cetaceans

This would be a place to include any corrections to statistics presented in earlier years. It may also be appropriate to include references to studies that utilise time series of data here.

Bycatch estimates of common and striped dolphins in a drift net fishery for albacore tuna were calculated from 1990 – 2000 based on observer data from three fleets (Rogan & Mackey, in press).

7.2 Direct catches of small cetaceans for the calendar year 2006

NA

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2006

7.3.1 Observed or reported ship strikes of small cetaceans (including non fatal events)

None reported

7.3.2 Fishery bycatch of small cetaceans

A number of small cetacean species have been reported from commercial fisheries using set gill nets. Two common dolphins were also caught in a pelagic trawl during a research acoustic survey for herring.

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common dolphin		1	26/9/2006	51.37N 8.01W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Common dolphin		1	13/10/2006	50.81N 8.63W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Common dolphin		1	19/10/2006	52.82N 10.50W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Common dolphin		2	October 2006	NA	D	<i>Clupea harengus</i>	TM	Scientific observer	MI
Common dolphin		2	October 2006	NA	D	<i>Clupea harengus</i>	TM	Scientific observer	MI
Harbour porpoise		1	24/7/2006	51.04N 8.94W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Harbour porpoise		1	26/9/2006	51.23N 8.24W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Harbour porpoise		1	26/9/2006	51.25N 8.36W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM
Striped Dolphin		1	26/9/2006	51.27N 8.23W	D	<i>Merluccius merluccius</i>	GNS	Scientific observer	BIM

8. STRANDINGS

Strandings for the entire coastline of Ireland are systematically recorded and reported to the IWDG. Due to lack of funding, post-mortem examinations are only carried out on an ad-hoc basis. A total of 146 stranding records were reported during 2006, which is the highest annual total since records began (O'Connell and Berrow, in press). At least 15 species were identified including the first sei whale record since 1914 (Whooley and Steele, 2007). The most dramatic increase in records was for striped dolphin with 16 records including a mass stranding of 14 individuals (the first time more than three individuals of this species have been recorded stranding together). There have been 101 stranding records of striped dolphin since 1901 with a mean of approximately 4 records/annum. The previous highest total was in 1991 with nine records. The number of stranded northern bottlenose whales was also higher than previously reported; during 2006 there were four records of this species, the same number reported over the last decade. Two Sowerby's beaked whales were reported during 2006. Of the 10 records of this species since 1864, two each were in 2004 and 2006. Records are validated and published in the Irish Naturalists' Journal.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Harbour porpoise	22	1	M. O'Connell (IWDG)/E.Rogan	mick.oconnell@iwdg.ie E.Rogan@ucc.ie
Common dolphin	29	3	M. O'Connell (IWDG)/E.Rogan	mick.oconnell@iwdg.ie E.Rogan@ucc.ie
Striped dolphin	18	4	M. O'Connell (IWDG)/ E.Rogan	mick.oconnell@iwdg.ie E.Rogan@ucc.ie
Pilot whale	14	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Atlantic white-sided dolphin	7	1	M. O'Connell (IWDG)/E.Rogan	mick.oconnell@iwdg.ie E.Rogan@ucc.ie
Bottlenose dolphin	6	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Risso's Dolphin	2	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Northern bottlenose whale	4	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
White beaked dolphin	3	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Minke whale	3	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Sowerby's beaked whale	2	1	M. O'Connell (IWDG)/E.Rogan	mick.oconnell@iwdg.ie E.Rogan@ucc.ie
Humpback whale	1	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Sei whale	1	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Sperm whale	1	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Cuvier's beaked whale	1	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Unident. dolphin	13	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Unident. whale	5	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Unident. Beaked whale	1	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie
Unident. cetacean	13	0	M. O'Connell (IWDG)	mick.oconnell@iwdg.ie

9. OTHER STUDIES AND ANALYSES

Trials on the effectiveness of acoustic deterrents on common dolphins were carried out during April 2007 (SDWF/GMIT). These are a continuation of trials carried out in 2005 and 2006 for BIM under the NECESSITY project. Two deterrents (CETASAVER and the DDD) were tested with little or very mild deterrent effects recorded.

