



SEA WATCH FOUNDATION WELSH BOTTLENOSE DOLPHIN PHOTO-IDENTIFICATION CATALOGUE 2011

D. Feingold and P.G.H. Evans

CCW Marine Monitoring Report No. 97



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July 2012





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1. INTRODUCTION

Long term studies of individuals through photo-identification (frequently termed photo-ID) of naturally marked cetaceans can reveal much needed information using a technique that is non-invasive. It provides information on group structure, site fidelity, movement patterns and population size. In conjunction with other studies, long-term photo ID can also enhance descriptions of life history parameters such as age at sexual maturity, calving intervals, reproductive, and total, life spans (Hammond *et al.*, 1990).

In bottlenose dolphins, a significant portion of the population may bear markings that allow individual identification. These appear in the form of nicks in the dorsal fin either from the bites of other dolphins or, more rarely, cuts from a vessel's propeller. They can also take other forms: pigmentation patterns or de-pigmentation on the fin and body, rake marks or wounds over the back, and skin lesions from disease can all lead to particular individuals having a unique set of markings. Some of these can be seen only from one side or other of the animal; others may change over time either by acquiring new marks or by these marks changing in shape or extent.

1.1 History

Cardigan Bay has long been known for its population of bottlenose dolphins (Morris, 1991; Mayer et al., 1991; Lewis & Evans, 1993). During the late 1980s, Bob Morris started drawing the fins of bottlenose dolphins that he saw at close guarters from the town of New Quay. Then in 1989, Sue Mayer and Holly Arnold from Greenpeace UK teamed up with Peter Evans and Emily Lewis-Brown from the UK Mammal Society Cetacean Group (later to become Sea Watch Foundation) to initiate a study of the Cardigan Bay dolphins using photo-identification techniques. Most observations were made from vessel surveys conducted out of Aberystwyth and New Quay. This was supplemented by some photography conducted by Mick Baines out of Fishguard, and by Tony Wenden out of Aberporth. Images collected from trips over this period were assembled into two main catalogues (Arnold et al., 1997; Lewis, 1999), with funding from the Countryside Council for Wales (CCW). However, it was not until 2001 that intensive photo-ID surveys were started within Cardigan Bay, through a project funded by the EU INTERREG Programme and CCW (Baines et al., 2002). This was continued in 2002 by Paul Gregory and Steve Hartley in a collaboration between the Sea Watch Foundation and West Wales Chartering Company/Cardigan Bay Marine Wildlife Centre.

From the 1990s until 2007, photo-ID emphasis had been upon the Cardigan Bay Special Area of Conservation in the southern part of Cardigan Bay (Baines *et al.*, 2002; Ugarte & Evans, 2006; CBMWC, 2007; Pesante *et al.*, 2008b). This covers an area of c. 1,000 km² from the coast between Aberarth (just N of Aberaeron) and Ceibur (just S of Cardigan) to 20 km offshore.

Since 2007, photo-ID has been conducted also in the northern part of Cardigan Bay and Tremadog Bay, encompassing the Pen Llyn a'r Sarnau SAC (Pesante *et al.*, 2008b). These were *ad-libitum* surveys initially undertaken by Friends of Cardigan Bay and Sea Watch Foundation, but additional important information from the region has come also from Alan Gray of Shearwater Coastal Cruises, operating out of Pwllheli. In 2011, line transect surveys were commenced, covering all of northern Cardigan Bay and thus providing photo-ID information for the entire Bay (Veneruso & Evans 2011a).

In 2007, a Bottlenose Dolphin Connectivity Project was initiated by Dr Mandy McMath of the Countryside Council for Wales, in conjunction with Sea Watch Foundation, and with additional support from Marine Awareness North Wales (Pesante *et al.*, 2008b). This

project aimed to establish whether animals from Cardigan Bay ranged into the waters of Anglesey and North Wales in general. Data were collected through opportunistic surveys around the North Welsh coast, mainly from the Skerries in north Anglesey east to Great Orme Head, but with additional information from Jon Shaw of Seekat Charters, operating out of Amlwch and Dave Powell and Nia Haf Jones of Marine Awareness North Wales. In recent years, photo-ID data from the Isle of Man have also been kindly forwarded to us by the Manx Whale and Dolphin Watch (MWDW).

An analysis of results from 2007-11 shows at least 141 dolphins (64% of 221 used in the analysis) to be identified in both Cardigan Bay SAC and north of the Llyn Peninsula (mainly around the Isle of Anglesey), indicating that the majority of the population migrates between these two regions (Feingold *et al.*, 2011; Veneruso & Evans, 2012a, b; Veneruso *et al.*, 2012). Thirty-eight individuals from the Sea Watch catalogue have also been recorded further north off the Isle of Man. On the other hand, some individuals within the population may have a more localised range, with 32 dolphins (14%) identified in the Pen Llyn a'r Sarnau SAC and north of the Llyn Peninsula but never recorded in the Cardigan Bay SAC. Thirty-four (15%) dolphins have been encountered in Cardigan Bay only, with 16 of these (7%) recorded only within Cardigan Bay SAC. A small proportion of the catalogue, consisting of 14 individuals (7%), has so far only been recorded north of the Llyn Peninsula.

1.2 The catalogue

This photo-ID catalogue represents all the recognizable dolphin individuals known from Welsh waters up to the end of 2011. It updates the first version of the catalogue produced in 2008 (Pesante & Evans, 2008). In total, 248 different marked individuals have been catalogued in this latest version. From counts of the number of marked animals photographed compared against total group size during each photographic encounter, this number is thought to represent 63% of the population, yielding an overall 394 bottlenose dolphins recorded in Welsh waters over the last ten years (these figures include both Cardigan Bay and North Wales).

Photo-identification has become a standard method for estimating the abundance of bottlenose dolphins using a technique called mark-recapture where a sample of marked individuals are photographed (i.e. "captured" photographically) and compared with subsequent samples where a proportion will be "re-captured" by being photographed. In order to obtain a reliable estimate, a number of assumptions are made. These are that a marked animal will always be recognized if it is seen again (i.e. marks are not lost or that changes go unrecognized), that samples of individuals are representative of the population being estimated, and that every animal in the population should have the same probability of being "captured" photographically within any one sampling occasion. The following is a description of the methods used (Evans & Hammond, 2004; Ugarte & Evans, 2006; Pesante *et al.*, 2008b; Veneruso & Evans, 2012a).

1.3 The database

A customised Access database (designed by Roberto Gramolini) was used to create the Photo-ID Catalogue. This relational database contains tables with information on the encounters (date, time, position, behaviours displayed, group size and composition), on each identified individual (catalogue name, nickname, age, gender, method of gender determination, marking type, first sighting date, number of times sighted, areas where sighted, and relationships with other individuals) and details of the photographs (camera body and lens used, name of photographers, number of pictures taken in each

encounter, and number used). The database is linked to an ArcView project from which the encounters can be easily and quickly plotted, either together, or for single individuals, or for particular years or areas.

A report links information contained in the tables with those of the individual dolphins, their pictures and a map with the positions of the encounters where they were spotted. This report was then used to create the pdf catalogue. The database also contains a number of queries that are very helpful for the data analysis, as well as masks for data entering, along with error checks.

1.4 Data collection

Dolphin groups are approached to a distance of 20-50 metres, following the guidelines outlined in the photo-identification licence granted to the Sea Watch Foundation by the Countryside Council for Wales. Photos have been taken using a digital Canon camera equipped with 70-300mm, 18-200mm or 28-300mm zoom lens. Attempts are made to photograph all the individuals in the group including at least one picture of the dorsal fin of each dolphin, and preferably both sides. Photo-Identification sessions last until the dolphins are lost from view, show signs of disturbance, all the dolphins in the group are identified, or the conditions of the licence are reached.

A group of dolphins is defined as a cluster of animals separated by approximately 100m or less, moving in the same direction and engaged in a similar activity. A new encounter is started every time a different group of dolphins is approached and identification photographs taken. During each encounter, we record the encounter number, date, time, position, group size and composition, photographer's name, as well as all behaviours performed. Four age categories (adult, juvenile, calf and newborn) are used, based on the size of the animal relative to an adult, the swimming pattern, the skin coloration, presence of foetal folds and proximity to the mother. Group size is determined in the field, but if the photo-identification estimate has resulted in an even larger group size, this latter evaluation is used in the analysis.

A pre-requisite of a good photo-identification study is good photographs, good enough so that animals that are considered marked will be recognized with certainty if seen again later. This also depends on how well-marked animals in the population are, and how much variability there is in these markings. To obtain a good photograph of each animal, attempts are made to photograph them in good light, and as perpendicular to the camera as possible.

Not all animals in the population may bear distinguishing markings. For example, bottlenose dolphins acquire nicks as they get older, so younger animals are typically not marked. Data on the proportion of marked animals in each school encountered can be used to estimate the proportion of marked animals in the population, but this requires attempts to photograph as many individuals in the group as possible (from both sides), and a good estimate of the group size (whether or not they are marked) in each photographic encounter. Despite best attempts, it is not always possible to obtain top quality photographs. For this reason, photographs are graded according to quality, and only the best are used in estimating population size. Including poor quality photographs may lead to animals not being recognized on recapture, which can bias the resultant estimate.

1.5 Analysis

Data were analysed by mark-recapture methods using the software, MARK. Once new photographs have been graded for quality, an attempt is made to match each one to the existing database (catalogue) of marked animals. The first photo represents the first 'capture' event, and matches represent 'recaptures' of individuals. It is good practice to be conservative in matching to eliminate the possibility of false positives but this may lead to some missed matches, which can in turn result in an overestimation of population size. This applies particularly if photographs other than the very best are used during the matching process. We performed the matching using ACDSee Pro, following the techniques described by Defran and colleagues (1990) and Würsig & Jefferson (1990).

Mark-recapture methods require at least two sampling occasions. We have multiple sampling occasions and so a time series of estimates can be obtained. We have chosen to analyse the data using both 'closed' and 'open' population models. A closed population model assumes that population size is closed to births, deaths, immigration and emigration, i.e. it does not change over the period of the study. This will rarely be the case but if either deaths or births can be assumed to be negligible, the estimate will be unbiased at the time of the first or second sample, respectively. If the sampling occasions are close together in time, so that population size can be assumed not to change, closed population models can be used. We therefore use this model to analyse data within research seasons (summer months when data are collected), assuming that population size over that period has not changed. Open population models are used to analyse data on a yearly basis as we have evidence that some animals either enter or migrate from the study area over the longer term. Abundance estimates are derived and compared using both methods.

2. RESULTS

Abundance estimates for the whole of Cardigan Bay over the period 2005-11 using the Chao(mth) model for closed populations indicate that between 182 and 295 bottlenose dolphins have used the area in any one year. The corresponding values using open population models range between 127 and 221 dolphins.

Both closed and open population models indicate a general increase in the bottlenose dolphin population using Cardigan Bay until around 2009, followed by a noticeable decline to 2011. There is also recent evidence to suggest that some proportion of the population may no longer be using Cardigan Bay, the probability of emigration from the Bay between 2010 and 2011 having risen to 35%, whilst the probability of dolphins remaining out of the study area has increased to 42% (Veneruso & Evans, 2012a).

Abundance estimates specifically for Cardigan Bay SAC for the period 2001-11 ranged between 129 and 260 dolphins using the Chao(mth) model for closed populations, and between 127 and 221 dolphins using the open population model. In 2011, the probability of individuals leaving the Cardigan Bay SAC between years was 30%, similar to that seen between 2007 and 2009, although major fluctuations between years disguise any clear pattern. However, the likelihood that animals stayed out of Cardigan Bay SAC has shown an overall decline. This may mean that there is a sub population loyal to the site but that there is a reduction in visits by more transient animals (Veneruso & Evans, 2012a).

The number of individual re-sightings within the SAC has varied widely between individuals, with one dolphin having been recorded on as many as 103 occasions. The average frequency of re-sightings across the population was 5.47. From re-sightings, 42% of animals are classified as residents (identified on more than 12 occasions); 30% of dolphins are occasional to the area, having been identified between four and 11 times; and 28% of individuals are considered transients, having been recorded on three occasions or less (Veneruso & Evans, 2012a).

The photo-ID catalogue of bottlenose dolphins in the Irish Sea has grown extensively since it was first created; now reaching 513 images. It continues to grow, with 27 new dolphins being added to the catalogue in 2011. Many of these new animals are juveniles that were previously unmarked. Due to the high numbers of calves in the region, it is expected that new animals will be added to the catalogue each year, as the juveniles acquire marks. In addition, there are new adult dolphins in the catalogue, suggesting that dolphins not encountered before are still being discovered. This is especially true for dolphins in North Wales, particularly those spotted in summer months.

3. CATALOGUE LEGENDS

SWF CATALOGUE NAME

Ea: 005-90W

The catalogue name is a unique code that identifies an individual dolphin. It consists of the following: a consecutive number in three digits (e.g. 005), followed by the year when the dolphin was sighted for the first time (e.g. 90), and finally a letter that identifies whether the dolphin is well-marked, slightly-marked, and right or left aspect (e.g. W).

CBMWC NAME

Eq: **066**

It reports the name of the dolphin given in the photo-identification catalogue of the Cardigan Bay Marine Wildlife Centre (CBMWC).

ELB NAME

Ea: **045**

It reports the name of the dolphin given in the photo-identification catalogue assembled by Emily Lewis-Brown (SWF), under contract from CCW.

ARNOLD NAME

Eq: 012

It reports the name of the dolphin given in the photo-identification catalogue assembled by Holly Arnold (Greenpeace UK), under contract from CCW.

NICKNAME

Eq: Rip Torn

The nickname is simply a common name given to the dolphin, which is easier to remember than the catalogue name. It usually refers to a characteristic of the dorsal fin of the animal, or the name of the person who identified it for the first time.

AGE CATEGORY

Eg: juvenile

Four arbitrary age classes are considered, based on visual assessment of sizes relative to average adult size, the coloration pattern, and the behaviour type: 1) newborn, below 50% of adult length, constantly in close association with an adult; its dorsal fin is typically low and rounded, it has dark coloration with visible foetal folds, and it has a juvenile swimming style with a stereotyped surfacing pattern when breathing; 2) calf, about 50% of adult length, in clear association with the mother, but not as strictly as a newborn; it has a light grey coloration and often lighter vertical stripes left by the foetal folds; 3) juvenile, about 2/3 the length of an adult with a coloration generally slightly lighter than the adult and with a more curious attitude towards boats. They are generally unmarked; and 4) adult.

GENDER

Eg: **female**

A dolphin can be recorded as male, female, or its gender unknown. It is possible to determine with certainty the sex of an individual from a picture showing the genital area; otherwise it has to be inferred from other clues (in which case it is uncertain). Following other researchers working on bottlenose dolphins (Wilson, 1995; Ingram, 2000), individuals seen in the close proximity of a calf during several encounters are presumed to be female. Animals with heavy scarring and big nicks on the dorsal fin are thought to be male (Tolley *et al.*, 1995).

MARKING CATEGORY

Eg: **slightly-marked**

The dolphins are categorized on the basis of the quantity of marks on their dorsal fin. The animals are "marked" when they have nicks on the trailing edge of the fin or visible marks or de-pigmentations on both sides of the fin, and can therefore be identified from both sides. If the dolphin has large nicks or marks, it can be identified even if the picture is of poor quality (out of focus, from the wrong angle, or taken too far away), and it is therefore called "well-marked". When the nicks or marks are minor, the animals are referred to as "slightly-marked", and can be identified only from medium or high quality pictures. Right or left animals are those that cannot be recognized from both sides, but where we have pictures from either the left or the right side.

FIRST TIME SEEN

Eg: 05/06/2001

This field reports the date when the dolphin was seen for the first time. The study period for this project is 2001-11, but some dolphins have been previously identified by SWF or other researchers, and they therefore may have dates as far back as 1989.

NUMBER OF TIMES SEEN

Eq: **5/6/2001**

This field reports the total number of times during the 2001-11 period that the dolphin was positively identified.

RELATIONSHIPS

Eg: *calf of 013-02S*

This field reports any known relationship between the dolphin and any other individual from the catalogue.

SIGHTINGS HISTORY

The table reports each year in which the dolphin was positively sighted.

PICTURES

The best right and left shot of each dolphin are entered in the catalogue. The most recent images of good quality are used wherever possible so as to cater for changes in marks over time. For some dolphins, only the right or the left image is available.

MAP

The map shows where the dolphins were spotted over the period 2001-11.

Please note that the locations of some sightings may be covered by some others if they occurred close together, and therefore one may not be able to see all the sightings on the map.

The depth of the sea floor is visualized by bathymetric lines with different gradations of blue, lighter for shallower waters and darker for deeper ones.

The Cardigan Bay Special Area of Conservation (shortened to Cardigan Bay SAC) is shown as a transparent box with a dark frame, while the Pen Llyn a'r Sarnau SAC (shortened to Pen Llyn SAC) is the dotted polygon. Land is in green; water is in white.

4. ACKNOWLEDGEMENTS

Many people or organisations have contributed to the development of this catalogue. First of all we would like to acknowledge the Sea Watch staff and volunteers that contributed to the picture collection and to the matching phase. Many thanks also to all the people that provided extra pictures or that developed photo-identification catalogues: Pia Anderwald (Sea Watch Foundation), Holly Arnold (Greenpeace UK), Mick Baines (Sea Watch Foundation), Janet Baxter (Friends of Cardigan Bay), Alan Gray (Shearwater Coastal Cruises), Steve Hartley (West Wales Chartering Company/Cardigan Bay Marine Wildlife Centre), Nia Haf Jones (Marine Awareness North Wales), Emily Lewis-Brown (Sea Watch Foundation), Sue Mayer (Greenpeace UK), Mandy McMath (Countryside Council for Wales), Dave Powell (Marine Awareness North Wales), Jon Shaw (Seekat Charters), and the late Tony Wenden.

The entire project would not have been possible without the funds provided by the Countryside Council for Wales and the EU Interreg Programme. Roberto Gramolini was indispensable for the development of the Access photo-identification database. Finally, lots of thanks go to our boat skippers Winston Evans, Mike Harris, Gary Hartley, Graham Kennard, Dafydd Lewis, Andy Owen, and Jon Shaw.

5. REFERENCES

Arnold, H., Bartels, B., Wilson, B., and Thompson, P. (1997) The bottlenose dolphins of Cardigan Bay: Selected biographies of individual bottlenose dolphins recorded in Cardigan Bay, Wales. CCW Contract Science Report No. 209.

Baines, M.E., Reichelt, M., Evans, P.G.H., and Shepherd, B. (2002) *Bottlenose dolphin studies in Cardigan Bay, West Wales*. INTERREG final report. Sea Watch Foundation, Oxford.

Cardigan Bay Marine Wildlife Centre (2007) Cardigan Bay Marine Wildlife Centre Bottlenose Dolphin (Tursiops truncatus) Photo-Identification Catalogue 2007. BayMarineWildlifeCentreBottlenoseDolphinPhoto-identificationCatalogue2007. www.cbmwc.org/research/documents/Cardigan

Chao, A., Lee, S.M., and Jeng, S.L. (1992) Estimating population size for capture-recapture data when capture probabilities vary by time and individual animal. *Biometrics*, **48**, 201-216.

Defran, R.H., Shultz, G.M., and Weller, D.W. (1990) A technique for the photographic identification and cataloguing of dorsal fins of the bottlenose dolphin (*Tursiops truncatus*). Report of the International Whaling Commission (Special Issue **12**), 53–55.

Evans, P.G.H. and Hammond, P.S. (2004) Monitoring cetaceans in European waters. *Mammal Review*, **34**, 131-156.

Feingold, D., Baines, M.E., and Evans, P.G.H. (2011) Cardigan Bay bottlenose dolphin social and population structure – findings from a ten-year photo-ID dataset. Poster at the 25th Annual Conference of the European Cetacean Society, Cadiz, Spain, 21-23 March 2012.

Hammond, P.S., Mizroch, S.A., and Donovan, G.P. (editors) (1990) *Individual recognition of cetaceans. Reports of the International Whaling Commission* (Special Issue **12**), 1-440.

Ingram, S.D. (2000) The ecology and conservation of bottlenose dolphins in the Shannon Estuary, Ireland, University College Cork. PhD thesis. 213pp.

Lewis, E.J. (1999) A digital database of photographically identified bottlenose dolphins: Cardigan Bay, West Wales. Countryside Council for Wales, Haverfordwest, Pembs.

Lewis, E.J. and Evans, P.G.H. (1993) Comparative ecology of bottlenose dolphins (*Tursiops truncatus*) in Cardigan Bay and the Moray Firth. *European Research on Cetaceans*, **7**, 57-62.

Mayer, S., Arnold, H., and Evans, P.G.H. (1991) Preliminary Findings from a Photo-Identification Study of Bottle-nosed Dolphins (*Tursiops truncatus*) in Cardigan Bay, Wales, UK, during 1990. *European Research on Cetaceans*, **5**, 45-46.

Morris, R.J. (1991) The New Quay Dolphins: A study of the natural history and behaviour of a wild, resident group of dolphins living off the west coast of Wales in an area of considerable human activity. A report for the World Wide Fund for Nature (WWF) on the study period October 1986 - June 1990. 141pp.

Pesante, G. and Evans, P.G.H. (2008) Sea Watch Foundation Welsh Bottlenose Dolphin Photo-identification Catalogue. CCW Marine Monitoring Report No. 66, i-xii, 1-204.

Pesante, G., Evans, P.G.H., Anderwald, P., Powell, D., and McMath, M. (2008a) *Connectivity of Bottlenose dolphins in Wales: North Wales Photo-Monitoring*. CCW Marine Monitoring Report No. 62. 42pp.

Pesante, G., Evans, P.G.H., Baines, M.E., and McMath, M. (2008b) *Abundance and Life History Parameters of the Bottlenose Dolphin in Cardigan Bay: Monitoring 2005-2007.* CCW Marine Monitoring Report No. 61. 75pp.

Tolley, K.A., Read, A.J., Wells, R.S., Urian, K.W., Scott, M.D., Irvine, A.B. and Hohn, A.A. (1995) Sexual dimorphism in wild bottlenose dolphins (*Tursiops truncatus*) from Sarasota, Florida. *Journal of Mammalogy*, **76**(4), 1190-1198.

Ugarte, F. and Evans, P.G.H. (2006) *Monitoring of marine mammals in the Cardigan Bay SAC: surveys from May 2003 to April 2005*. Marine Monitoring Report No. 23. Species Challenge Report No. 05/01/04. Countryside Council for Wales, Bangor. 38pp.

