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# Risso's dolphins of Ynys Enlli / Bardsey Island: Photo-ID catalogue

S. Einfeld-Pierantonio, V. James  
Whale and Dolphin Conservation

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## 1. Crynodeb gweithredol

Mae dolffin Risso (*Grampus griseus*) yn rhywogaeth a warchodir gan Ewrop o dan Atodiad IV Cyfarwyddeb Cynefinoedd yr UE ac yn rhywogaeth o brif bwysigrwydd ar restr Adran 7 o dan Ddeddf yr Amgylchedd (Cymru) 2016. Fodd bynnag, ceir bylchau sylweddol o hyd yn ein dealltwriaeth o ddsbarthiad a helaethrwydd y rhywogaeth, a'i defnydd o gynefin.

Mae'r dyfroedd o amgylch Ynys Enlli, ger Penrhyn Llŷn yng ngogledd Cymru yn cael eu hystyried yn ardal bwysig ar gyfer dolffiniaid Risso, lle mae cofnodion yn dangos bod clystyrau o ddolffiniaid wedi cael eu gweld yno.

Gwnaeth y Gymdeithas Cadwraeth Morfilod a Dolffiniaid gynnal arolygon systematig a manteisgar ar gwch o ddolffiniaid Risso, er mwyn casglu data ar ffurf ffotograffau adnabod yn y dyfroedd o amgylch Ynys Enlli rhwng 1997 a 2016, mewn ymgais i wella'r ddealltwriaeth ynghylch presenoldeb y rhywogaeth yn yr ardal hon. Mae Cyngor Cefn Gwlad Cymru a Cyfoeth Naturiol Cymru yn ddiweddarach, wedi rhoi cymorth ariannol bob hyn a hyn i'r gwaith hwn.

Nodwyd 205 o ddolffiniaid Risso unigol, gan gynnwys 13 llo yn ystod 35 ymweliad - tynnwyd lluniau o 73 o'r rhain o'r ddwy ochr, 65 ohonynt o'r ochr chwith yn unig, a 67 o'r ochr dde yn unig. Gwelwyd 111 o'r dolffiniaid gyda hiciau o wahanol feintiau ar eu hesgyll, tra bu i 81 gael eu hadnabod drwy creithiau ddorsal, ystlys neu greithiau eraill; cafodd y 13 o ddolffiniaid a oedd yn weddill eu hadnabod fel lloi, ar y cyd â'u mamau. Rhwng 1997 a 2016, gwelwyd 22 o ddolffiniaid fwy nag unwaith, gwelwyd 17 ohonynt ddwywaith a phump ohonynt deirgwaith. Naw mlynedd oedd y cyfnod hiraf rhwng dau achos o weld yr un dolffin. Gwelwyd pum dolffin ddwy neu deirgwaith ar gyfnodau ar wahân yn ystod yr un flwyddyn.

Mae'r adroddiad hwn yn nodi'r catalog ffotograffau adnabod o ddolffiniaid Risso o amgylch Ynys Enlli a Phenrhyn Llŷn, sydd wedi'i rhoi at ei gilydd o ddata a gasglwyd gan y Gymdeithas Cadwraeth Morfilod a Dolffiniaid rhwng 1997 a 2016.

## 2. Executive Summary

The Risso's dolphin (*Grampus griseus*) is a European Protected Species under Annex IV of the EU Habitats Directive and a Section 7 species of principal importance under the Environmental (Wales) Act 2016. However there remain significant gaps in our understanding of the species' distribution, abundance and habitat use.

The waters around Ynys Enlli / Bardsey Island (hereafter Bardsey Island) off the Llŷn Peninsula in North Wales are considered to be an important area for Risso's dolphins where clusters of sightings have been documented.

Whale & Dolphin Conservation conducted systematic and opportunistic boat surveys of Risso's dolphins to collect photo-ID data in the waters around Bardsey Island between 1997 – 2016 in an effort to improve the understanding of the species' presence in this area. The Countryside Council for Wales (CCW) and later Natural Resources Wales (NRW) have intermittently supported this work with funding.