10. LITERATURE CITED

Include all references cited in the text here. Please follow the official IWC style guide for references (<http://www.iwcoffice.org/publications/styleguide.htm>).

O'Connell, M. and Berrow, S. (in press) Records from the Irish Whale and Dolphin Group. *Irish Naturalists' Journal*.

McHugh, B., Law R.J., Allchin C., **Rogan, E.** Murphy S., Foley, M.B., Glynn D. and McGovern E. (in review) Bioaccumulation and enantiomeric profiling of organochlorine pesticides and persistent organic pollutants in the Killer Whale (*Orcinus orca*) from British and Irish waters. Submitted to *Marine Pollution Bulletin*

Rogan, E. and Mackey, M. (in press). Megafauna bycatch in driftnets for albacore tuna (*Thunnus alalunga*) in the NE Atlantic. *Fisheries Research*.

Whooley, P. and Steele, P. (2007) Live stranding of Sei whale *Balaenoptera borealis* Lesson 1828, in Larne lough. *Irish Naturalists' Journal* 28(8), 340.

11. PUBLICATIONS

Please follow the official IWC style guide for references (<http://www.iwcoffice.org/publications/styleguide.htm>).

11.1 Published or 'In Press' papers only

- Berrow, S. Massett, N. & O'Brien, J. 2006. Humpback whale *Megaptera novaengliae* off Cos Kerry and Galway. *Irish Naturalists' Journal* 28(8), 339-340.
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- Caurant, F., Aubail, A., Lahaye, V., VanCanneyt, O., Rogan, E., Lopez, A., Addink, M., Churlaud, C., Robert, M., & Bustamante, P. 2006. Lead concentrations of small cetaceans in European waters – The use of stable isotopes for identifying the sources of lead exposure. *Marine Environmental Research*, 62, 131 – 148.
- Ingram, S.N., Walsh, L., Johnson, D. & Rogan, E. 2007. The distribution of fin whales (*Balaenoptera physalus*) and minke whales (*Balaenoptera acutorostrata*) in the Bay of Fundy, Canada: using a tour-boat as a platform of opportunity. *Journal of the Marine Biological Association (UK)* 87 87, 149–156.
- Leeney, R., Berrow, S.D., McGrath, D., O'Brien, J., Cosgrove, R. & Godley, B.J. 2007. Effects of pingers on the behaviour of bottlenose dolphins. *Journal of the Marine Biological Association (UK)* 87, 129-133.
- Murphy, S., Herman, J.S., Pierce, G.J., Rogan, E., & Kitchener, A.C. 2006. Species identification, sexual dimorphism and geographical cranial variation of common dolphins (*Delphinus*) in the eastern North Atlantic. *Marine Mammal Science* 22(3) 573 – 599.
- Murphy, S. & Rogan, E. 2006. External morphology of the short-beaked common dolphin *Delphinus delphis*: growth, allometric relationships and sexual dimorphism. *Acta Zoologica (Stockholm)*
- O'Brien, J. & Berrow, S. 2006. Seaweed ingestion by a bottlenose dolphin *Tursiops truncatus*. *Irish Naturalists' Journal* 28(8), 338-339.
- O'Connell, M. & Berrow, S. (in press) Records from the Irish Whale and Dolphin Group. *Irish Naturalists' Journal*.
- Philpott, E., Englund, A., Ingram, S., & Rogan, E. 2007. Using T-Pods to investigate detection range and echolocation behaviour of coastal bottlenose dolphins. *Journal of the Marine Biological Association (UK)* 87, 11–17
- Philpott, E., Wall, D. & Rogan, E. (in press). Records from the Irish Whale and Dolphin Group for 2004. *Irish Naturalists' Journal*
- Rogan, E. & Mackey, M. (in press). Megafauna bycatch in driftnets for albacore tuna (*Thunnus alalunga*) in the NE Atlantic. *Fisheries Research*.
- Santos, M.B., Berrow, S.D. & Pierce, G.J. 2006. Stomach contents of a sperm whale *Physeter macrocephalus* calf in Co Clare (Ireland). *Irish Naturalists' Journal* 28(7), 272-275.
- Wall, D., O'Brien, J., Meade, J. & Allen, J. 2006. Summer distribution and relative abundance of cetaceans off the west coast of Ireland. *Biology and Environment* 106B, 135 – 142.
- Wenzel, F.W., Allen, J., Berrow, J., Jann, B., Lien, J., Martin, A.R. & Seton, R. E. 2006. Humpback whales (*Megaptera novaeangliae*) off the Cape Verde Islands. *Occasional Publication of the Irish Biogeographical Society* 9: 172-185
- Whooley, P. & Steele, P. 2007. Live stranding of Sei whale *Balaenoptera borealis* Lesson 1828, in Larne lough. *Irish Naturalists' Journal* 28(8), 340.
- Wilson, J. with Berrow, S. 2006. *A Guide to the Identification of Whales and Dolphins of Ireland*. Irish Whale and Dolphin Group, County Clare. ISBN 978-0-9540552-2-6.