Veneruso, G. and Evans, P.G.H (2012a) *Bottlenose Dolphin and Harbour Porpoise Monitoring in Cardigan Bay and Pen Llŷn a'r Sarnau Special Areas of Conservation*. CCW Marine Monitoring Report No. 95. 65pp.

Veneruso, G. and Evans, P.G.H (2012b) *Connectivity of Bottlenose Dolphins in Welsh Waters: North Wales.* Photo-Monitoring Interim Report. Report to Countryside Council for Wales. Sea Watch Foundation. 17pp.

Veneruso, G., Feingold, D., Pesante, G., and Evans, P.G.H. (2012) Bottlenose dolphin dispersal in Wales: are current conservation guidelines enough? Poster at the 26th Annual Conference of the European Cetacean Society, Ireland, March 2012.

Wilson B (1995) The ecology of bottlenose dolphins in the Moray Firth, Scotland: a population at the northern extreme of the species' range. PhD Thesis, University of Aberdeen, Aberdeen.

Würsig, B. and Jefferson, T.A. (1990) Methods of photo-identification for small cetaceans. In: "Individual Recognition of Cetaceans: Use of Photo-identification and other Techniques to Estimate Population Parameters" (Editors P.S. Hammond, S.A. Mizroch, and G.P. Donovan). Report of the International Whaling Commission (Special Issue, 12), 43–52.

2003 2004 2008





SWF CATALOGUE NAME: 001-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

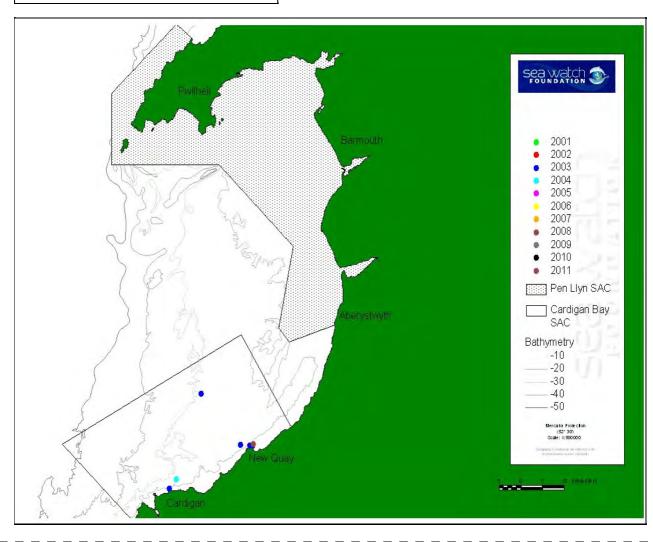
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 26/05/2003

NUMBERS OF TIMES SEEN: 7



2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 002-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Flint

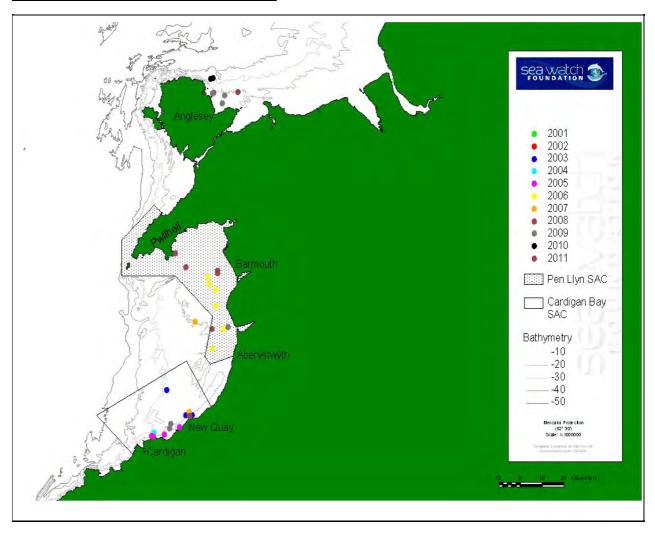
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 26/05/2003

NUMBERS OF TIMES SEEN: 34



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 003-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Checkmate

AGE CATEGORY: Adult

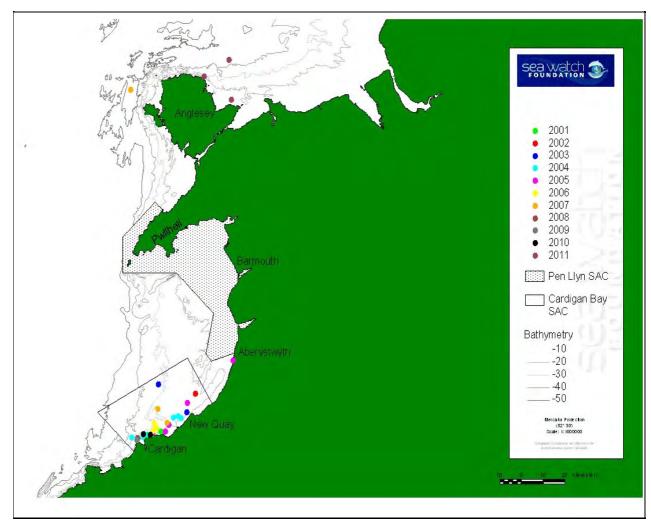
GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/08/2001

NUMBERS OF TIMES SEEN: 35

RELATIONSHIPS: Mother of Unknown



2003
2004
2005
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 004-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Chris

AGE CATEGORY: Adult

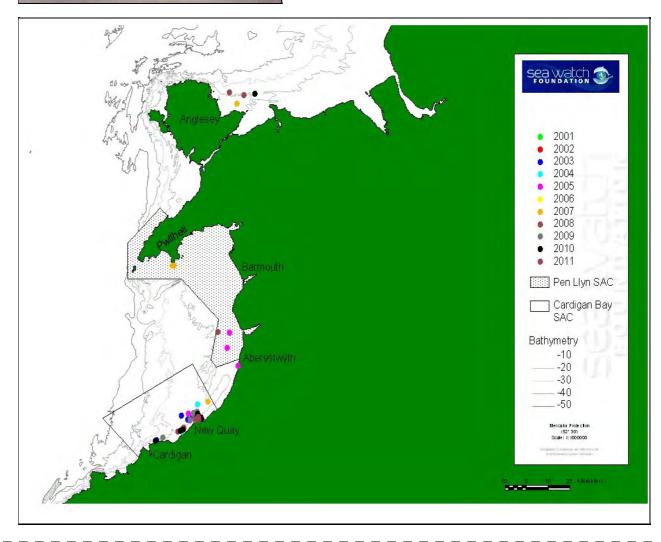
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 26/05/2003

NUMBERS OF TIMES SEEN: 135

RELATIONSHIPS: Mother of 068-08L



2001
2002
2003
2004
2005
2006
2007
2008
2009
2011





SWF CATALOGUE NAME: 005-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Rip Torn

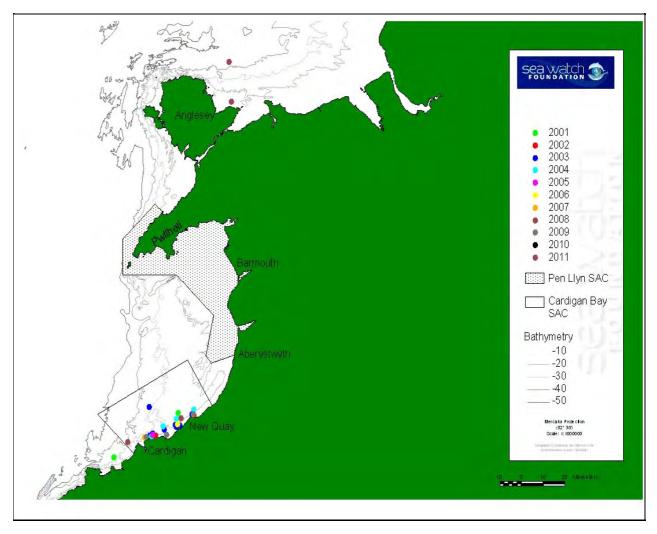
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 09/07/2001

NUMBERS OF TIMES SEEN: 33



2001
2003
2004
2005
2006
2007
2009
2010
2011





SWF CATALOGUE NAME: 006-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Tide

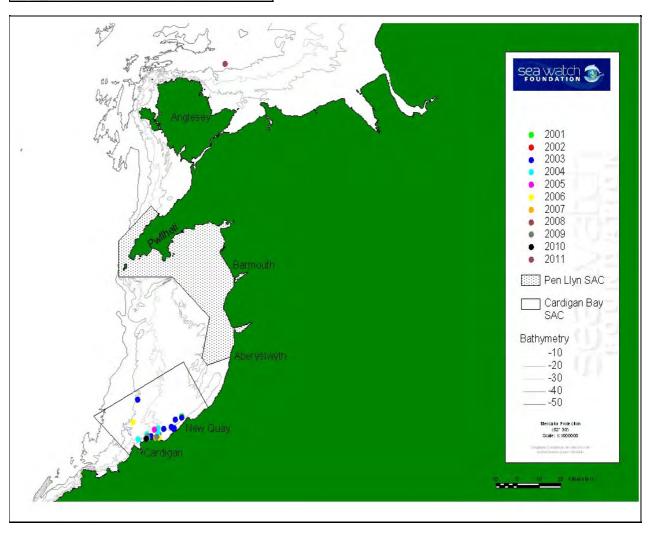
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/08/2001

NUMBERS OF TIMES SEEN: 34



2001
2003
2004
2005
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 007-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Alma

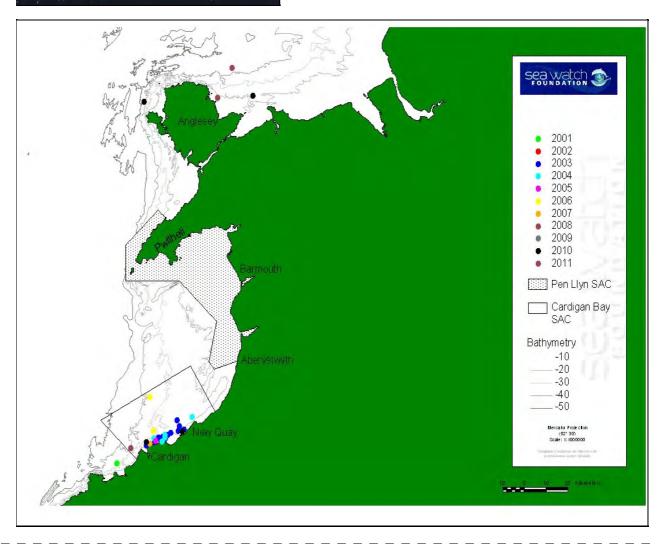
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 21/09/2001

NUMBERS OF TIMES SEEN: 30



2001
2002
2003
2004
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 008-89W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Ebony

AGE CATEGORY: Adult

GENDER: Female

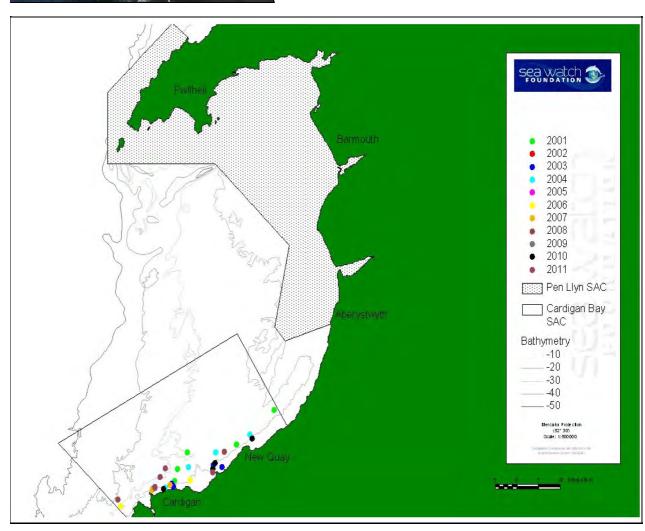
MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 11/06/2001

NUMBERS OF TIMES SEEN: 36

RELATIONSHIPS: Mother of 117-03S +

141-04S + 213-08S



2003	
2004	
2006	
2008	
2009	
2010	
2011	





SWF CATALOGUE NAME: 009-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Frankie

AGE CATEGORY: Adult

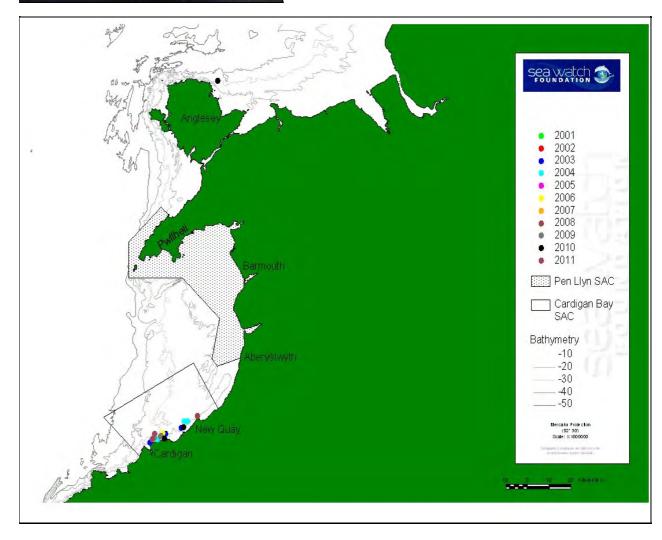
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 28/05/2003

NUMBERS OF TIMES SEEN: 17

RELATIONSHIPS: Mother of Unknown



2001 2002 2003 2004





SWF CATALOGUE NAME: 010-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Owain

AGE CATEGORY: Adult

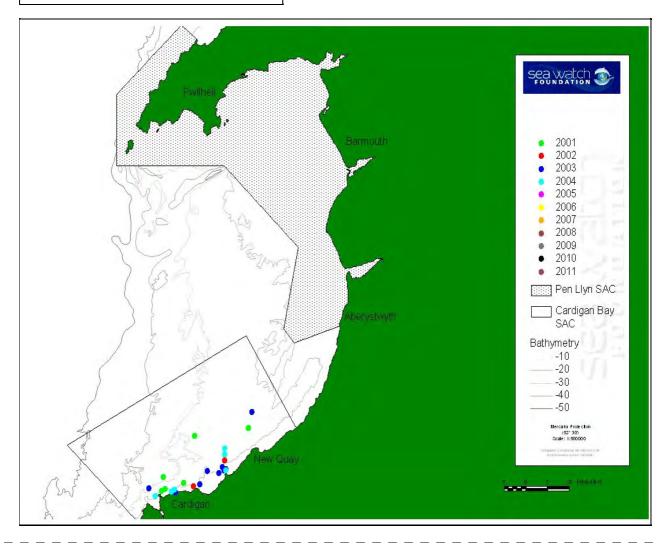
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 27

RELATIONSHIPS: Mother of 087-03S







SWF CATALOGUE NAME: 011-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

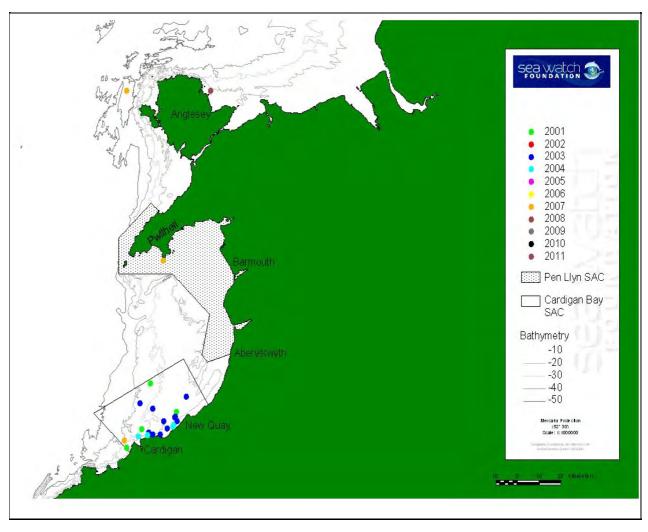
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

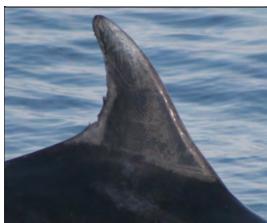
FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 29



2001	
2003	
2004	
2006	
2007	
2008	
2009	





SWF CATALOGUE NAME: 012-89W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Fog

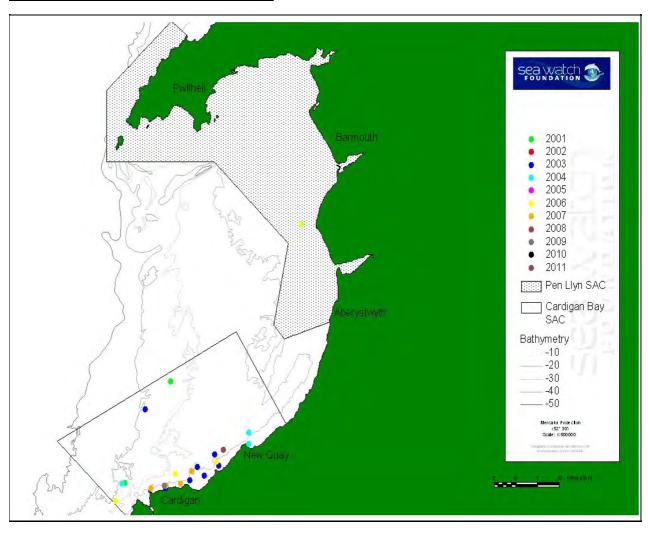
AGE CATEGORY: **Adult**

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 24



2001
2003
2004
2005
2006
2007
2009





SWF CATALOGUE NAME: 013-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Colin

AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 21/09/2001

NUMBERS OF TIMES SEEN: **32**RELATIONSHIPS: **None known**

sea watch 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 Pen Llyn SAC Cardigan Bay SAC Bathymetry -10 -20 -30 -40 -50

2001
2002
2003
2004
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 014-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Gandalf

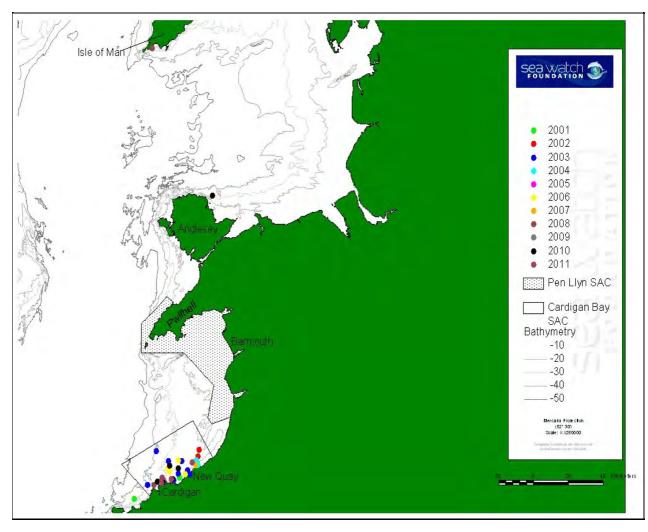
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 23/05/2001

NUMBERS OF TIMES SEEN: 40



2001	
2003	
2004	
2005	
2006	
2007	
2011	





SWF CATALOGUE NAME: 015-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Whisper

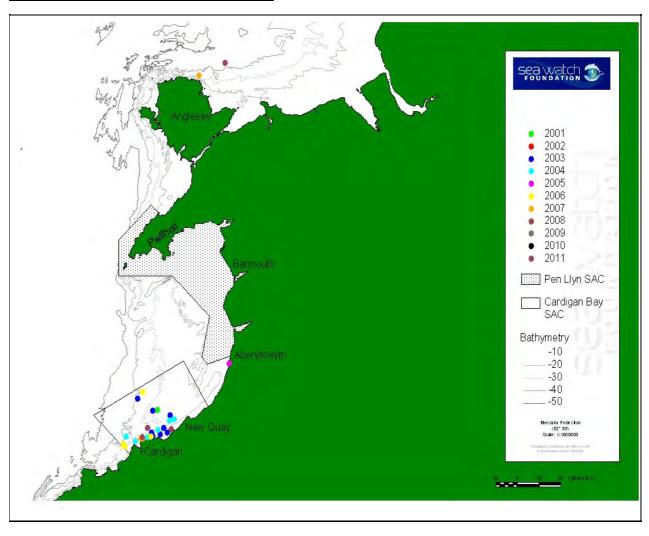
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 29



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010





SWF CATALOGUE NAME: 016-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Myfanwy

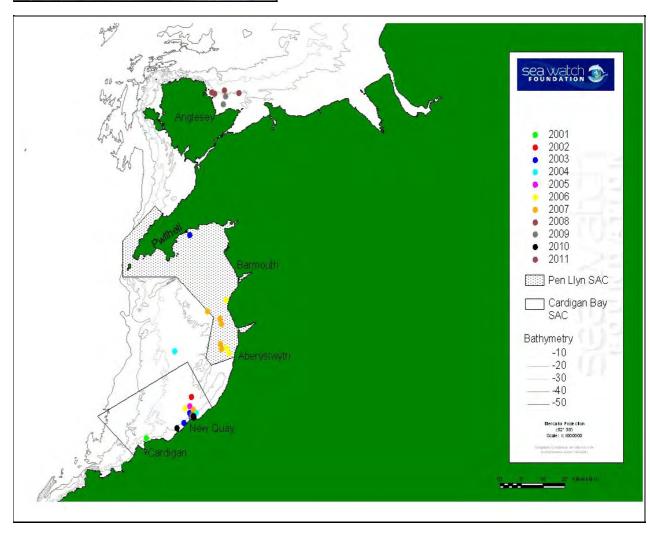
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/09/2001

NUMBERS OF TIMES SEEN: 42



2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	





SWF CATALOGUE NAME: 017-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Smoothy