Two hundred and five individual Risso's dolphins, including 13 calves, were identified in 35 encounters, 73 of which were photographed from both sides, 65 only from the left side and 67 only from the right side. One hundred and eleven dolphins exhibit fin nicks of various sizes, while 81 were identified via dorsal, flank or other scars; the 13 remaining dolphins were identified as calves associated with their mothers. Twenty-two dolphins were seen more than once, 17 were sighted twice, and five were sighted three times between 1997 and 2016. The longest time between two sightings was 9 years. Five dolphins were seen two or three times in separate encounters during the same year.

This report details the photo-ID catalogue of Risso's dolphins around Ynys Enlli/ Bardsey Island and the Llŷn Peninsula gathered from data collected by WDC between 1997 and 2016.

### 3. Introduction

The Risso's dolphin (*Grampus griseus*) is a European Protected Species under Annex IV of the EU Habitats Directive and a Section 7 species of principal importance in Wales under the Environment (Wales) Act 2016. Despite this, their present status in European waters is largely unknown (Wharam & Simmonds 2008). Most Risso's dolphin sightings data for NW Europe consist of opportunistic records, although some effort-related data are available (Reid et al., 2003; Weir et al., 2001). Large scale studies in the north-eastern Atlantic provided some information regarding Risso's dolphin distribution within Europe (Bearzi et al., 2011; Hammond et al., 2017; Weir et al., 2001), and lately an abundance estimate for the whole survey area of SCANS-III (Small Cetaceans in European Atlantic waters and the North Sea) of 13,584 Risso's dolphins was suggested (Hammond et al., 2017).

The Risso's dolphin is found in the temperate and tropical zones of all the world's oceans, primarily between 60°N and 60°S (Reid et al., 2003). Risso's dolphins are present in UK waters all year round, but with some seasonal patterns of occurrence, with more sightings in shelf waters from May to October, while sightings are higher in offshore areas during the rest of the year (Evans et al., 2003; Reid et al., 2003).

Typically, Risso's dolphins are found in deep waters of between 400 and 1000m (Baird and Stacey, 1991), but in the UK they exhibit a preference for shallower waters of 20-100m (Evans et al., 2003, Weir et al., submitted). Only a few sites around the world have been documented as important coastal habitats for Risso's dolphins (e.g. Pico Island, the Azores, and La Herradura, southern Chile). In the UK, the Western Isles in Scotland, the Isle of Man, Anglesey and the Llŷn Peninsula (north Wales) and Pembrokeshire (southwest Wales) have shown clusters of sightings of Risso's dolphins (Reid et al., 2003). The Irish Sea is considered to be an important area for Risso's dolphin populations as it contains several distribution hotspots, concentrated around the Isle of Man, Bardsey Island off the Llŷn Peninsula in North Wales and west of Pembrokeshire (Baines and Evans, 2012; de Boer et al., 2013).

Risso's dolphins in the UK are considered part of a large management unit that covers all of UK seas (IAMMWG, 2015) and provides the relevant spatial scale for conservation strategy and management of potential anthropogenic threats. Implementing appropriate conservation measures requires an understanding of the long-term status of this species and identification of areas of critical habitat.

Photo-identification is a non-invasive method that can be used as an effective mark-recapture technique to estimate population size and study individual movements, association patterns and social structure in dolphin species (de Boer et al., 2013; Hartman et al., 2008). Image quality and fin distinctiveness are two important parameters to obtain unbiased population estimates (Rosel et al., 2011). Risso's dolphins typically exhibit long-lasting identifiable natural markings, which include distinctive patterns of scarring, nicks on their dorsal fins and variations in dorsal fin shape which makes them a good candidate for photo-ID techniques. Photo-ID has been used to document site fidelity of



Risso's dolphins in the Azores (Hartman et al., 2014), Mediterranean (Casacci and Gannier, 2000) and within the UK (Wales: de Boer et al., 2013; Scotland: Atkinson et al., 1997, 1998, Weir et al. submitted). Photo-ID may help to further differentiate sub-populations within the UK when photo-ID images from different catalogues are compared.