11.2 Unpublished literature

- Berrow, S.D., Cosgrove, R., O'Brien, J. & McGrath, D. 2007. Evaluation of pelagic trawl pingers and their effect on the behaviour of common dolphins *Delphinus delphis*: CETASAVER and DDD deterrent devices. Final Report to Bord Ischaigh Mhara. February 2007.
- Mirimin, L. 2007. Molecular genetics of three dolphin species occurring in the eastern North Atlantic. Unpublished PhD thesis, National University of Ireland, Cork, Ireland. 232pp.

Appendix 1. FOA fishing descriptions and codes

FAO FISHING GEAR CATEGORIES:		FALLING GEAR	
SURROUNDING NETS		Cast nets	FCN
With purse lines	PS	Falling gear (not specified)	FG
One-boat operated purse seines	PS1	GILLNETS AND ENTANGLING GEAR	
Two-boat operated purse seines	PS2	Set gillnets (anchored)	GNS
Without purse lines (lampara)	LA	Driftnets	GND
SEINE NETS		Encircling gillnets	GNC
Beach seines	SB	Fixed gillnets (on stakes)	GNF
Boat seines	SV	Trammel nets	GTR
Danish seines	SDN	Combined gillnet-trammel nets	GTN
Scottish seines	SSC	Gillnets and entangling gillnets (not specified)	GEN
Pair seines	SPR	Gillnets (not specified)	GN
Seine nets (not specified)	SX	TRAPS	
TRAWLS		Stationary uncovered pounds nets	FPN
Bottom trawls	TBB	Pots	FPO
Beam trawl	OTB	Fyke nets	FYK
Otter trawls (side or stern)	PTB	Stow nets	FSN
Pair trawls	TBN	Barriers, fences, weirs, etc	FWR
Nephrops trawls	TBS	Aerial traps	FAR
Shrimp trawls (not specified)	TM	Traps (not specified)	FIX
Midwater trawls		HOOKS AND LINES	
Otter trawls (side or stern)	OTM	Handlines and pole-lines (hand operated)	LHP
Pair trawls	PTM	Handlines and pole-lines (mechanised)	LHM
Shrimp trawls	TMS	Set longlines	LLS
Midwater trawls (not specified)	TM	Drifting longlines	LLD
Otter twin trawls	OTT	Longlines (not specified)	LL
Otter trawls (not specified)	OT	Trolling lines	LTL
Pair trawls (not specified)	PT	Hooks and lines (not specified)	LX
Other trawls (not specified)	TX	GRAPPLING AND WOUNDING	
DREDGES		Harpoons	HAR
Boat dredges	DRB	HARVESTING MACHINES	
Hand dredges	DRH	Pumps	HMP
LIFT NETS		Mechanised dredges	HMD
Portable lift nets	LPN	Harvesting machines (not specified)	HMX
Boat-operated lift nets	LNB	MISCELLANEOUS GEAR	MIS
Shore operated stationary lift nets	LNS	RECREATIONAL FISHING GEAR	RG
Lift nets (not specified)	LN	GEAR NOT KNOWN OR NOT SPECIFIED	NK
		SHARK CONTROL NETS	NSC
		DERELICT FISHING GEAR	