AGE CATEGORY: Adult

GENDER: Female

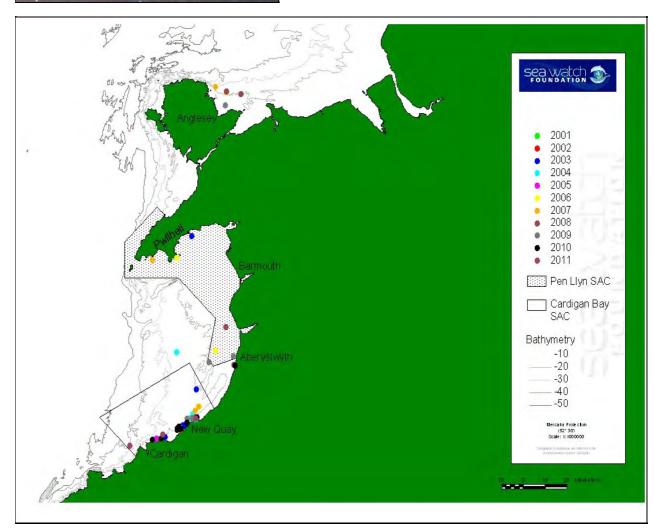
MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 30/05/2003

NUMBERS OF TIMES SEEN: 121

RELATIONSHIPS: Mother of 207-07S +

047-03L



2003 2004 2005





SWF CATALOGUE NAME: 018-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

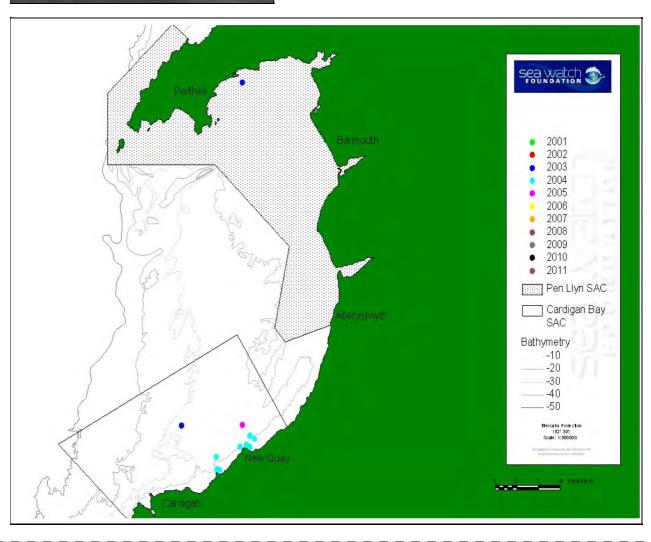
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 01/06/2003

NUMBERS OF TIMES SEEN: 11



2002
2003
2004
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 019-02\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Rose

AGE CATEGORY: Adult

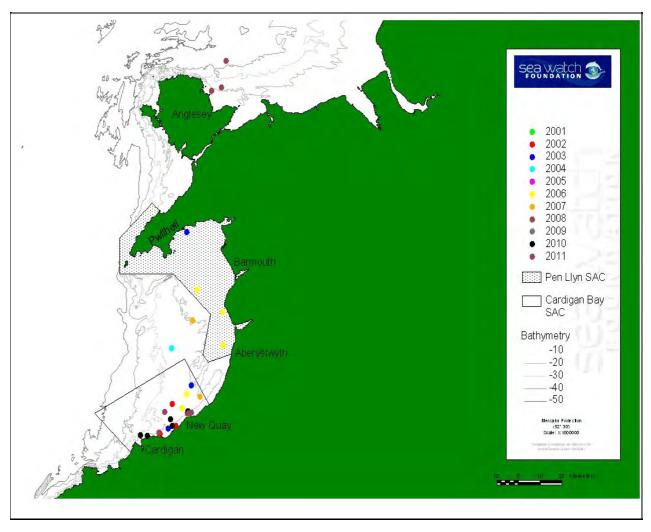
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 24/08/2002

NUMBERS OF TIMES SEEN: 29

RELATIONSHIPS: Mother of 103-06L



2002	
2003	
2004	
2007	
2008	
2009	
2010	
2011	





SWF CATALOGUE NAME: 020-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Henry

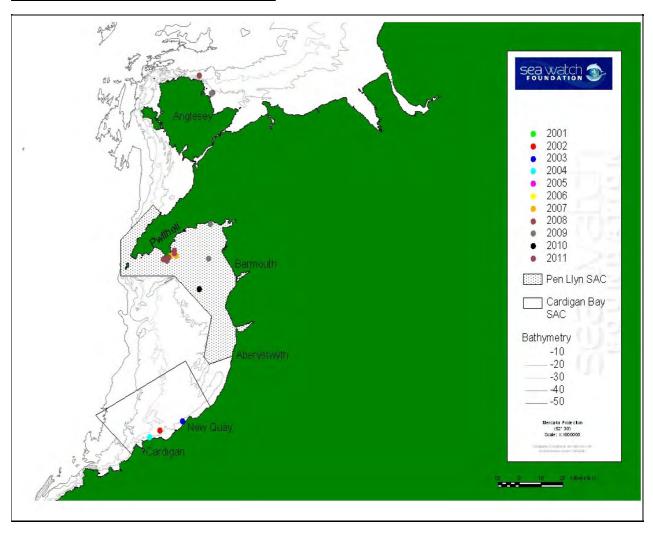
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/08/2002

NUMBERS OF TIMES SEEN: 17







SWF CATALOGUE NAME: 021-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Alice

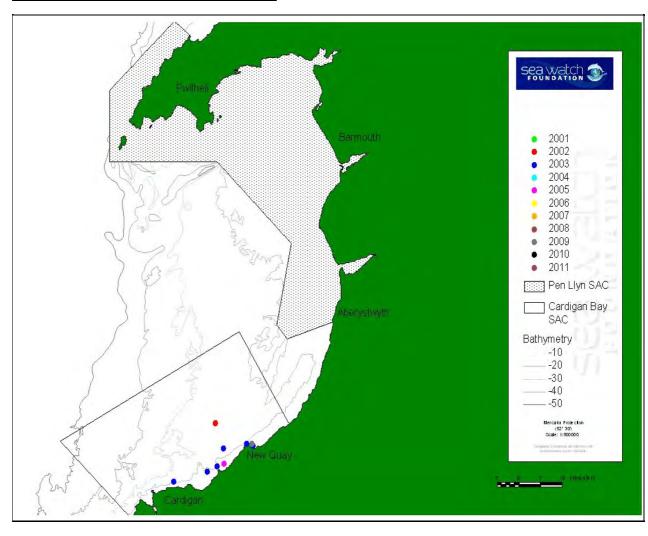
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 01/09/2002

NUMBERS OF TIMES SEEN: 10



2003





SWF CATALOGUE NAME: 022-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: File

AGE CATEGORY: Adult

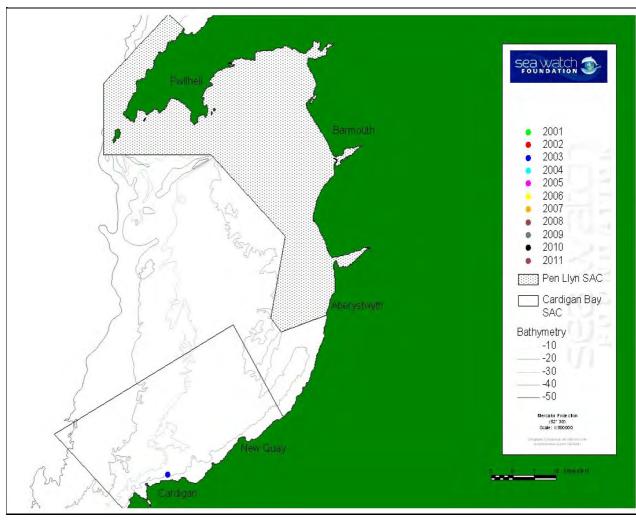
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 05/06/2003

NUMBERS OF TIMES SEEN: 1

RELATIONSHIPS: Mother of Unknown



2003
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 023-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Voldermort

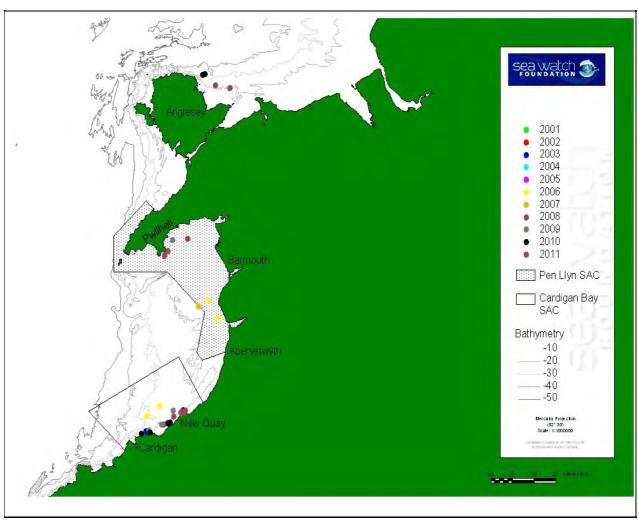
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 05/06/2003

NUMBERS OF TIMES SEEN: 35







SWF CATALOGUE NAME: 024-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Roxanna

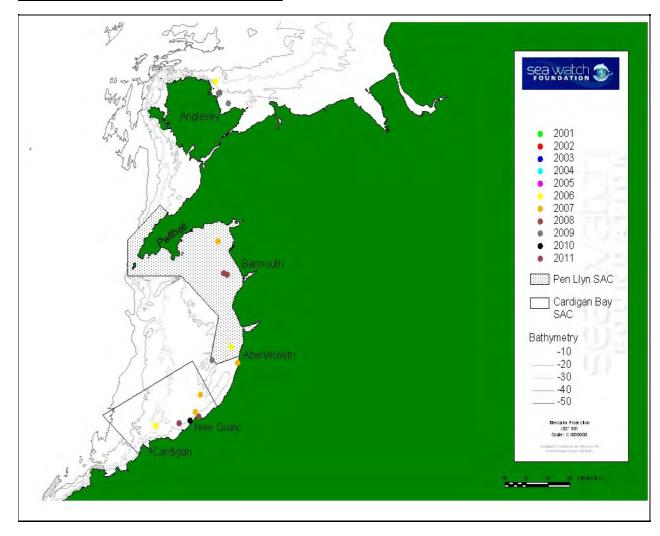
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 18/10/2005

NUMBERS OF TIMES SEEN: 18







SWF CATALOGUE NAME: 025-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Haf

AGE CATEGORY: Adult

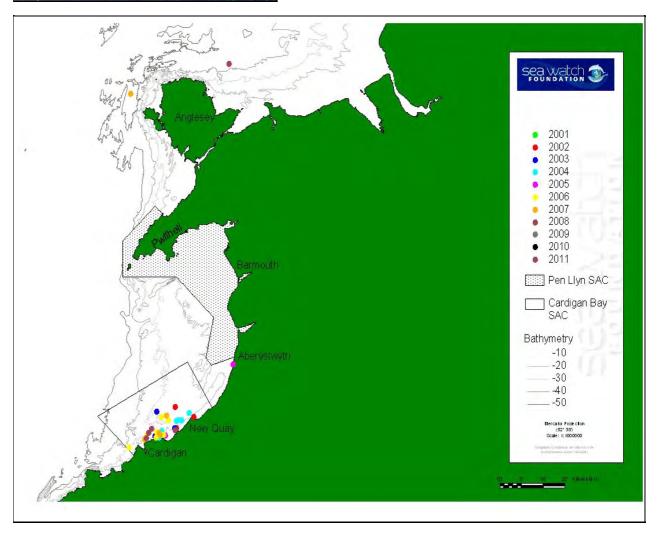
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 01/09/2002

NUMBERS OF TIMES SEEN: 32

RELATIONSHIPS: Mother of 058-03L







SWF CATALOGUE NAME: 026-07\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Drew

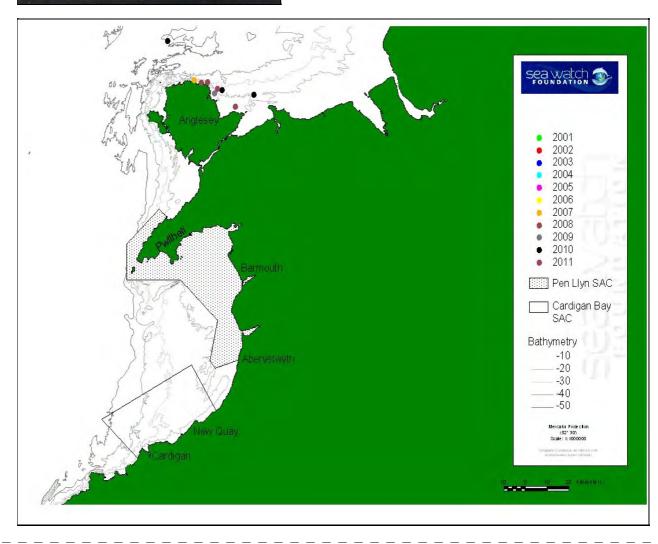
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 10/08/2007

NUMBERS OF TIMES SEEN: 9







SWF CATALOGUE NAME: 027-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

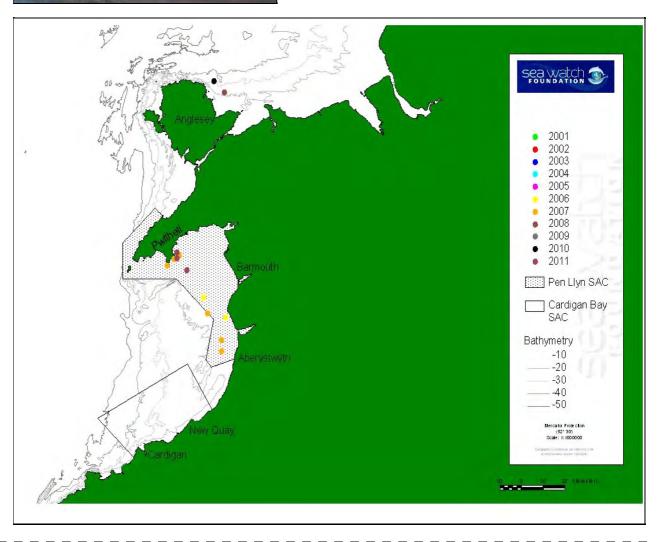
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 05/06/2006

NUMBERS OF TIMES SEEN: 14



2005 2006 2007 2008





SWF CATALOGUE NAME: 028-05W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

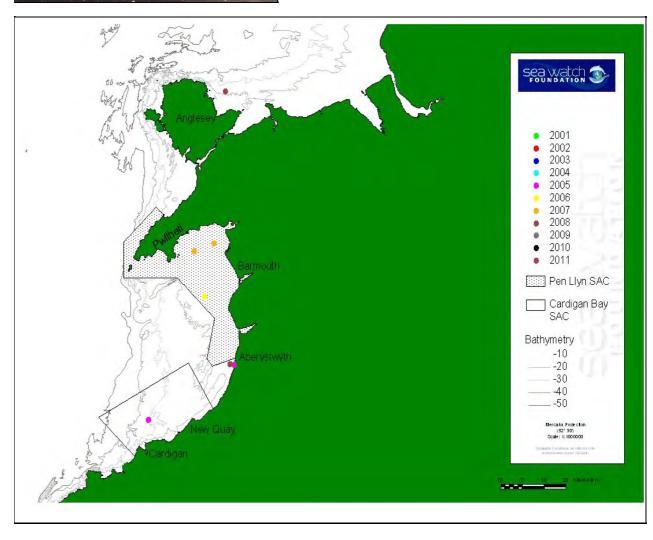
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/04/2005

NUMBERS OF TIMES SEEN: 7



2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 029-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Strata

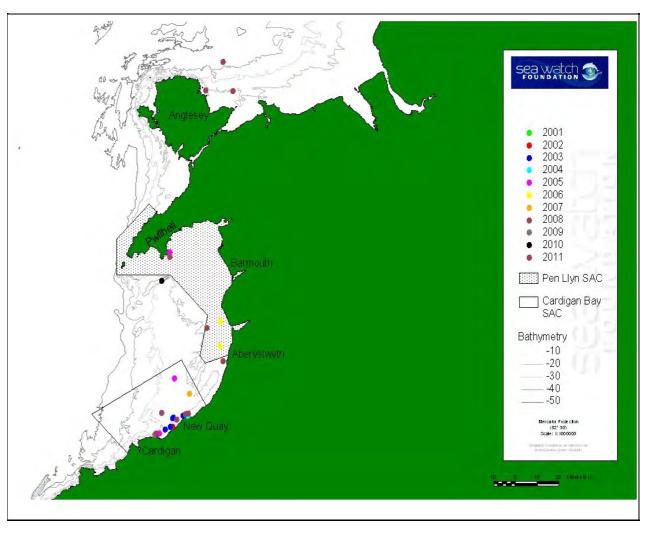
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 24/08/2002

NUMBERS OF TIMES SEEN: 27



2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 030-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

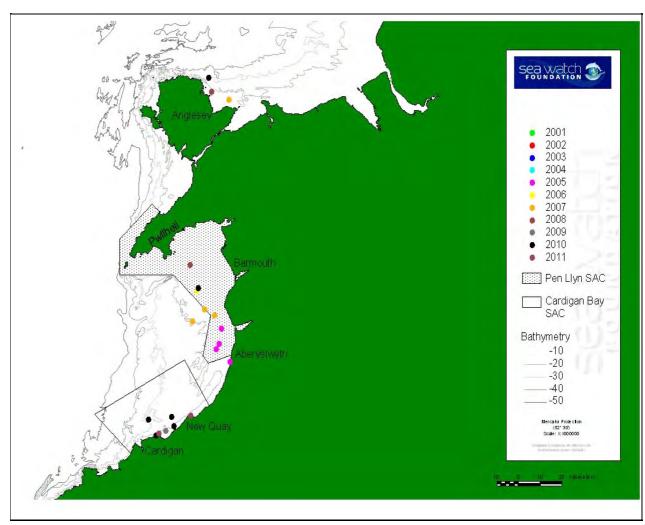
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 21/04/2005

NUMBERS OF TIMES SEEN: 21

RELATIONSHIPS: Mother of Unknown



2001 2003 2004 2005





SWF CATALOGUE NAME: 031-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Chips

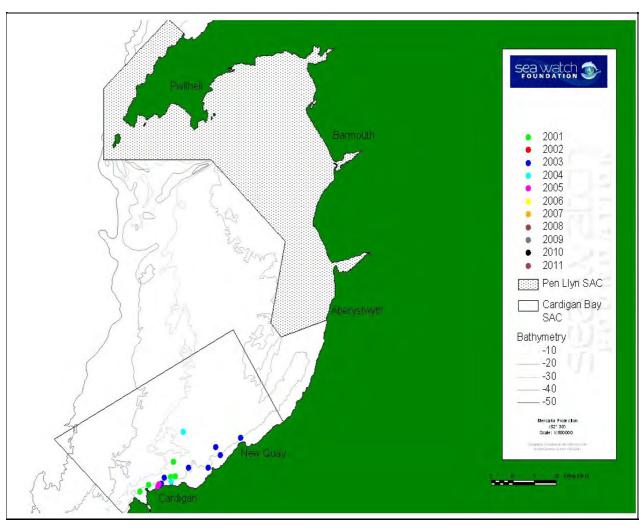
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 16



> 2006 2007





SWF CATALOGUE NAME: 032-90\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: White tip

AGE CATEGORY: Adult

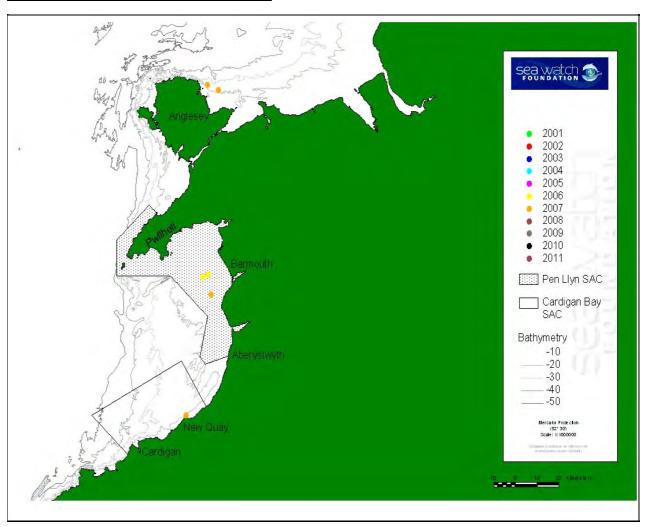
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 29/06/2006

NUMBERS OF TIMES SEEN: 6

RELATIONSHIPS: Mother of Unknown







SWF CATALOGUE NAME: 033-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Tamara

AGE CATEGORY: Adult

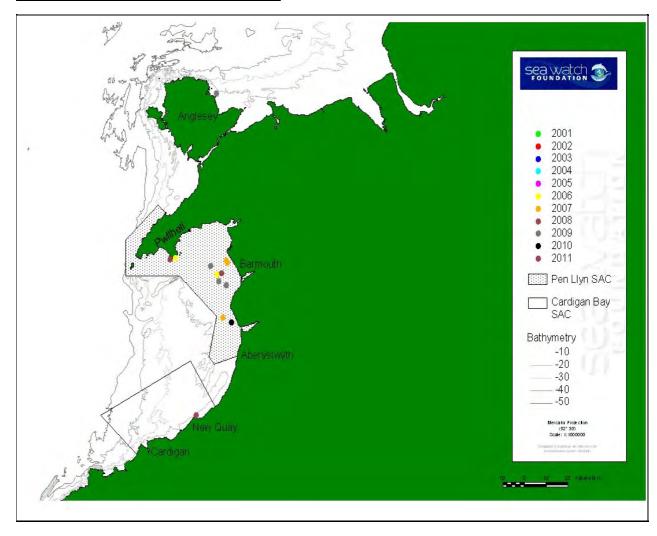
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 29/06/2006

NUMBERS OF TIMES SEEN: 14

RELATIONSHIPS: Mother of Unknown



2002	
2003	
2006	
2008	
2009	
2010	





SWF CATALOGUE NAME: 034-01\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

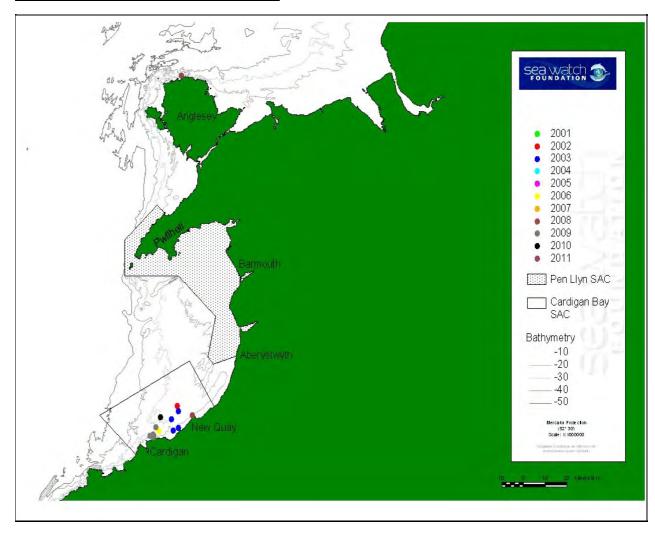
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 01/09/2002

NUMBERS OF TIMES SEEN: 14







SWF CATALOGUE NAME: 035-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Dodo

AGE CATEGORY: Adult

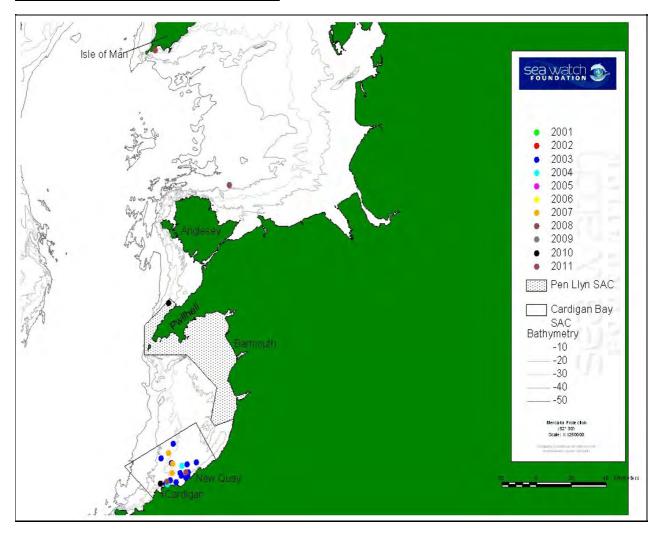
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/06/2003

NUMBERS OF TIMES SEEN: 24

RELATIONSHIPS: Mother of 235-10S(?)