This report details the methodology and summary of the photo-ID catalogue of Risso's dolphins around Bardsey Island and the Llŷn Peninsula gathered from data collected by WDC between 1997 and 2016. The catalogue will be reviewed and updated regularly and made available to compare against catalogues and individual images of Risso's dolphins from around the UK to investigate population size, site fidelity and connectivity between areas. The catalogue will be copyright of WDC and any usage or reproduction must first be agreed with WDC. Please request a copy of the catalogue via [info@whales.org](mailto:info@whales.org).

## 4. Materials and Methods

### 4.1. Study location

Bardsey Island is located approximately 3 km from the tip of the Llŷn Peninsula in the northern part of Cardigan Bay, a large shallow embayment on the east side of the St. George's Channel entrance to the semi-enclosed Irish Sea Basin in North Wales. The island is separated from the mainland by 'Bardsey Sound', a stretch of water with a complex system of tides and currents (Figure 1). The island lies within the Pen Llŷn a'r Sarnau / Llyn Peninsula and the Sarnau marine SAC which features a variety of marine habitats, such as sandbanks, estuaries, coastal lagoons, reefs and salt meadows, as well as species features including bottlenose dolphins, grey seals and otters.

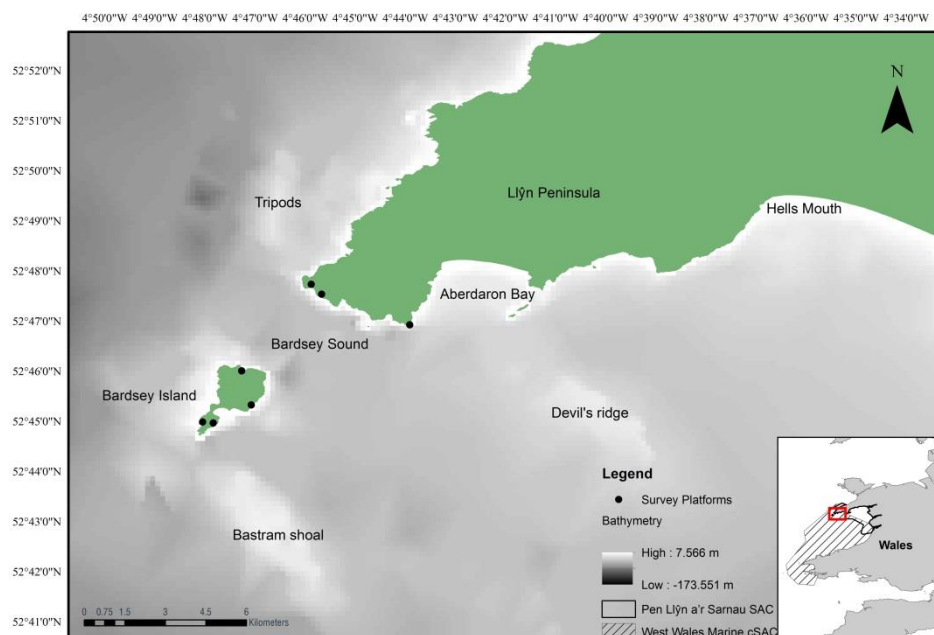


Figure 1. Location of Ynys Enlli/ Bardsey Island at the tip of the Llŷn Peninsula in the northern part of Cardigan Bay. Inset: Wales showing the location of the West Wales Marine and Pen Llŷn a'r Sarnau SACs.

#### 4.2. Data collection

Data were collected from Bardsey island intermittently between 1997 – 2016. Systematic boat-based surveys were carried out intermittently between 1997-2007 in July (1997), August (2001, 2002, 2004, 2007) and September (2000, 2005, 2006) to the east and west off the island (Figure 2, dashed lines).