SWF CATALOGUE NAME: 036-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Comb

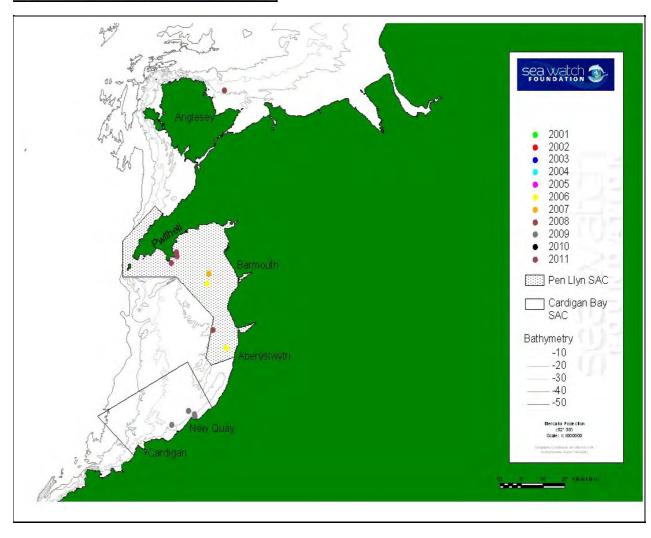
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 08/06/2006

NUMBERS OF TIMES SEEN: 13



2006 2007





SWF CATALOGUE NAME: 037-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

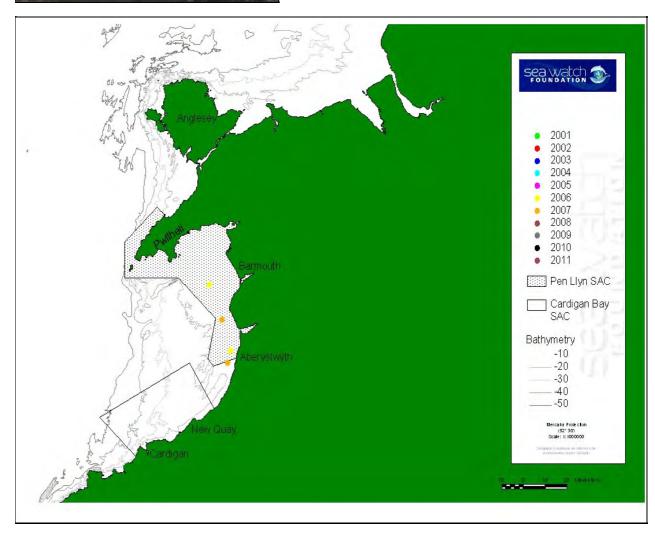
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 08/06/2006

NUMBERS OF TIMES SEEN: 4



2001
2003
2004
2005
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 038-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Ivy

AGE CATEGORY: Adult

GENDER: Female

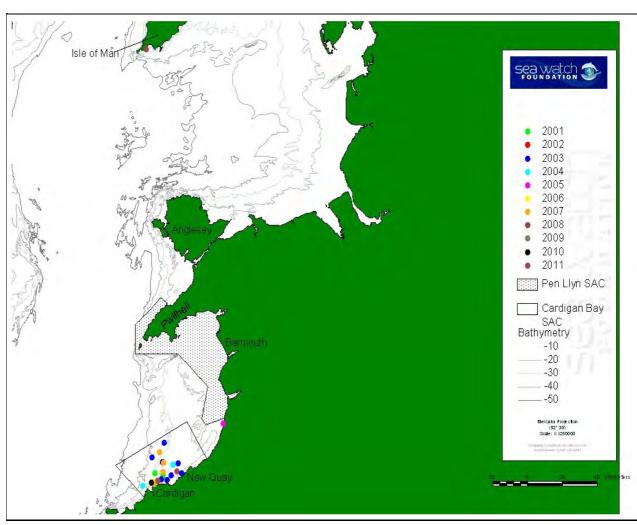
MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 11/06/2001

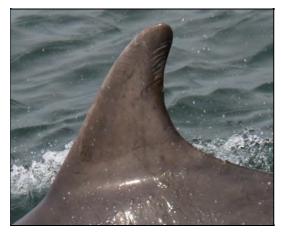
NUMBERS OF TIMES SEEN: 24

RELATIONSHIPS: Mother of 001-03L +

218-06S



2006 2008 2009 2010





SWF CATALOGUE NAME: 039-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Dominique

AGE CATEGORY: Adult

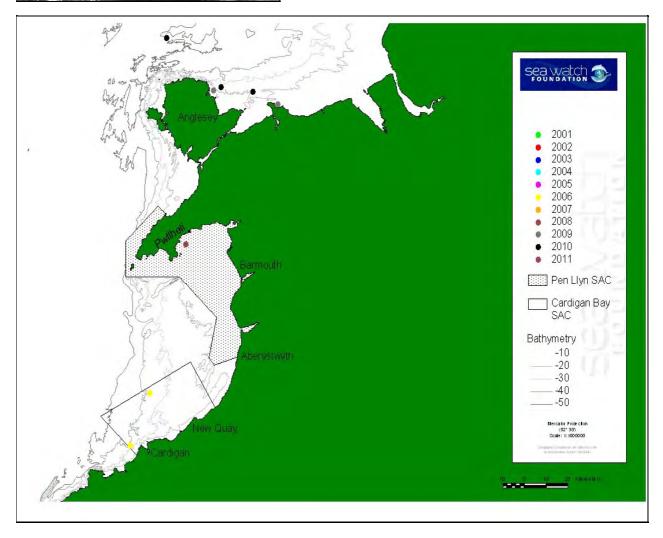
GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 16/06/2006

NUMBERS OF TIMES SEEN: 9

RELATIONSHIPS: Juvenile of Unknown(?)







SWF CATALOGUE NAME: 040-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Gyzmo

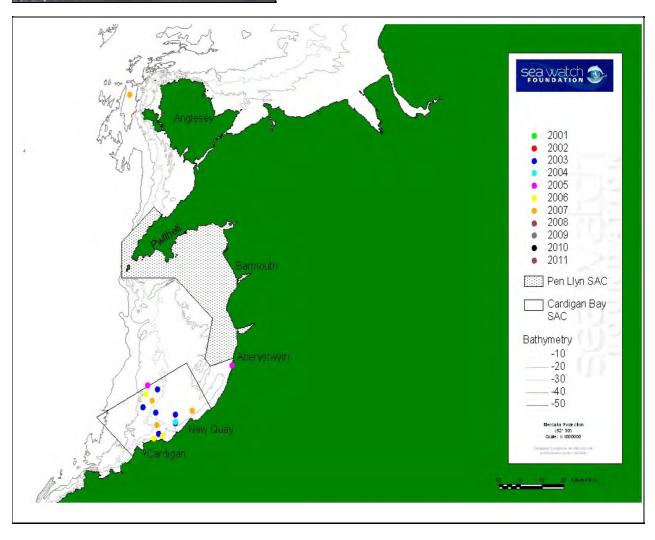
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/06/2003

NUMBERS OF TIMES SEEN: 16







SWF CATALOGUE NAME: 041-07\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Kerry

AGE CATEGORY: Adult

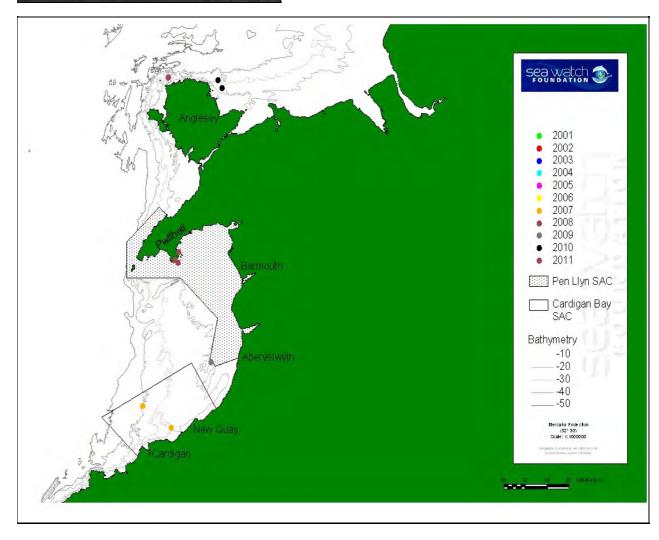
GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 20/05/2007

NUMBERS OF TIMES SEEN: 9

RELATIONSHIPS: Juvenile of Unknown(?)



2005 2006





SWF CATALOGUE NAME: 042-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

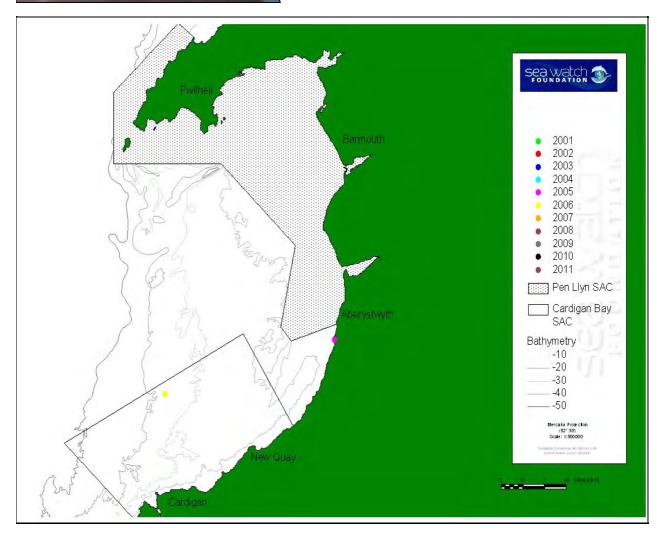
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 20/04/2005

NUMBERS OF TIMES SEEN: 2



> 2003 2004





SWF CATALOGUE NAME: 043-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

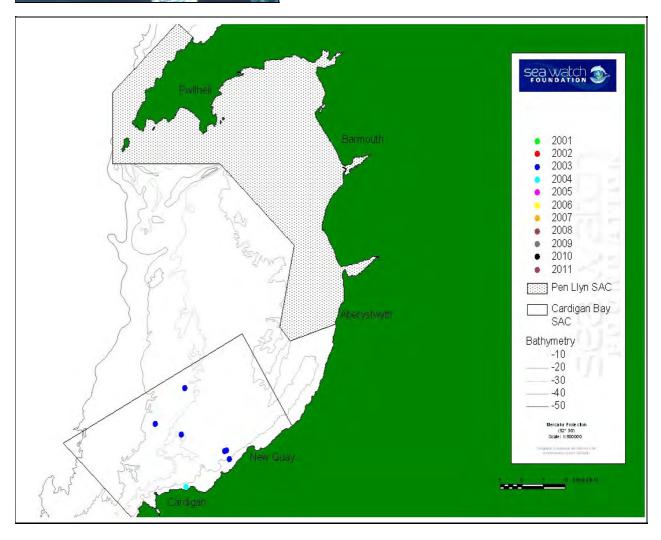
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 14/06/2003

NUMBERS OF TIMES SEEN: 7



2006





SWF CATALOGUE NAME: 044-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

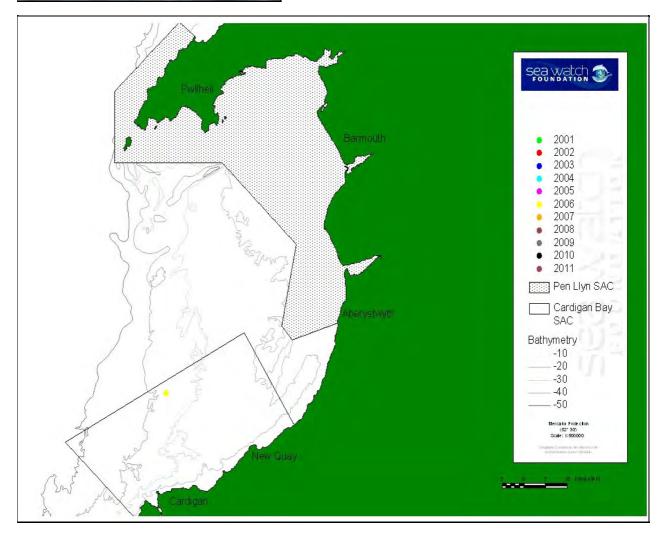
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 16/06/2006

NUMBERS OF TIMES SEEN: 1







SWF CATALOGUE NAME: 045-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

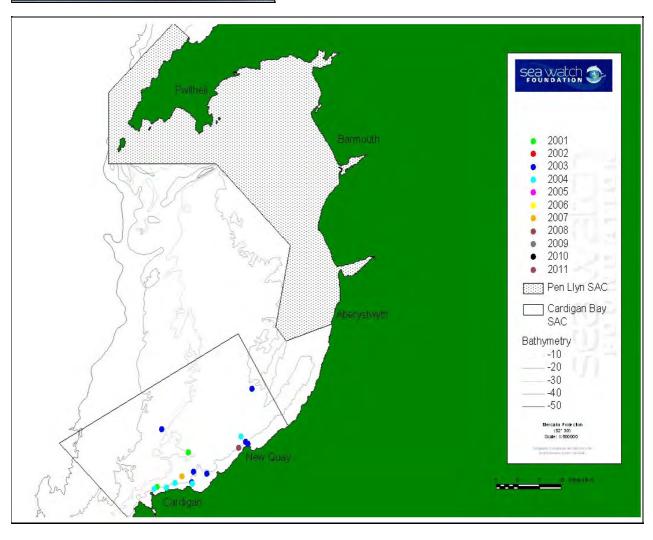
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 29/08/2001

NUMBERS OF TIMES SEEN: 17



2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 046-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

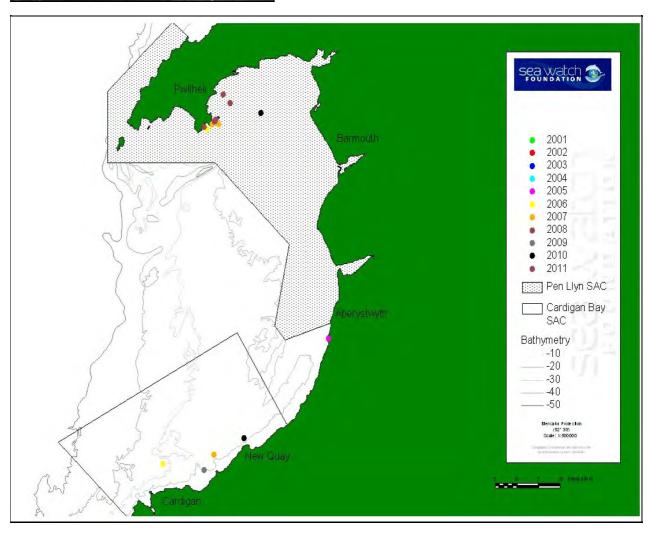
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 20/04/2005

NUMBERS OF TIMES SEEN: 14



2001
2002
2003
2004
2005
2007
2008





SWF CATALOGUE NAME: 047-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Bruster

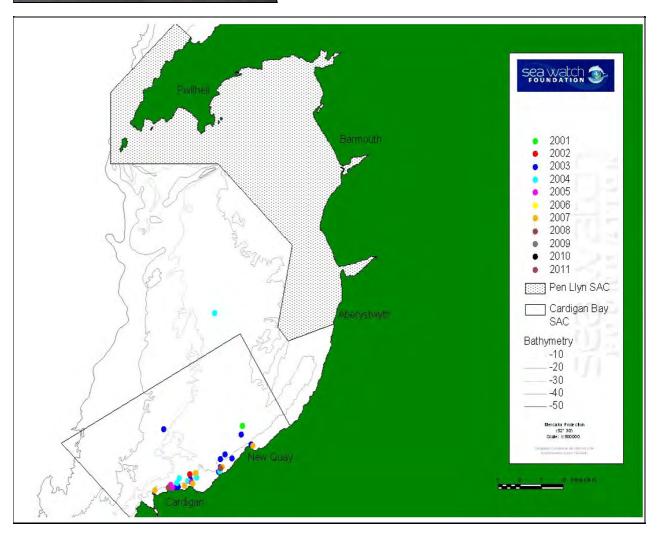
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 29/08/2001

NUMBERS OF TIMES SEEN: 35



2001
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 048-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Nic Nic

AGE CATEGORY: Adult

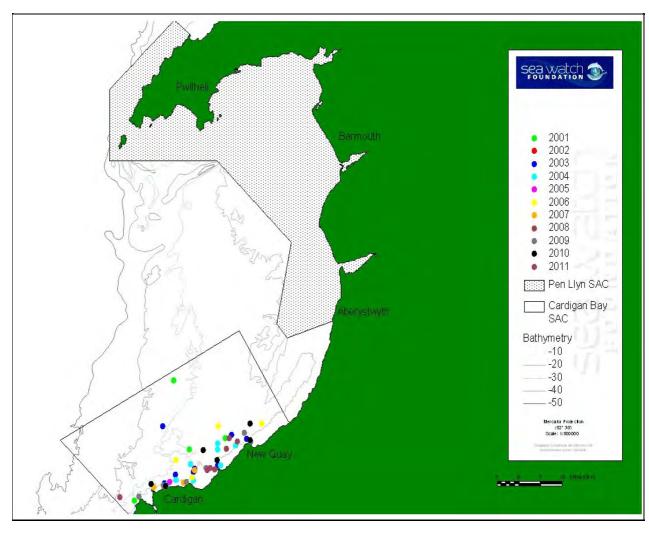
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 60

RELATIONSHIPS: Mother of 100-04S



2002	
2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	





SWF CATALOGUE NAME: 049-89\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

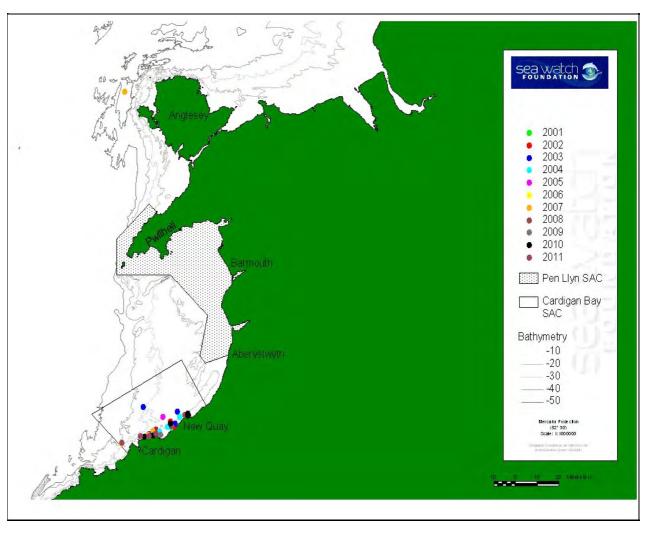
AGE CATEGORY: Adult

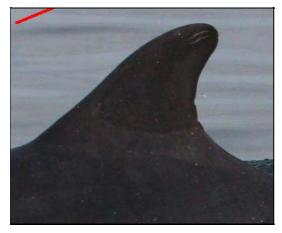
GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 20/08/2002

NUMBERS OF TIMES SEEN: 37







SWF CATALOGUE NAME: 050-01\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

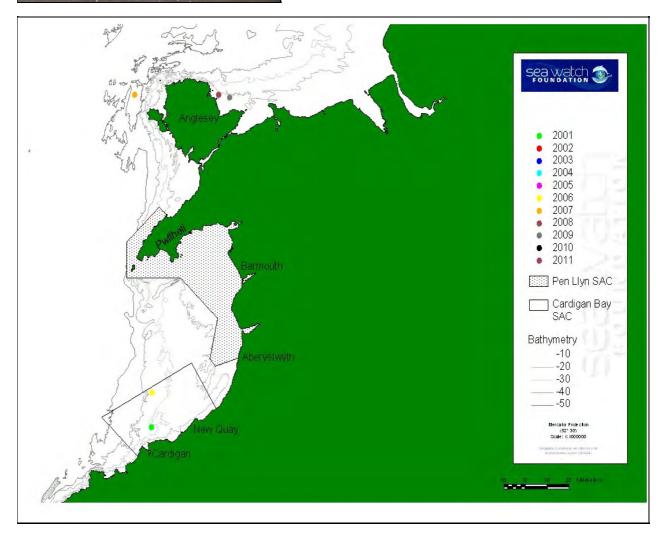
GENDER: Possible Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 29/08/2001

NUMBERS OF TIMES SEEN: 5

RELATIONSHIPS: Mother of 111-08L



2002 2003 2004 2005 2006 2007 2008 2009 2010	2001
2004 2005 2006 2007 2008 2009	2002
2005 2006 2007 2008 2009	2003
2006 2007 2008 2009	2004
2007 2008 2009	2005
2008 2009	2006
2009	2007
	2008
2010	2009
	2010
2011	2011