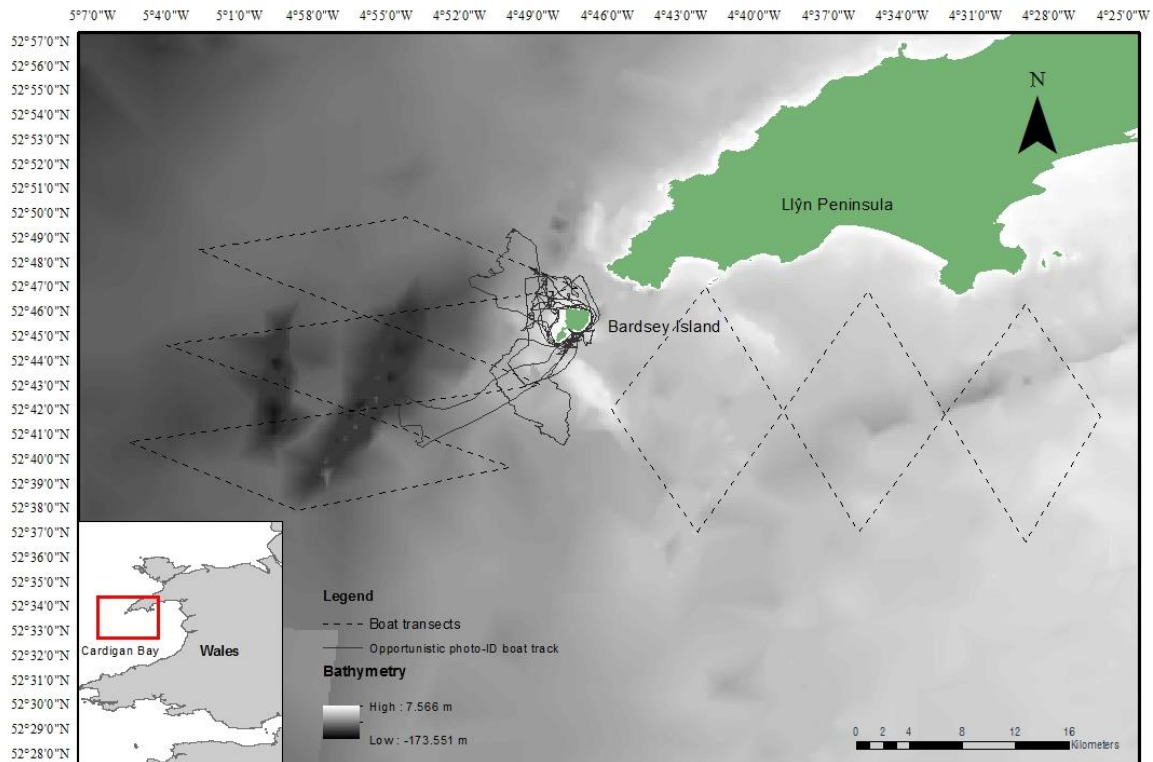


Figure 2. Systematic line-transect (dashed line) and opportunistic surveys (solid lines) for Risso’s dolphins between 1997 and 2016 around Ynys Enlli/ Bardsey Island, located at the tip of the Llŷn Peninsula at the northern part of Cardigan Bay. Inset: Wales.

The different boats used had an eyelevel height of 2 - 3 m and included both outboard powered vessels (sailing vessel under motor, rigid-inflatable boat) and 5 - 8 m inboard powered vessels such as the Bardsey ferry, a dory (small fishing boat) and a local wildlife-watching boat. Following line-transect survey protocols, dedicated watches were conducted during calm seas (Beaufort Sea states 0 - 3) and good visibility (>1 nmile). Two experienced observers were on watch covering a combined arch of 180°, scanning with the naked eye and occasionally using 7 × 50 reticuled binoculars (NIKON 7 × 50). When Risso’s were sighted, the survey went “off-effort” in order to approach the animals and obtain photos. Photos were taken using 35-mm slide film (1997-2004) or digital SLRs (2005-2007). Upon completing the photo-ID work, the line transect survey was then restarted from the point where “off- effort had commenced”.

In later years, photo-ID work was done opportunistically from a 6 m fishing boat with outboard engine in August (2014, 2016) and September (2011, 2012, 2014 - 2016) when Risso’s dolphins had been seen during dedicated land-based observations which were carried out from one to two lookout points on

the Island (Figure 2, solid lines). Photographs were taken using digital SLRs. Risso's dolphins were approached and photographed under licence from the Countryside Council for Wales (CCW) and later Natural Resources Wales (NRW) adhering to their guidelines to minimise disturbance. The aim during each encounter was to photograph the dorsal fin of each dolphin from at least one side, preferably both. Group-size was assessed in the field and later confirmed through the examination of photographs.

In addition, Risso's dolphins were also photographed on seven occasions from land when they came close enough to the shore (August 2016, September 2005, 2006, 2014).

#### 4.3. Photo-Identification of individual dolphins

The photographs were analysed by two, sometimes three independent assessors who studied markings such as scars, nicks and shape of dorsal fin. In addition, scars or wounds found elsewhere on the body were also noted. Images were graded with a quality rating based on the focus, angle and size of the fin within the image and the lighting level on the fin (1 = poor to 3 = excellent, as in Parsons et al. 2003). Photographs of grades 2 and 3 were primarily used to identify and catalogue individuals. Some grade 1 images, however, were used when highly distinctive dolphins could be recognised despite the low quality of the image taken. Individuals were given a distinctiveness value (DV) which categorises what feature is used to primarily identify each animal (table 1, figure 3).

Table 1 Distinctiveness Values (DV) given to individual Risso's dolphins from Bardsey Island ((c) Caroline Weir)

DV	Feature type	Description	Note on image quality
1	Permanent	Deep nicks, notches or disfigurements in fin edges	Evident even in poor-quality images
2	Permanent	Mod/small but still distinct nicks in fin edges	Evident in moderate- and high quality images only*
3	Permanent	Subtle (very small and/or shallow) nicks/notches in fin edges	Evident in high-quality images only*
4	Scar	Apparently "clean" dorsal fin edges; identified by distinctive scar pattern on fin	
5	Scar	No distinctive features on the dorsal fin; identified from scarring on upper flank adjacent to fin	
6	Scar	Identified primarily from scars elsewhere on body (e.g. tailstock, lower flank, head)	
7	Association	Calf or juvenile animals, catalogued solely through association with marked adult	

\* Individuals in these categories were sometimes identifiable in lower-quality images based on distinctive scar patterns



Figure 3. Photographic examples of distinctiveness values for Risso's dolphins around Bardsey Island (note that there is no example for a value of 6).

## 5. Results and discussion

Two hundred and five individual Risso's dolphins, including 13 calves, were identified in 35 encounters between 1997 – 2016, of which 73 were photographed from both sides, 65 only from the left side and 67 only from the right side. The discovery curve in Figure 4 shows that the identification of new dolphins has yet to level off.