SWF CATALOGUE NAME: 051-89W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Topnotch

AGE CATEGORY: Adult

GENDER: Female

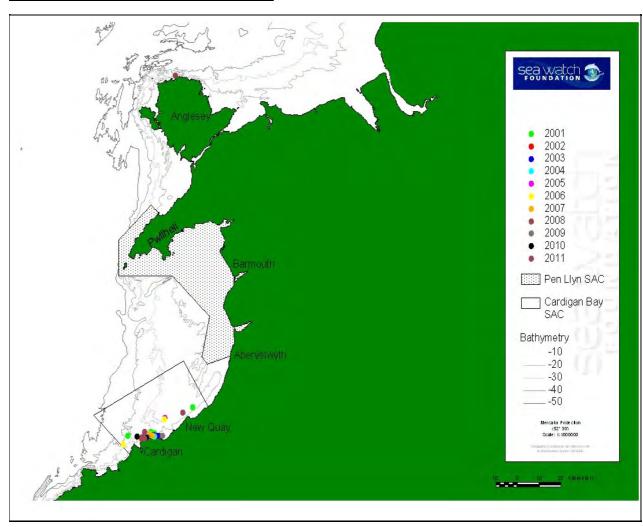
MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 02/07/2001

NUMBERS OF TIMES SEEN: 72

RELATIONSHIPS: Mother of 018-02L +

026-01L + 051-06L







SWF CATALOGUE NAME: 052-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Cog

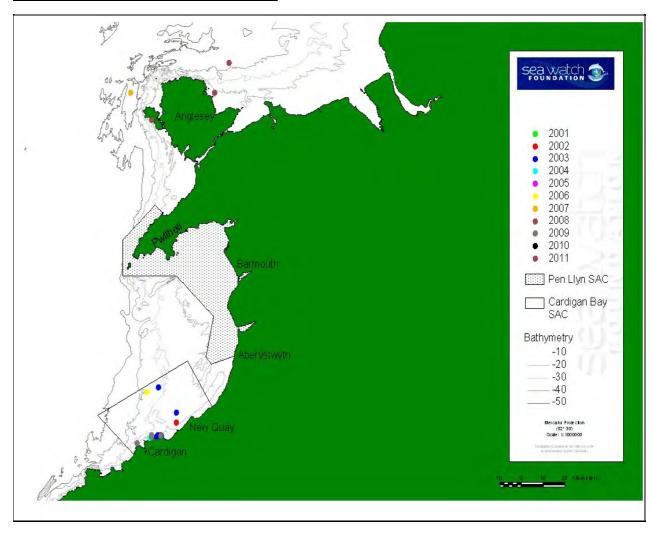
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/08/2002

NUMBERS OF TIMES SEEN: 25



2001
2003
2004
2005
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 053-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Burkenzi

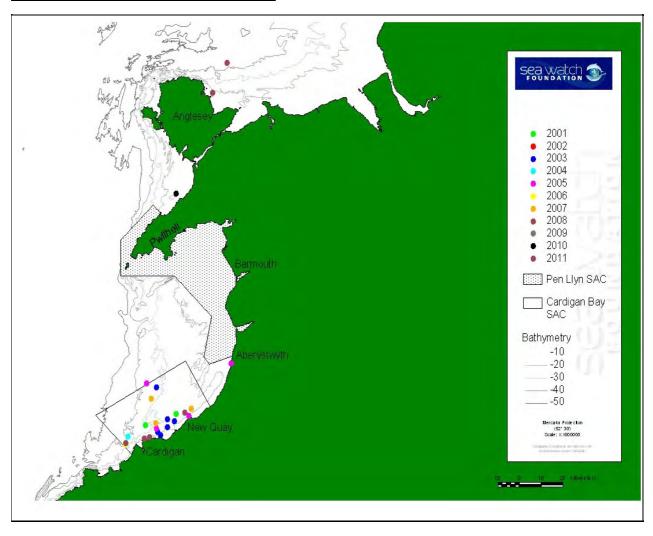
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 09/07/2001

NUMBERS OF TIMES SEEN: 25







SWF CATALOGUE NAME: 054-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Alfredo

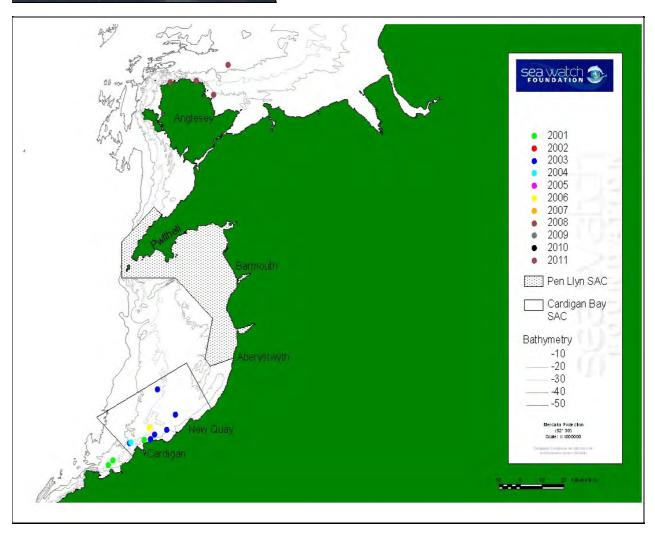
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 23/08/2001

NUMBERS OF TIMES SEEN: 19



2001 2003 2004 2006





SWF CATALOGUE NAME: 055-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Arian

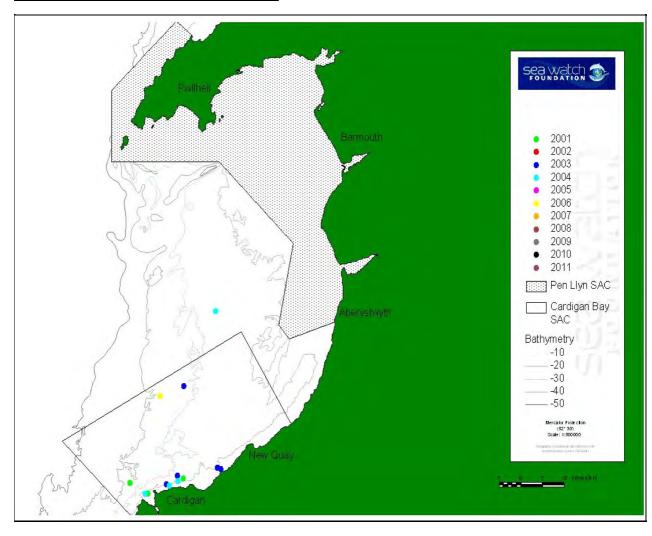
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 02/07/2001

NUMBERS OF TIMES SEEN: 20







SWF CATALOGUE NAME: 056-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Mitsos

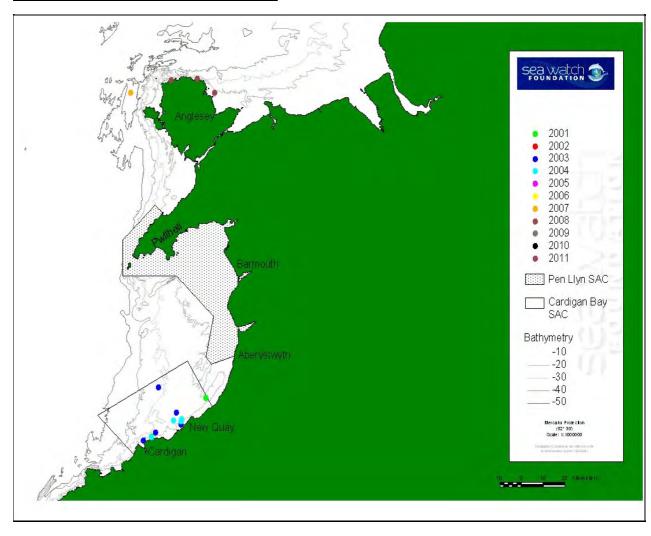
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/08/2001

NUMBERS OF TIMES SEEN: 16



2001 2005 2006





SWF CATALOGUE NAME: 057-01\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

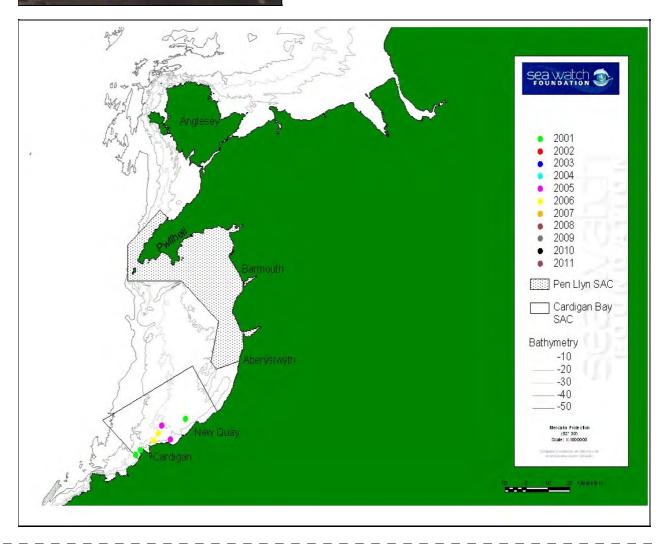
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 7







SWF CATALOGUE NAME: 058-04W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Titania

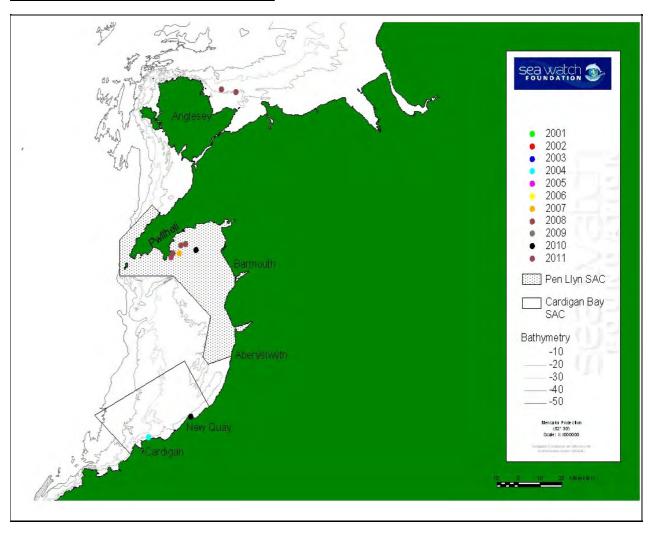
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 11/10/2004

NUMBERS OF TIMES SEEN: 12



2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 059-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Battleship

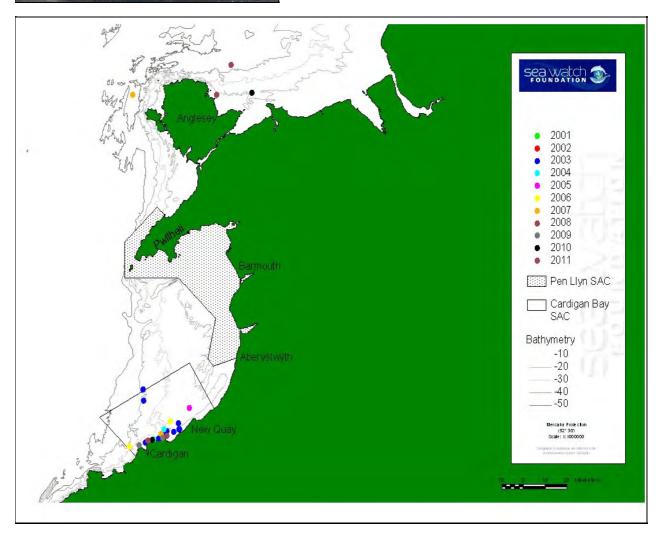
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 08/05/2003

NUMBERS OF TIMES SEEN: 36







SWF CATALOGUE NAME: 060-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Grill

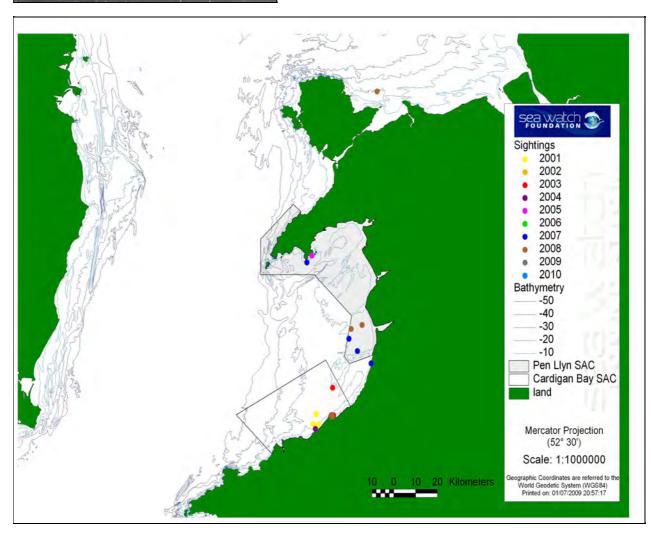
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 09/07/2001

NUMBERS OF TIMES SEEN: 25







SWF CATALOGUE NAME: 061-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Anaya

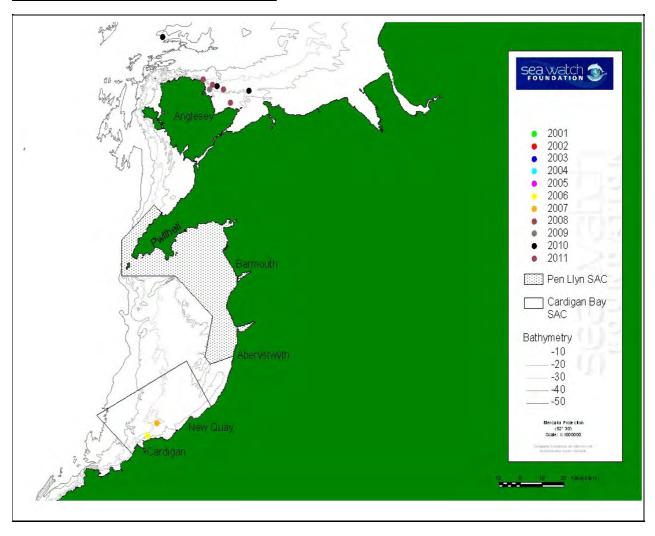
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 10/09/2006

NUMBERS OF TIMES SEEN: 10







SWF CATALOGUE NAME: 062-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

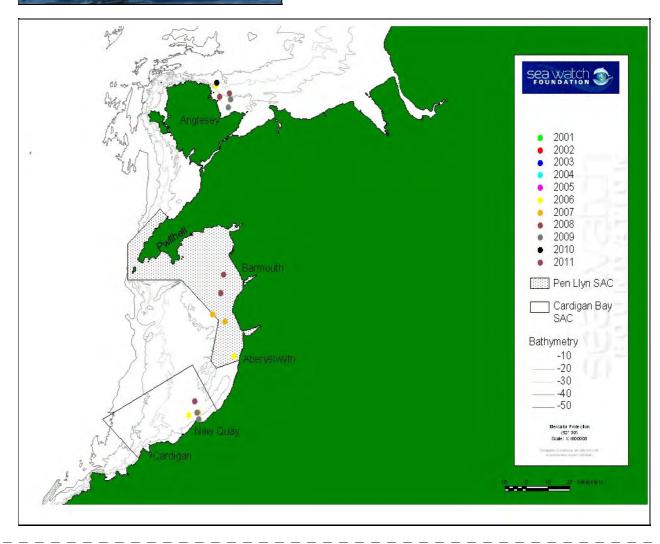
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 15/06/2006

NUMBERS OF TIMES SEEN: 16



2006





SWF CATALOGUE NAME: 063-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

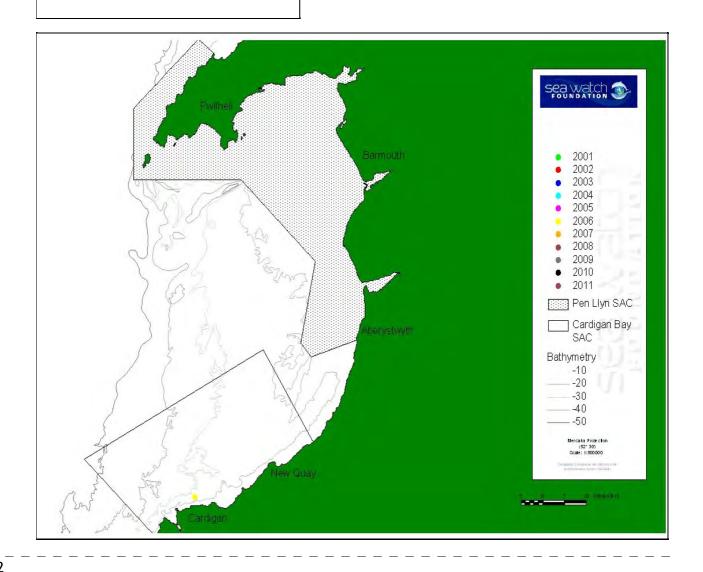
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 16/09/2006

NUMBERS OF TIMES SEEN: 1



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 064-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Jagger

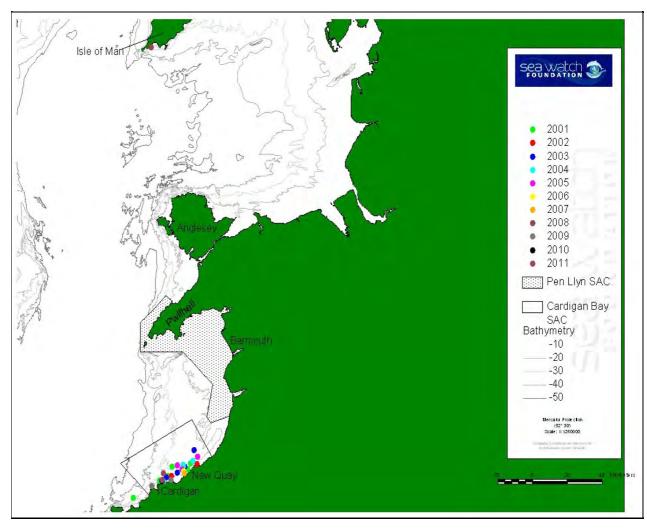
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 11/06/2001

NUMBERS OF TIMES SEEN: 33



2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 065-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Bella

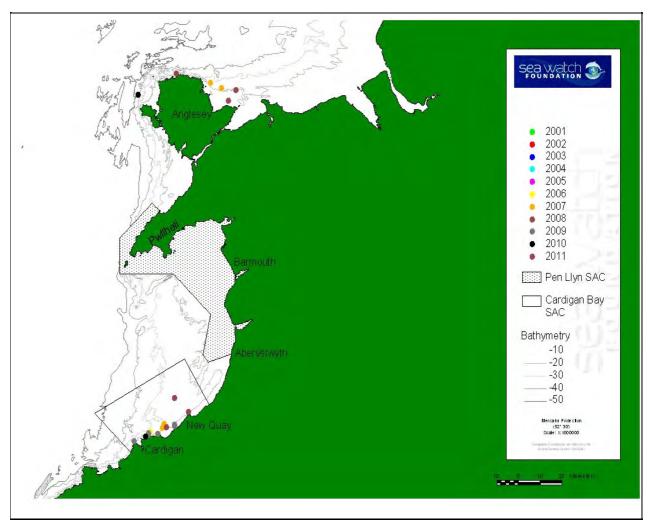
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 16/09/2006

NUMBERS OF TIMES SEEN: 19



2008 2009 2010 2011





SWF CATALOGUE NAME: 066-08W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Morgan

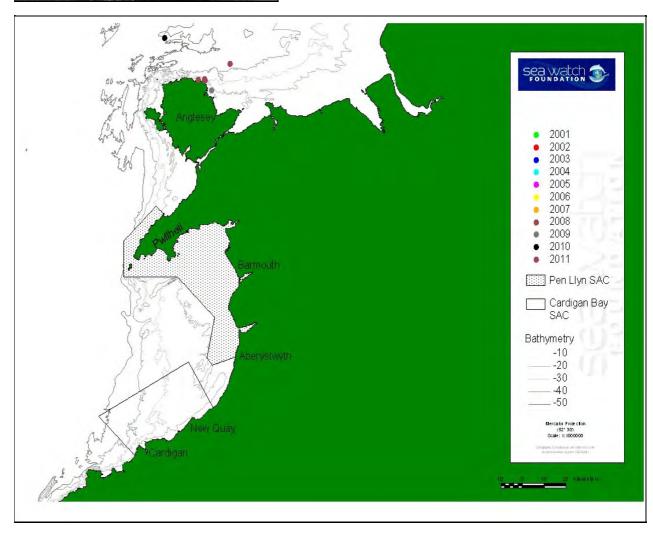
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 03/06/2008

NUMBERS OF TIMES SEEN: 6



2001
2002
2003
2004
2005
2006
2007





SWF CATALOGUE NAME: 067-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

GENDER: Female

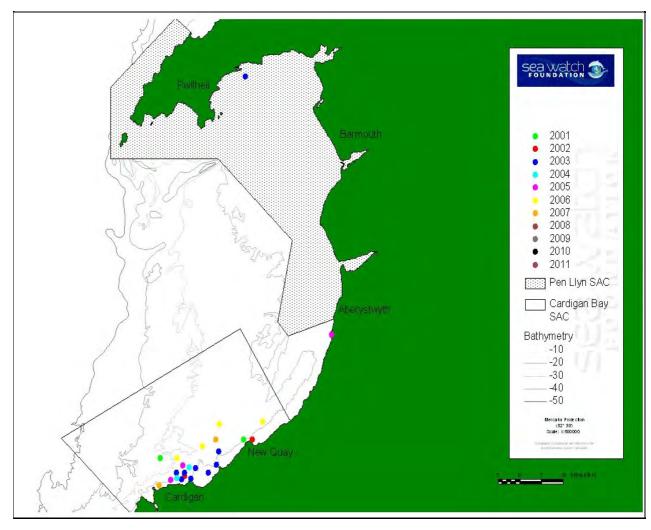
MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 15/08/2001

NUMBERS OF TIMES SEEN: 25

RELATIONSHIPS: Mother of 005-03L +

044-07L







SWF CATALOGUE NAME: 068-90W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Prima

AGE CATEGORY: Adult

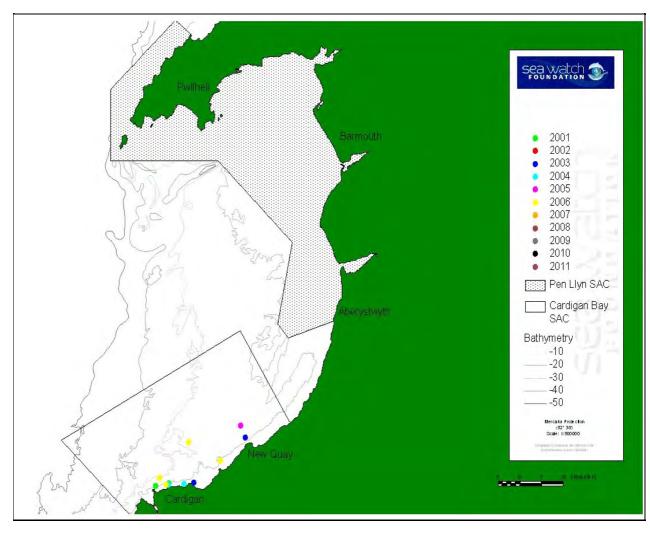
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/08/2001

NUMBERS OF TIMES SEEN: 12

RELATIONSHIPS: Mother of 033-06L







SWF CATALOGUE NAME: 069-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

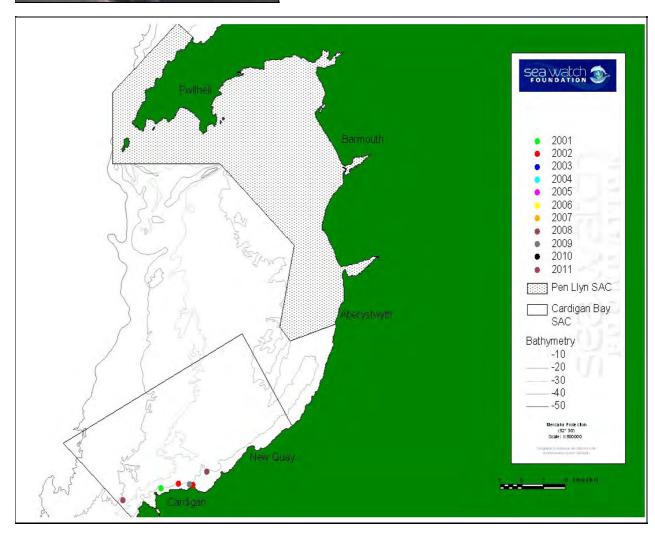
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 22/08/2001

NUMBERS OF TIMES SEEN: 7







SWF CATALOGUE NAME: 070-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Ghost

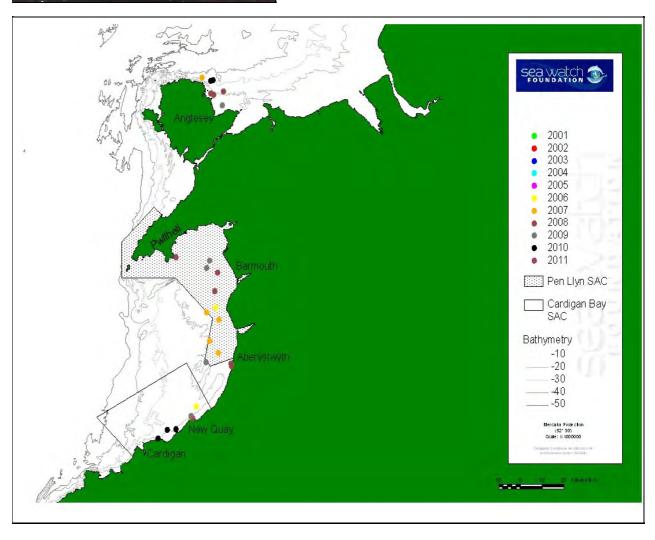
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 25/09/2006

NUMBERS OF TIMES SEEN: 35







SWF CATALOGUE NAME: 071-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

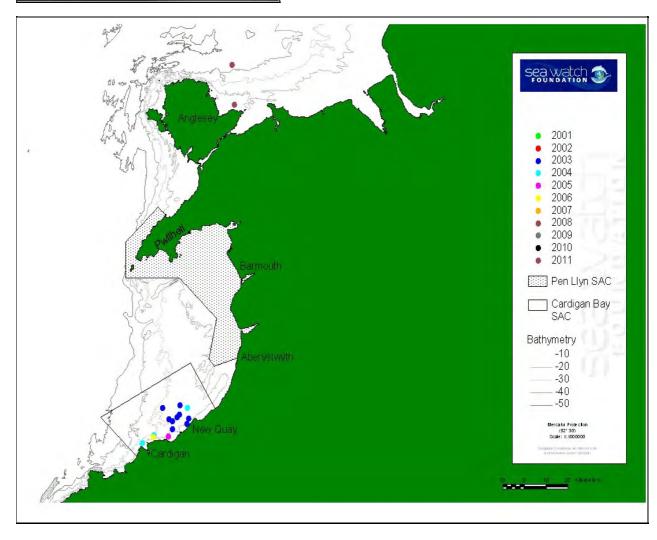
GENDER: Female

MARKING CATEGORY: Slightly-marked

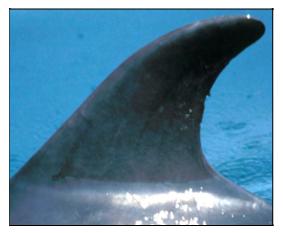
FIRST TIME SEEN: 14/07/2003

NUMBERS OF TIMES SEEN: 16

RELATIONSHIPS: Mother of Unknown



2001 2003 2005





SWF CATALOGUE NAME: 072-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

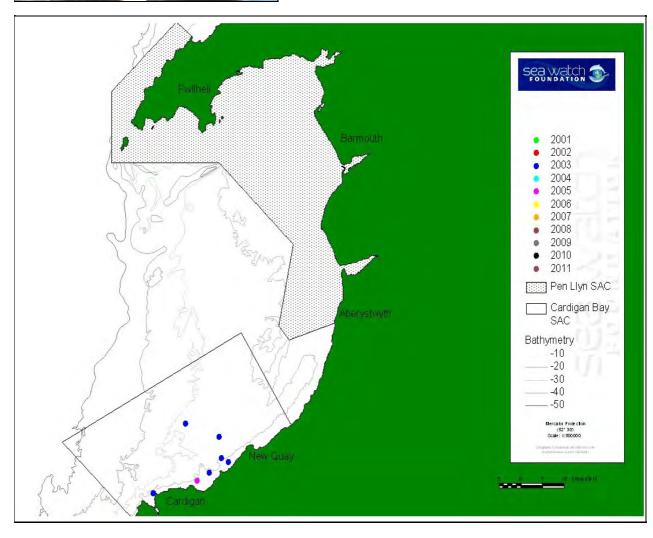
AGE CATEGORY: Adult

GENDER: Possible Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 23/09/2001

NUMBERS OF TIMES SEEN: 8



2003
2004
2005
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 073-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

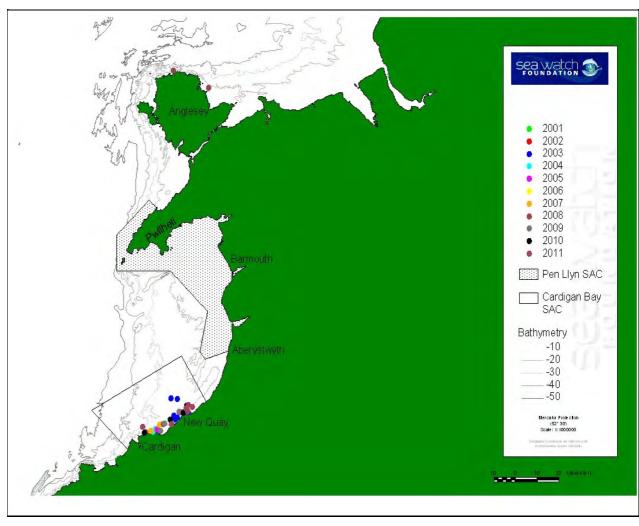
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 09/06/2003

NUMBERS OF TIMES SEEN: 40



2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 074-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Bond

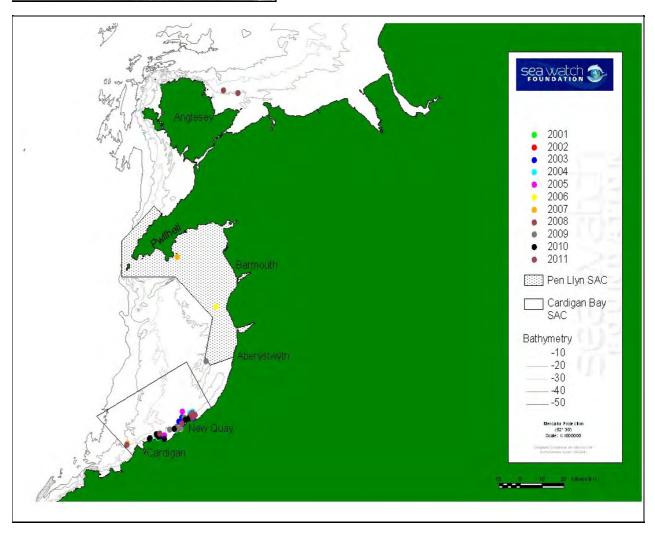
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 09/06/2003

NUMBERS OF TIMES SEEN: 114



2003	
2004	
2006	
2008	
2010	
2011	





SWF CATALOGUE NAME: 075-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Max

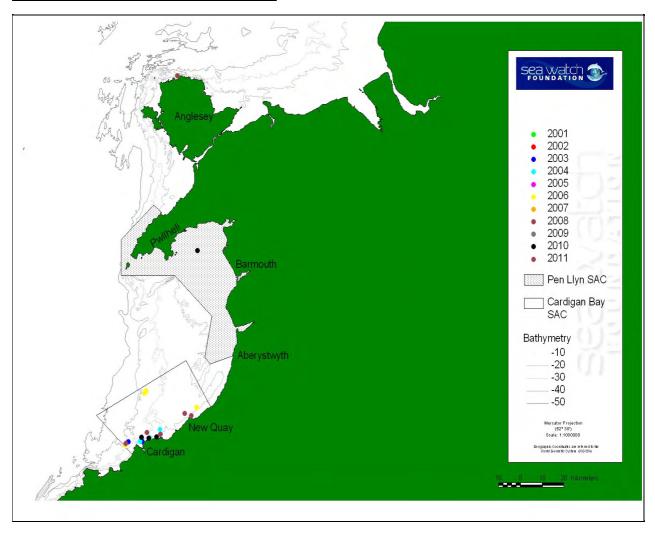
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 03/08/2003

NUMBERS OF TIMES SEEN: 21







SWF CATALOGUE NAME: 076-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Madog

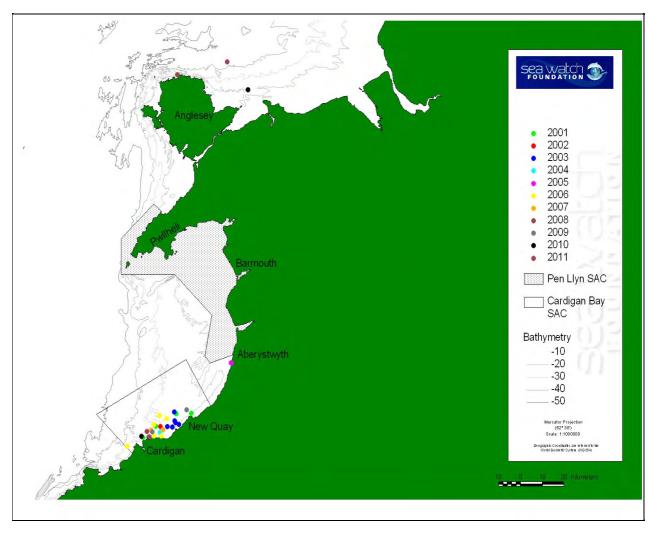
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 31



2001 2002





SWF CATALOGUE NAME: 077-89W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Fred

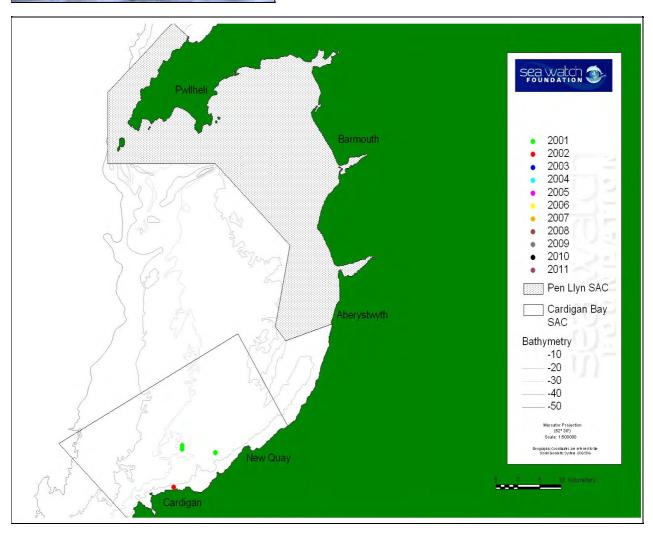
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 4







SWF CATALOGUE NAME: 078-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: **Nelly**

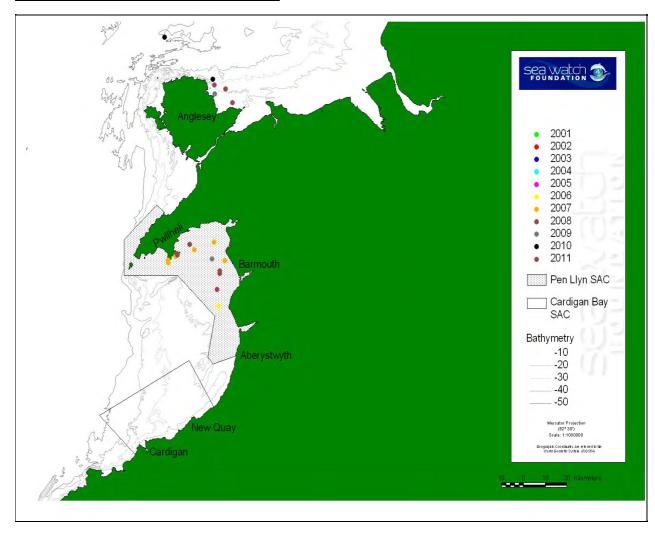
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 25/09/2006

NUMBERS OF TIMES SEEN: 22



2006





SWF CATALOGUE NAME: 079-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

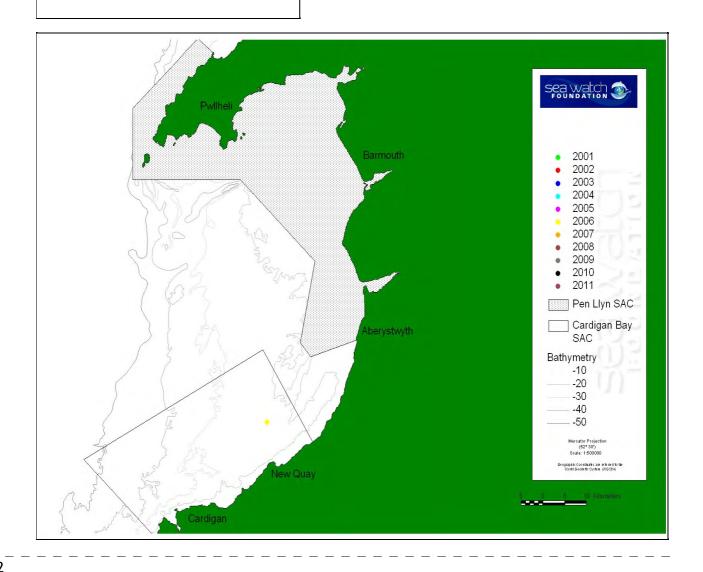
GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 26/09/2006

NUMBERS OF TIMES SEEN: 1

RELATIONSHIPS: Juvenile of Unknown(?)



2001 2003





SWF CATALOGUE NAME: 080-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Dragonfly

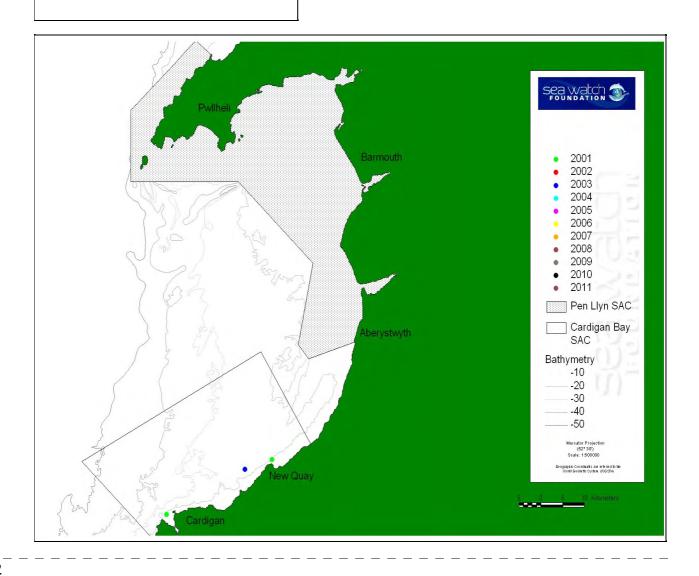
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 25/08/2001

NUMBERS OF TIMES SEEN: 3



2001
2002
2003
2004
2005
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 081-01\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Barbara

AGE CATEGORY: Adult

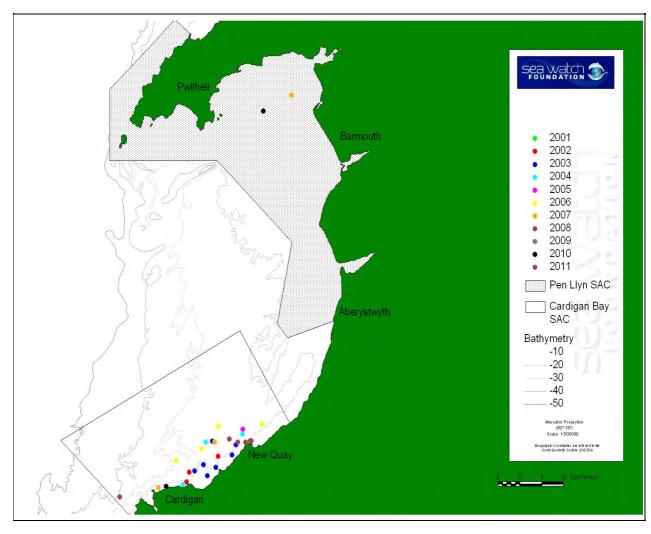
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 21/09/2001

NUMBERS OF TIMES SEEN: 30

RELATIONSHIPS: Mother of 042-03R



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 082-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Fish hook

AGE CATEGORY: Adult

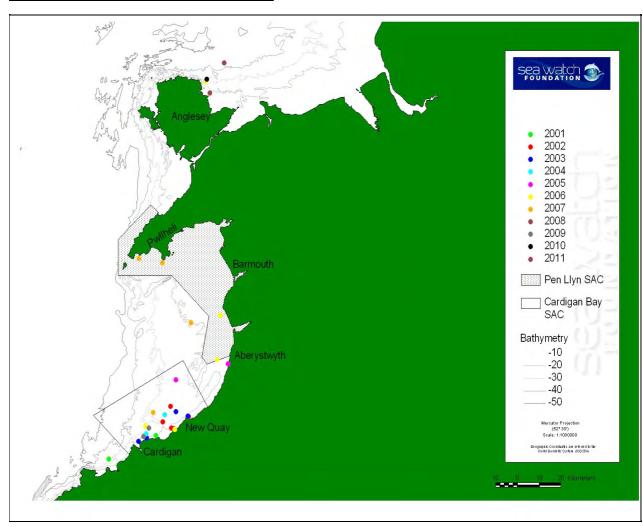
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 23/08/2001

NUMBERS OF TIMES SEEN: 29

RELATIONSHIPS: Mother of 115-08L



2001	
2003	
2005	
2006	Ī
2007	Ī
2008	
2009	
2010	





SWF CATALOGUE NAME: 083-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Zorro

AGE CATEGORY: Adult

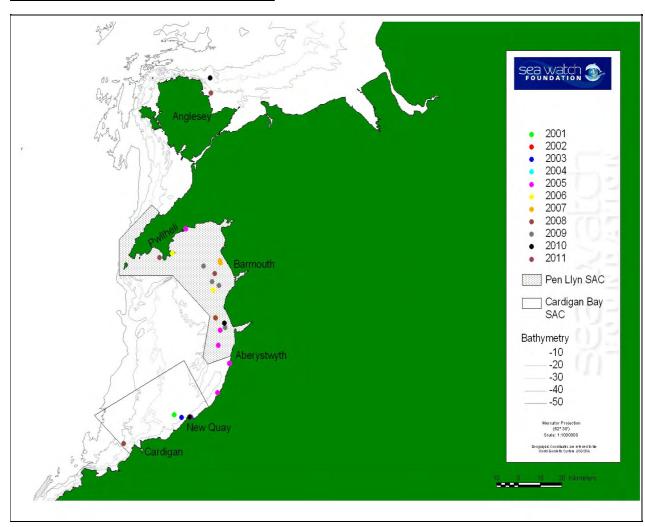
GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 09/07/2001

NUMBERS OF TIMES SEEN: 31

RELATIONSHIPS: Mother of Unknown



2003





SWF CATALOGUE NAME: 084-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

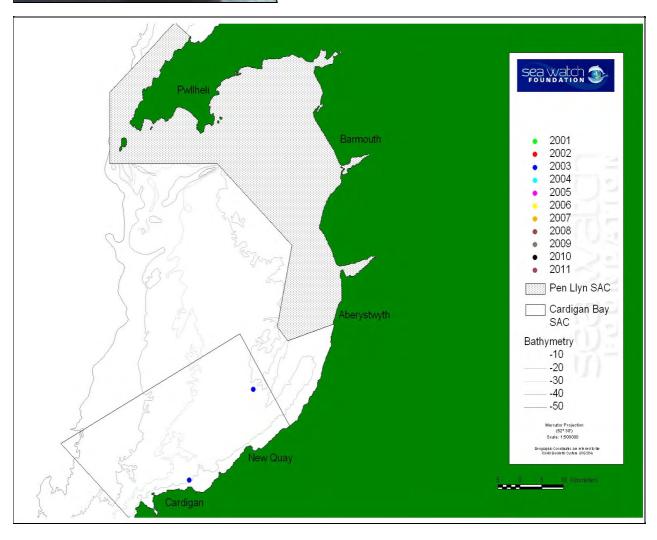
GENDER: Unknown

MARKING CATEGORY: Slightly-marked

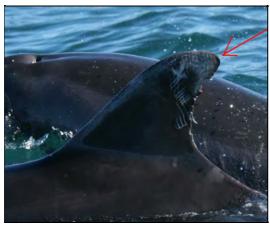
FIRST TIME SEEN: 12/07/2003

NUMBERS OF TIMES SEEN: 2

RELATIONSHIPS: Juvenile of Unknown(?)