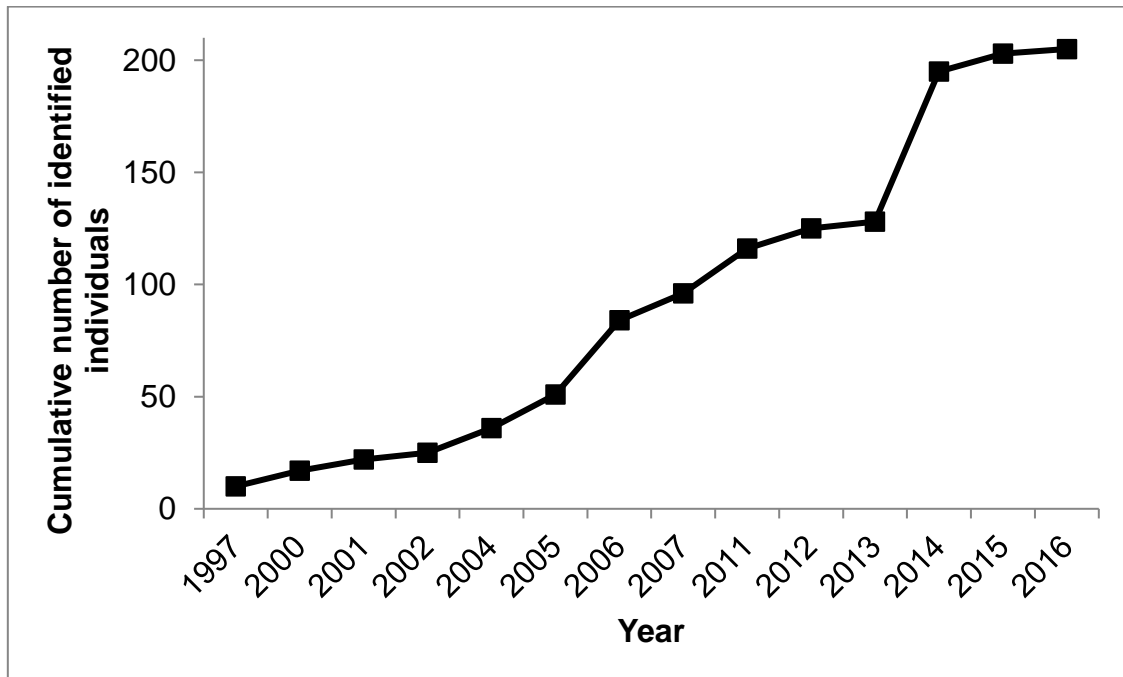


Figure 4. Discovery curve of the cumulative number of individual Risso's dolphins by year in the waters around Bardsey Island.

One hundred and eleven dolphins (54.1%) exhibited fin nicks of various sizes, while 81 (39.6%) were identified via dorsal, flank or other scars; the 13 (6.3%) remaining dolphins were identified as calves associated with their mothers (Table 2).

Table 2 Numbers of individual Risso's dolphins within each Distinctiveness Value (DV) category

Distinctiveness value	Number of individuals	%
<b>1 (deep nicks)</b>	29	14.1
<b>2 (mod/small nicks)</b>	40	19.5
<b>3 (subtle nicks)</b>	42	20.5
<b>4 (dorsal scars)</b>	70	34.1
<b>5 (flank scars)</b>	10	4.9
<b>6 (other scars)</b>	1	0.5
<b>7 (calf assoc)</b>	13	6.3
<b>TOTAL</b>	205	100.0

Twenty-two dolphins were seen more than once (Table 3), 17 were sighted twice, five were sighted three times between 1997 and 2016. The longest time between sightings was 9 years. Five dolphins were seen two or three times during the same year.

The catalogue of images of all 205 individuals can be requested from [info@whales.org](mailto:info@whales.org).

Table 3 Overview of resightings of individual dolphins between and within years around Bardsey Island.

ID#	1997	2000	2001	2002	2004	2005	2006	2007	2011	2012	2013	2014	2015	2016
1	√						√							
6	√			√										
10	√						√							
13		√	√											
21			√				√√							
22			√				√							
31					√	√								
44						√	√							
45						√	√							
52							√	√						
54							√	√						
60							√√							
74							√		√					
102									√			√		
110									√	√	√			
119										√		√		√
125										√		√		
126											√	√√		
133												√√√		
144												√		√
151												√	√	
171												√√		

## 6. Conclusions

During 14 years of surveys, 205 individual Risso's dolphins were identified and added to the catalogue of which 13 were identified as a calf in association with its mother. New dolphins continue to be identified, with no indication that discoveries of new animals are levelling off. This could indicate that there are more animals in the population to be discovered, or that the population is not closed with animals joining and leaving the population. The occurrence of a number of resightings of animals over a number of years indicates that dolphins do return to the area indicating some degree of site fidelity. We recommend that survey work should continue allowing further information to be gathered to investigate this population to inform NRW's advice on the conservation and management of this species in Welsh waters.

The long-term aim is for these data to be incorporated into a wider analysis of photo ID data across Wales and the Irish Sea (and at a later date, the UK) which will allow estimation of population size, and an investigation of individual range, site fidelity and movements of individuals between sit