2003	
2005	
2006	
2007	
2008	
2009	
2010	
2011	





SWF CATALOGUE NAME: 085-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Dusky

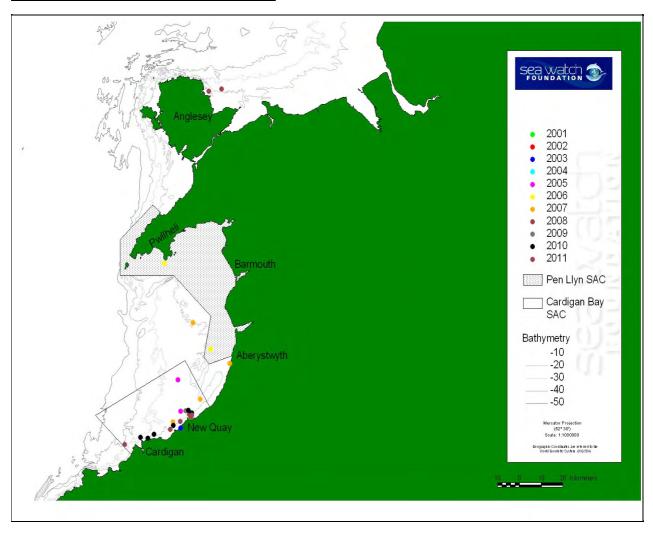
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/07/2003

NUMBERS OF TIMES SEEN: 26







SWF CATALOGUE NAME: 086-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Norbert

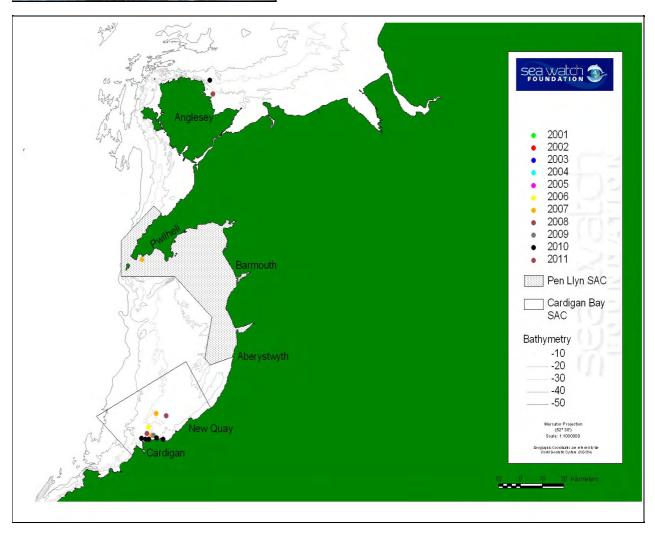
AGE CATEGORY: Adult

GENDER: Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 26/09/2006

NUMBERS OF TIMES SEEN: 15



> 2003 2004





SWF CATALOGUE NAME: 087-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

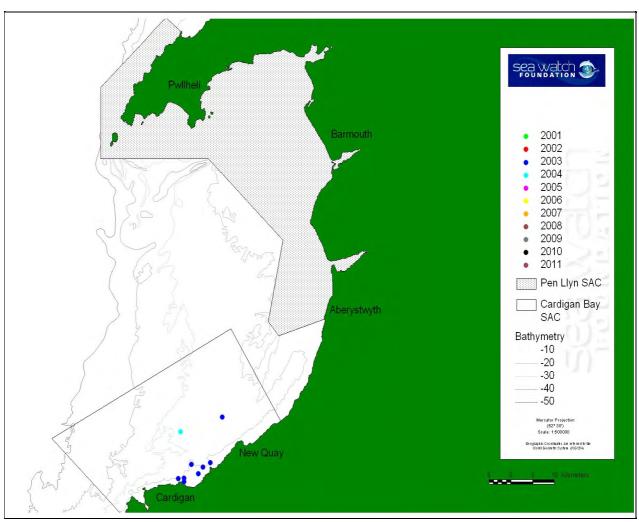
FIRST TIME SEEN: 06/07/2003

NUMBERS OF TIMES SEEN: 9

RELATIONSHIPS: New

born/Calf/Juvenile of

010-01W



2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 088-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Kim

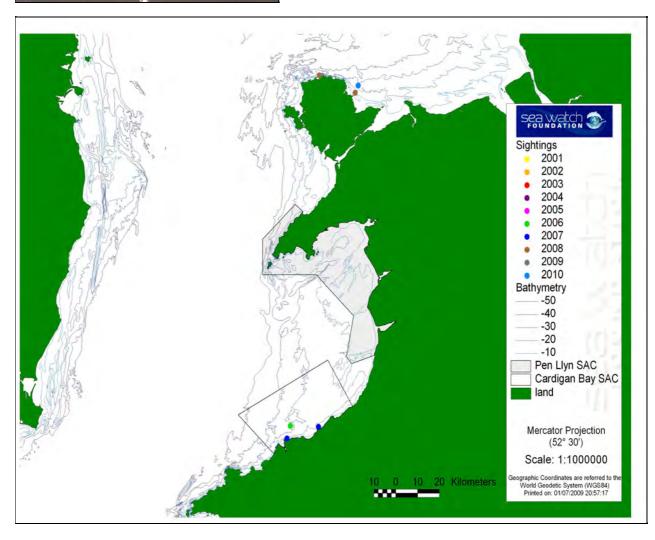
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 26/09/2006

NUMBERS OF TIMES SEEN: 10







SWF CATALOGUE NAME: 089-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

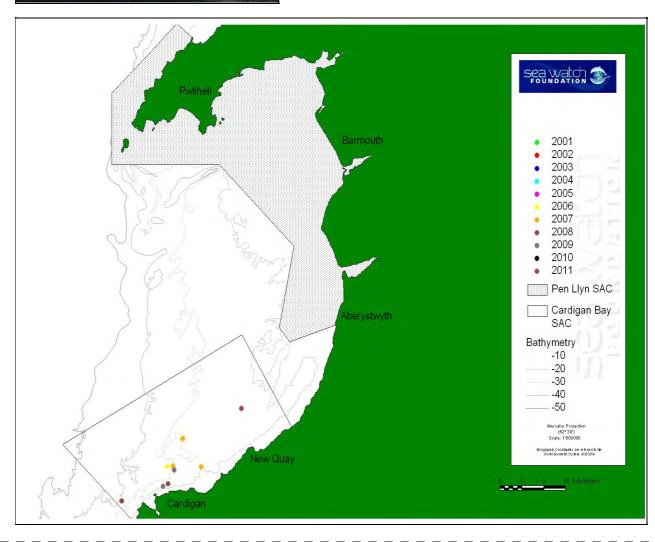
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 26/09/2006

NUMBERS OF TIMES SEEN: 9



2003
2004
2005
2008
2009
2010





SWF CATALOGUE NAME: 090-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Alex

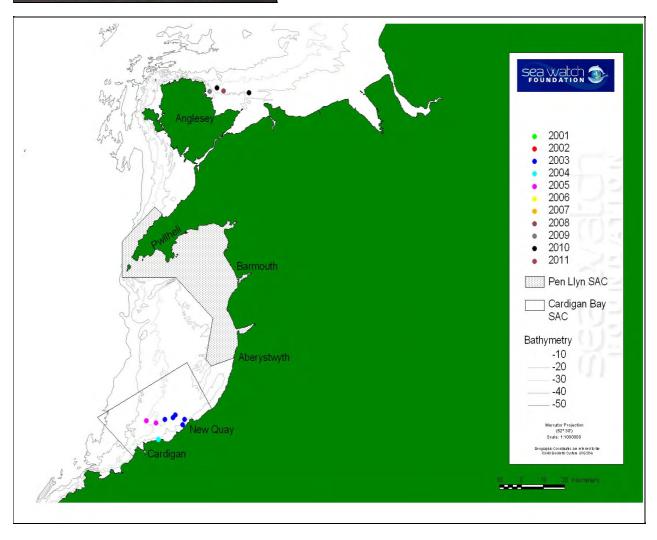
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 18/07/2003

NUMBERS OF TIMES SEEN: 12



2003
2005
2006
2008
2009
2010
2011





SWF CATALOGUE NAME: 091-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Valentino

AGE CATEGORY: Adult

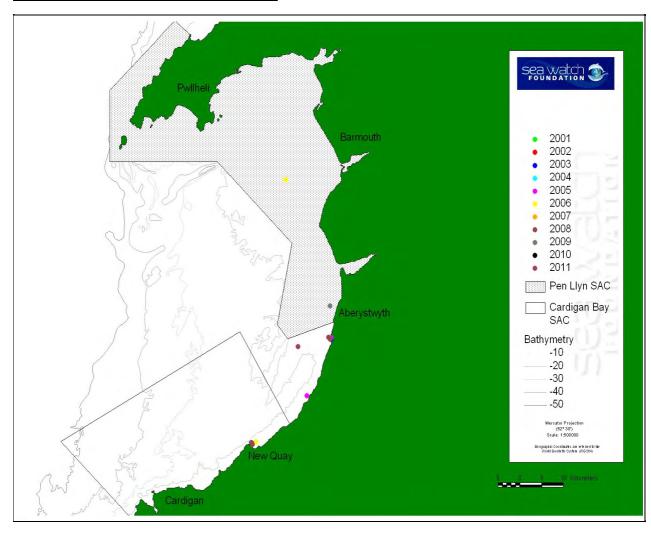
GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/09/2003

NUMBERS OF TIMES SEEN: 12

RELATIONSHIPS: Mother of 222-08S



> 2003 2008





SWF CATALOGUE NAME: 092-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

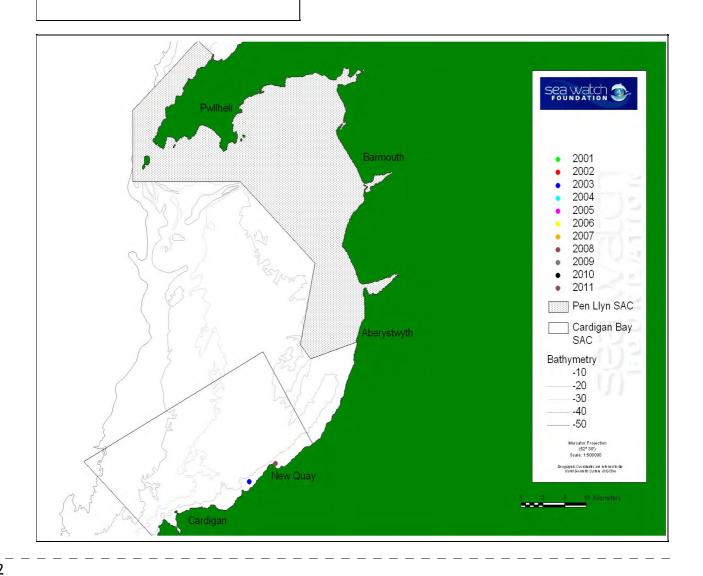
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 03/08/2003

NUMBERS OF TIMES SEEN: 2



2001
2002
2003
2004
2005
2006
2007
2008
2010
2011





SWF CATALOGUE NAME: 093-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Ionikos

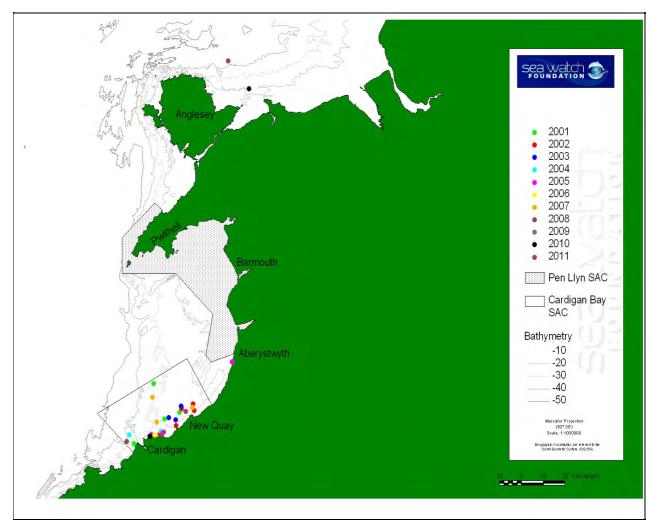
AGE CATEGORY: Adult

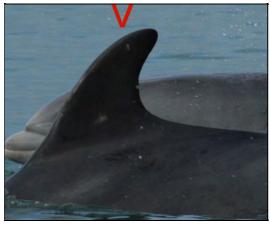
GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 12/06/2001

NUMBERS OF TIMES SEEN: 30







SWF CATALOGUE NAME: 094-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

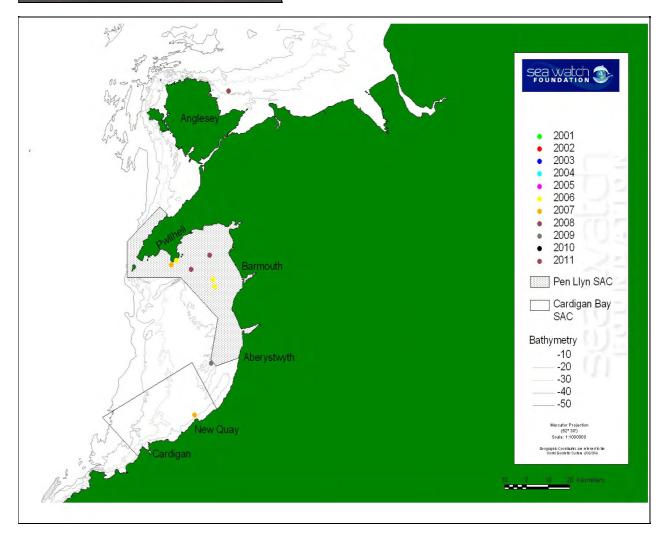
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 27/07/2006

NUMBERS OF TIMES SEEN: 9







SWF CATALOGUE NAME: 095-89W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Trouble

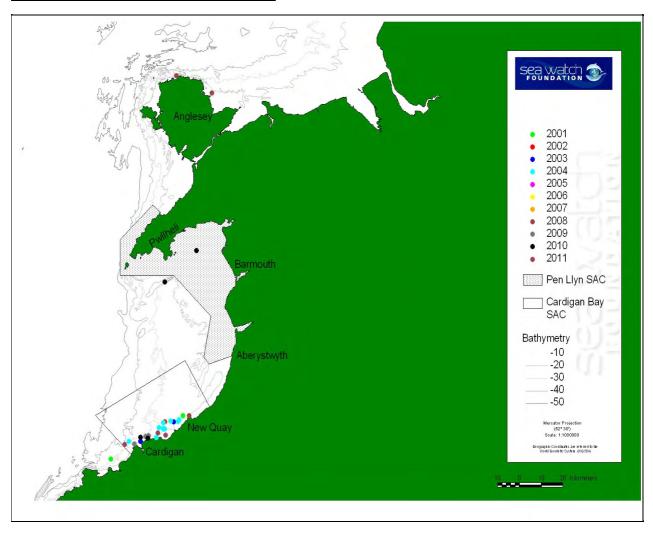
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 29/08/2001

NUMBERS OF TIMES SEEN: 28







SWF CATALOGUE NAME: 096-05W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Graham

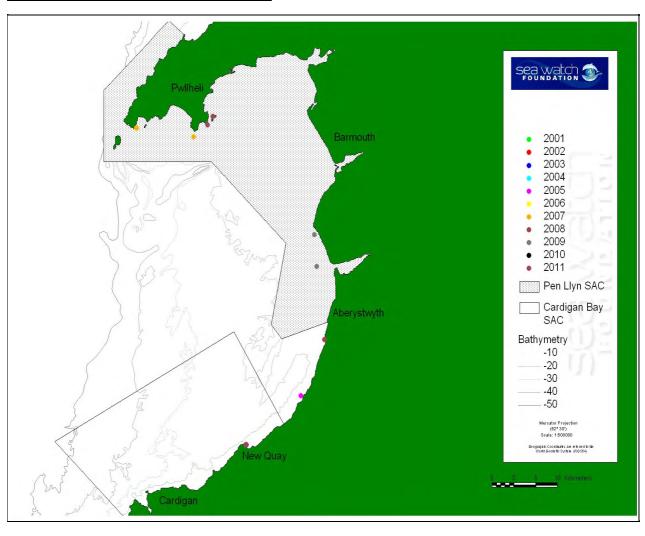
AGE CATEGORY: **Adult**

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/04/2005

NUMBERS OF TIMES SEEN: 14



2005





SWF CATALOGUE NAME: 097-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

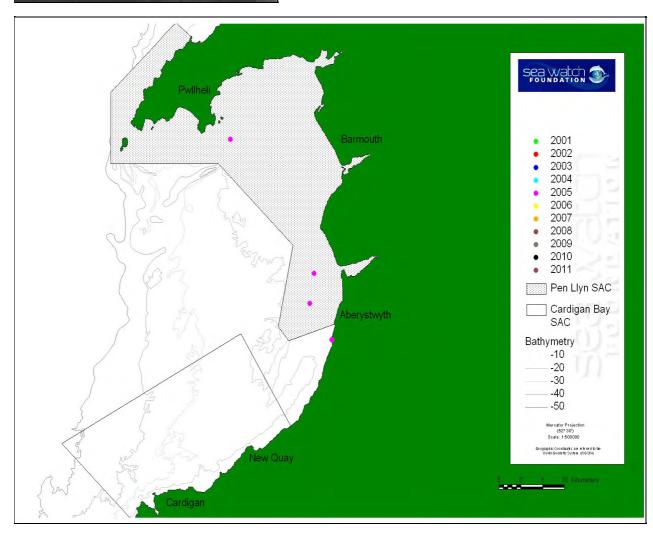
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 21/04/2005

NUMBERS OF TIMES SEEN: 5







SWF CATALOGUE NAME: 098-06W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

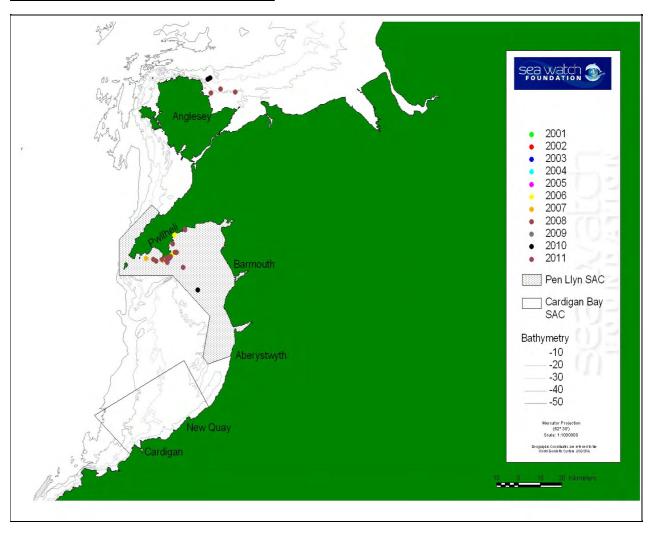
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 20/05/2006

NUMBERS OF TIMES SEEN: 27



2005 2007 2009 2010





SWF CATALOGUE NAME: 099-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Lili

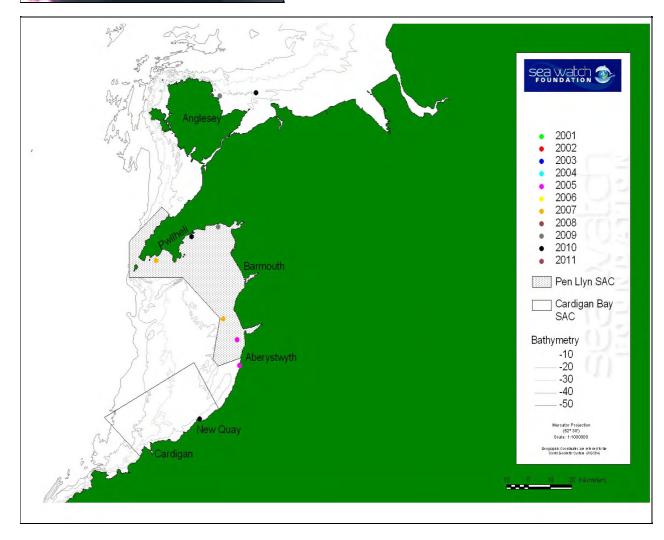
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 05/05/2005

NUMBERS OF TIMES SEEN: 9



2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 100-04\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Splash

AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Slightly-marked

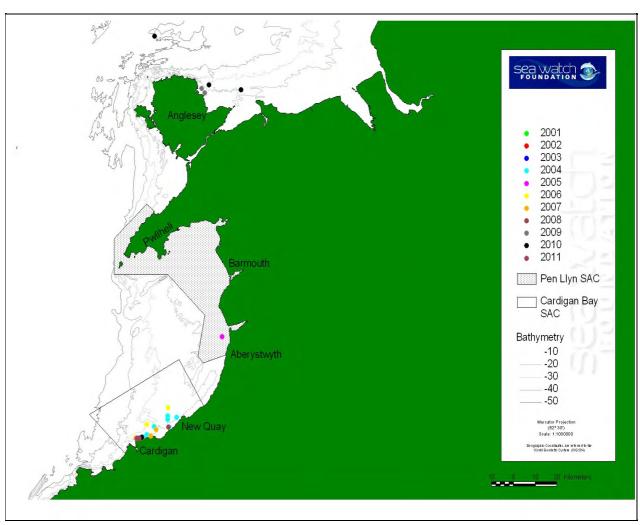
FIRST TIME SEEN: 26/06/2004

NUMBERS OF TIMES SEEN: 25

RELATIONSHIPS: New

born/Calf/Juvenile of

048-90W







SWF CATALOGUE NAME: 101-05W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Dalmatian