## 7. References

- Atkinson, T. and Gill, A. 1996. Risso's dolphins (*Grampus griseus*) in the coastal waters of the Eye peninsula, Isle of Lewis, Scotland. Report to the Whale and Dolphin Conservation Society. 26pp.
- Atkinson, T., Gill, A., Evans, P.G.H. 1997. A photo-identification study of Risso's dolphins in the coastal waters of the Eye Peninsula, Isle of Lewis, Scotland. *European Research on Cetaceans*. 11: 170.
- Baines, M.E., Evans, P.G.H., 2012. CCW Marine Monitoring Report No. 68. 2nd edition (CCW Monitoring Report No. 68 (2)).
- Baird, R.W., Stacey, P.J., 1991. Status of Risso's dolphin, *Grampus griseus*, in Canada. *Canadian Field-Naturalist* 105, 233–242.
- Bearzi, G., Reeves, R.R., Remonato, E., Pierantonio, N., Airoidi, S., 2011. Risso's dolphin *Grampus griseus* in the Mediterranean Sea. *Mammalian Biology - Zeitschrift für Säugetierkunde* 76, 385–400. <https://doi.org/10.1016/j.mambio.2010.06.003>
- Casacci, C., Gannier, A., 2000. Habitat variability and site fidelity of Risso's dolphin in the Northwestern Mediterranean: Defining a home range for a nomad. *European Research on Cetacean* 4.
- de Boer, M.N., Clark, J., Leopold, M.F., Simmonds, M.P., Reijnders, P.J.H., 2013. Photo-Identification Methods Reveal Seasonal and Long-Term Site-Fidelity of Risso's Dolphins (*Grampus griseus*) in Shallow Waters (Cardigan Bay, Wales). *Open Journal of Marine Science* 03, 66–75. <https://doi.org/10.4236/ojms.2013.32A007>
- Evans, P.G.H., Anderwald, P., Baines, M.E., 2003. UK cetacean status review. Oxford, United Kingdom.
- Hammond, P., Lacey, C., Gilles, A., Viquerat, S., Börjesson, P., Herr, H., Macleod, K., Ridoux, V., Santos, M., 2017. Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys 40.
- Hartman, K.L., Fernandez, M., Azevedo, J.M.N., 2014. Spatial segregation of calving and nursing Risso's dolphins (*Grampus griseus*) in the Azores, and its conservation implications. *Marine Biology* 161, 1419–1428. <https://doi.org/10.1007/s00227-014-2430-x>
- Hartman, K.L., Visser, F., Hendriks, A.J.E., 2008. Social structure of Risso's dolphins (*Grampus griseus*) at the Azores: a stratified community based on highly associated social units. *Canadian Journal of Zoology* 86, 294–306. <https://doi.org/10.1139/Z07-138>
- IAMMWG, 2015. Management Units for cetaceans in UK waters (January 2015) (JNCC report No. 547). JNCC, JNCC Peterborough.
- Reid, J.B., Evans, P.G.H., Northridge, S.P., 2003. Atlas of Cetacean distribution in north-west European waters. Joint Nature Conservation Committee, Peterborough, UK.
- Rosel, P.E., Mullin, K.D., Garrison, L., Schwacke, L., Adams, J., Balmer, B., Conn, P., Conroy, M.J., Eguchi, T., Gorgone, A., Hohn, A., Mazzoil, M., Schwarz, C., Sinclair, C., Speakman, T., Urian, K., Vollmer, N., Wade, P., Wells, R., Zolman, E., 2011. Photo-Identification capture-mark-recapture techniques for estimating abundance of bay, sound and estuary populations of bottlenose dolphins along the U.S. East coast and Gulf of Mexico: A workshop report 38.

- Weir, C.R., Pollock, C., Cronin, C., Taylor, S., 2001. Cetaceans of the Atlantic Frontier, north and west of Scotland. *Continental Shelf Research* 21, 1047–1071.
- Weir, C.R., Hodgins, N.K., Dolman, S.J., Walters, A. Submitted. Risso's dolphins (*Grampus griseus*) in a proposed Marine Protected Area off east Lewis (Scotland) 2010–2017.
- Wharam, J., Simmonds, M.P. 2008. Risso's Dolphin Conservation Plan for waters west of the UK. WDCS Science Team Report. 25 pp.

## Data Archive Appendix

Data outputs associated with this project are the property of WDC. Do not reproduce or use without prior permission. The catalogue of images of all 205 individuals can be requested from [info@whales.org](mailto:info@whales.org).



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