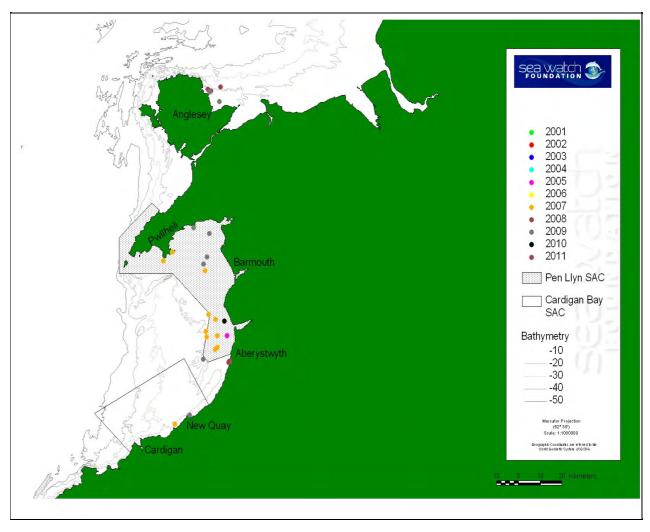
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 05/05/2005

NUMBERS OF TIMES SEEN: 27







SWF CATALOGUE NAME: 102-02\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

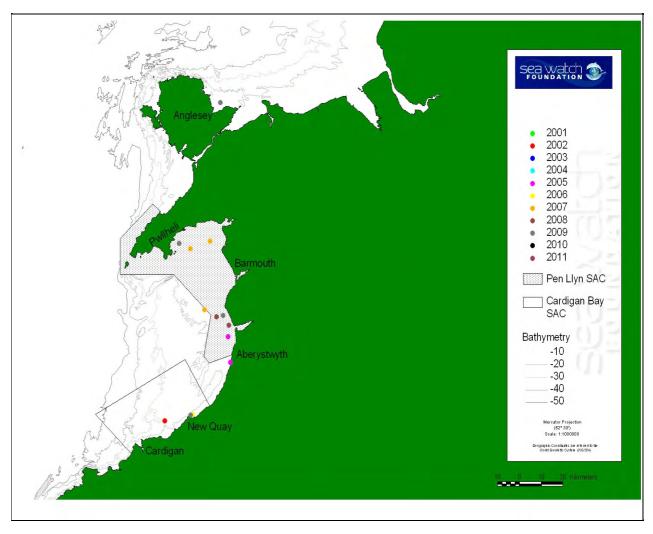
AGE CATEGORY: Adult

GENDER: Possible Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 20/09/2002

NUMBERS OF TIMES SEEN: 13



2006 2007 2008





SWF CATALOGUE NAME: 103-06\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

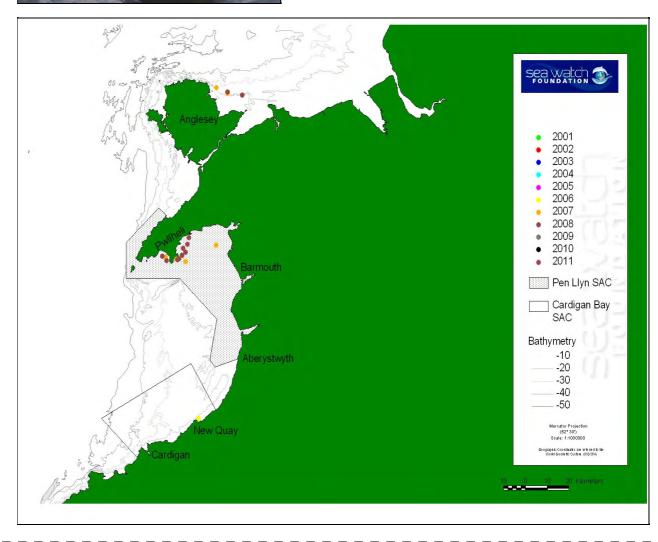
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 29/10/2006

NUMBERS OF TIMES SEEN: 20







SWF CATALOGUE NAME: 104-05\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

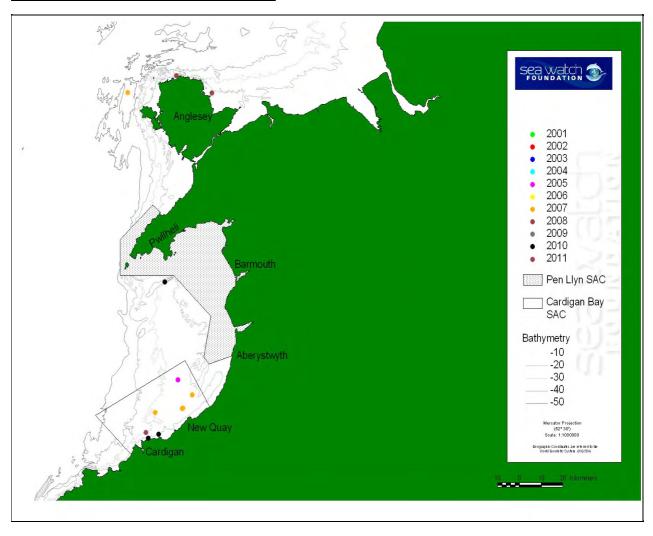
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 08/07/2005

NUMBERS OF TIMES SEEN: 12







SWF CATALOGUE NAME: 105-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

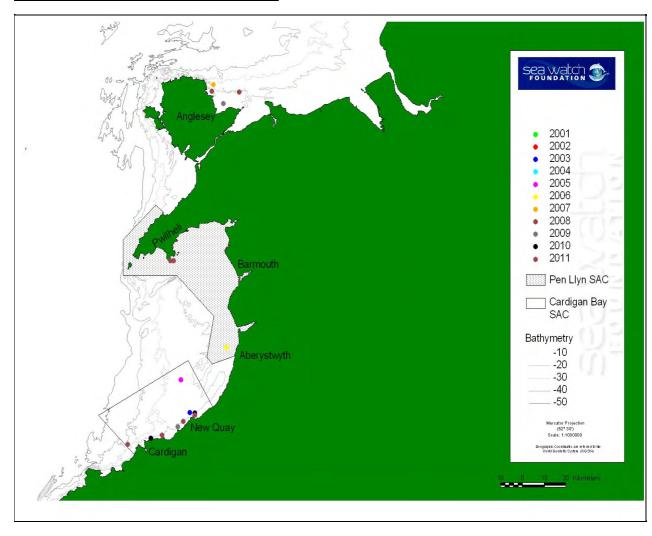
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 11/10/2003

NUMBERS OF TIMES SEEN: 16



2001





SWF CATALOGUE NAME: 106-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

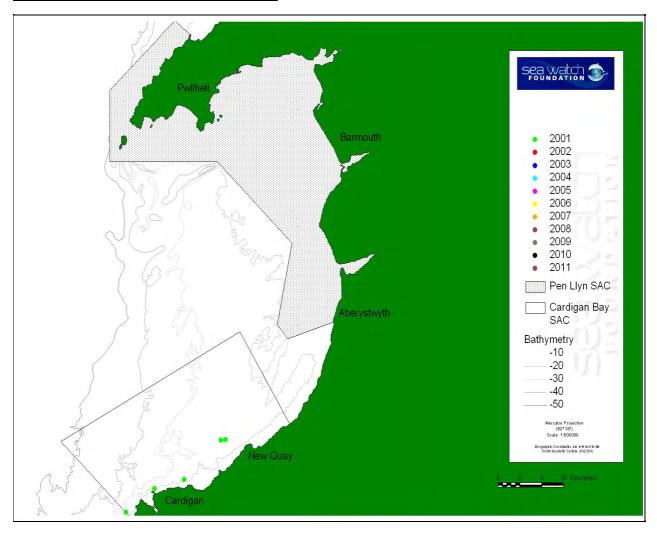
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 5



2003
2004
2005
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 107-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

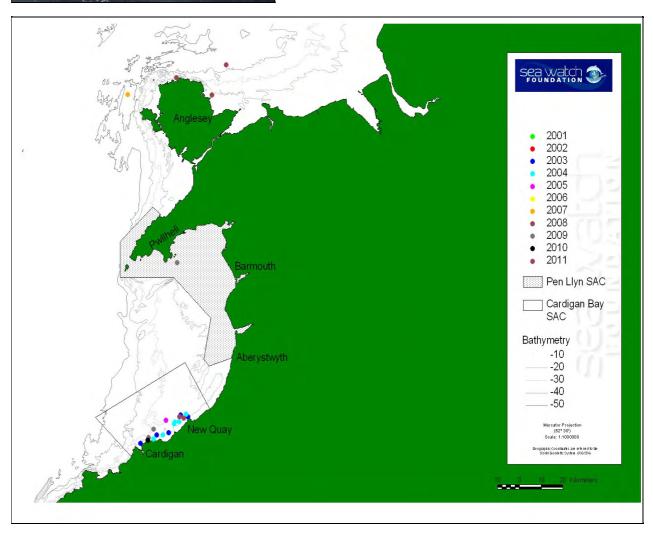
AGE CATEGORY: Adult

GENDER: Unknown

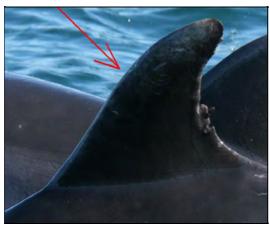
MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 12/07/2003

NUMBERS OF TIMES SEEN: 23



2001
2003
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 108-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

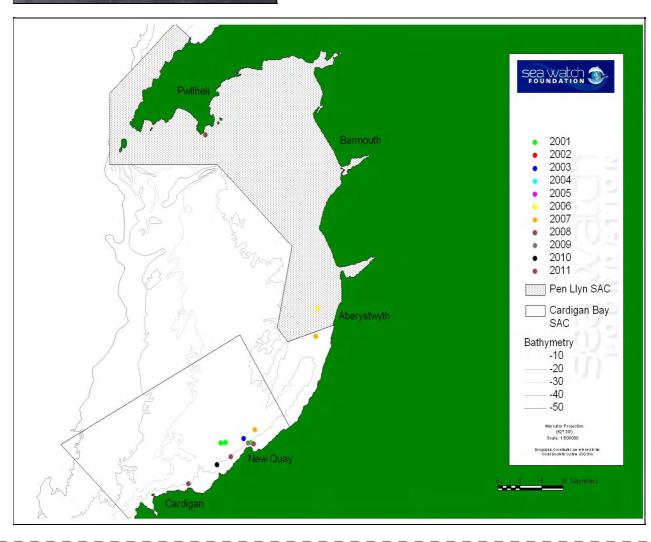
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 13



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 109-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Riptide

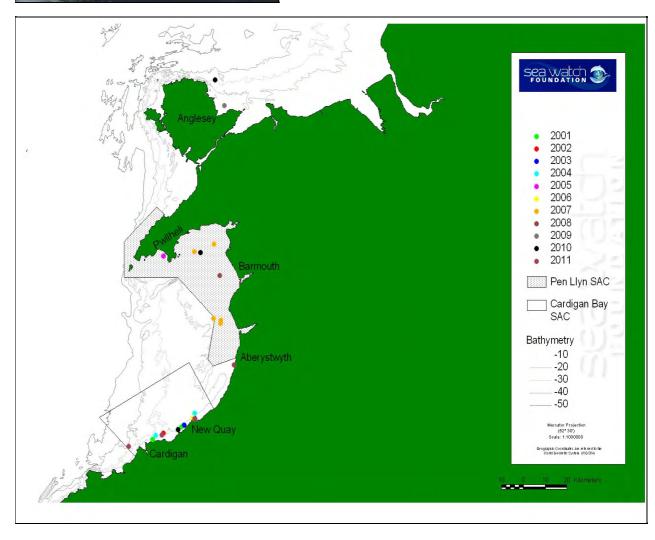
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 15/08/2001

NUMBERS OF TIMES SEEN: 36







SWF CATALOGUE NAME: 110-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Jay

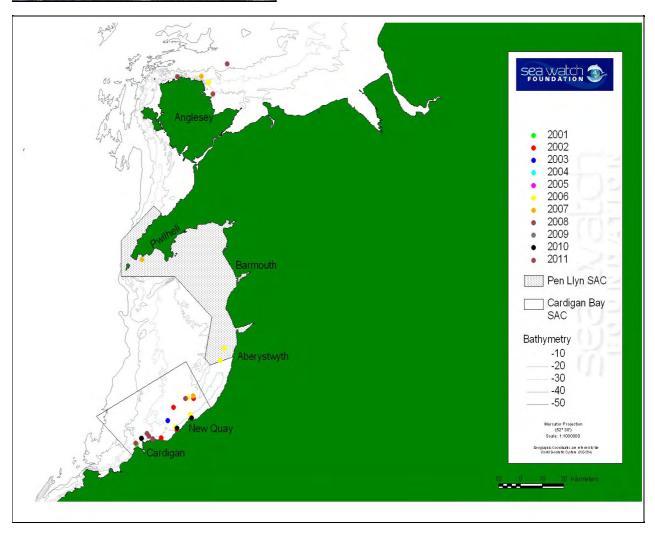
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 16/07/2001

NUMBERS OF TIMES SEEN: 27



2001 2009 2010





SWF CATALOGUE NAME: 111-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Akira

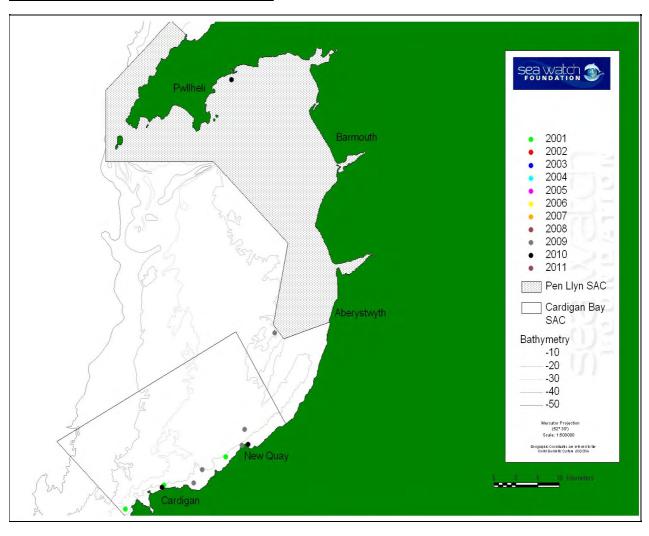
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 12



2001
2003
2004
2006
2007
2010
2011





SWF CATALOGUE NAME: 112-01S

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Paddle

AGE CATEGORY: Adult

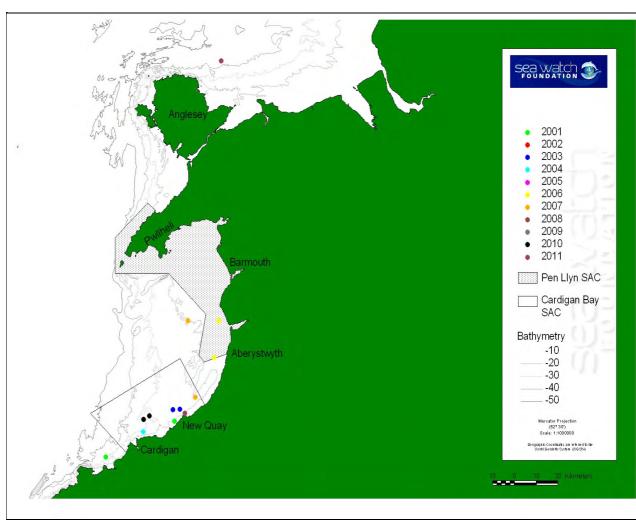
GENDER: Female

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 25/08/2001

NUMBERS OF TIMES SEEN: 13

RELATIONSHIPS: Mother of 013-06L







SWF CATALOGUE NAME: 113-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Ka

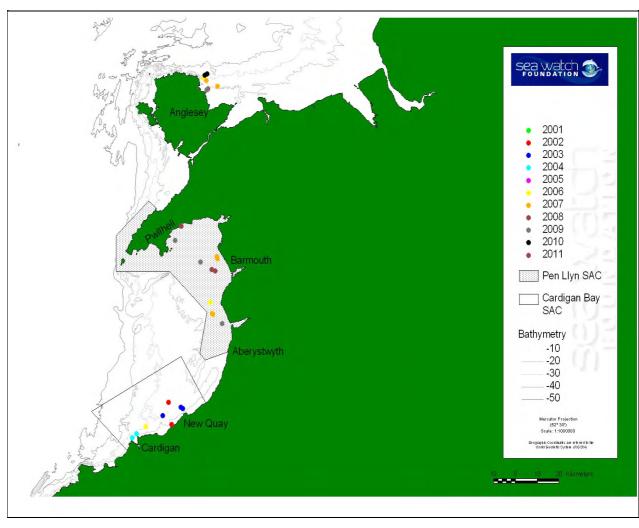
AGE CATEGORY: Adult

GENDER: Female

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 24/08/2002

NUMBERS OF TIMES SEEN: 26



2003 2006





SWF CATALOGUE NAME: 114-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

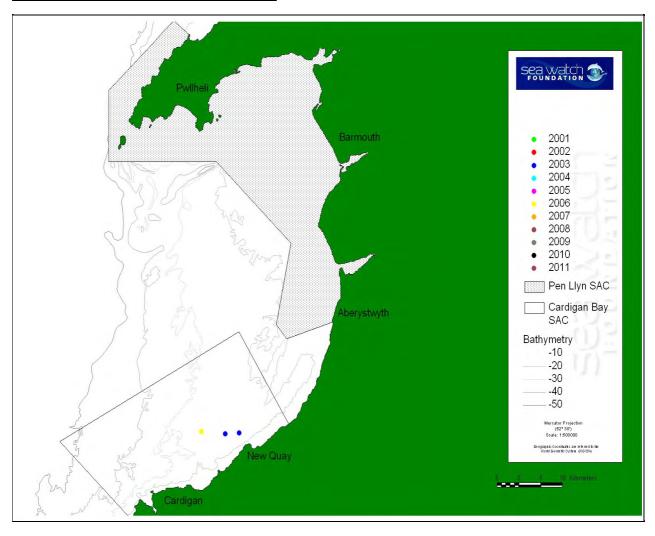
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 13/08/2003

NUMBERS OF TIMES SEEN: 3



2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011





SWF CATALOGUE NAME: 115-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

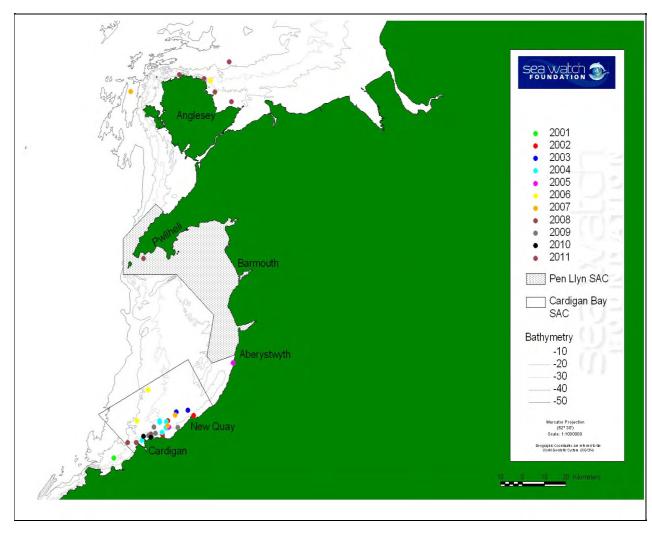
AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 21/09/2001

NUMBERS OF TIMES SEEN: 39



2003 2004 2005 2006





SWF CATALOGUE NAME: 116-03W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Razer

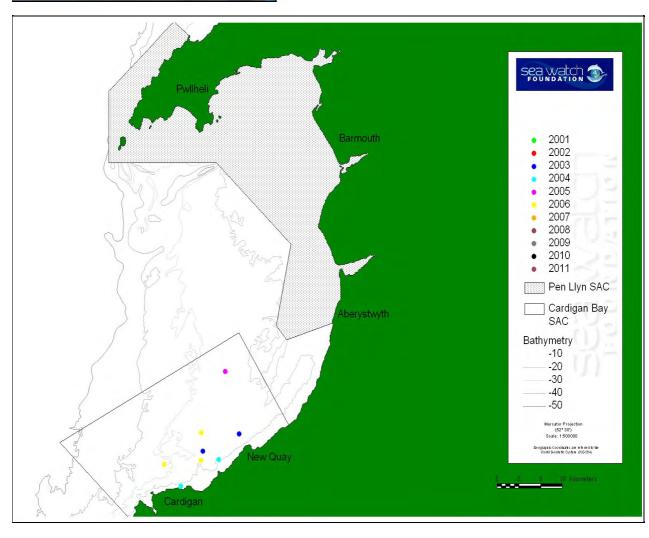
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 13/08/2003

NUMBERS OF TIMES SEEN: 8



2003





SWF CATALOGUE NAME: 117-03\$

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

GENDER: Unknown

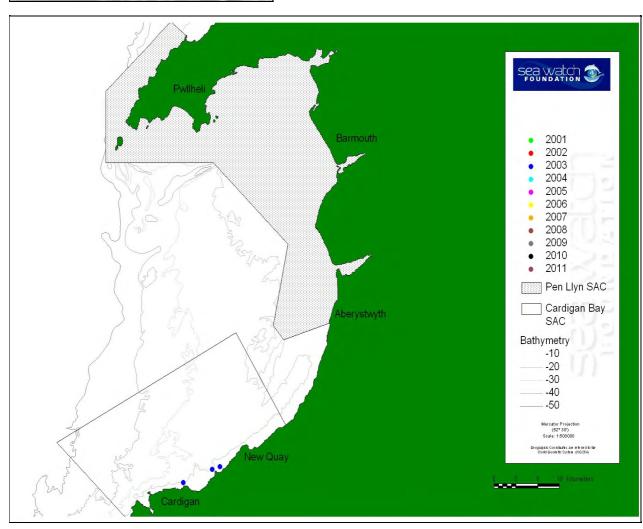
MARKING CATEGORY: Slightly-marked

FIRST TIME SEEN: 13/08/2003

NUMBERS OF TIMES SEEN: 3

RELATIONSHIPS: New

born/Calf/Juvenile of 008-89W + 008-03L







SWF CATALOGUE NAME: 118-02W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: Snowflake

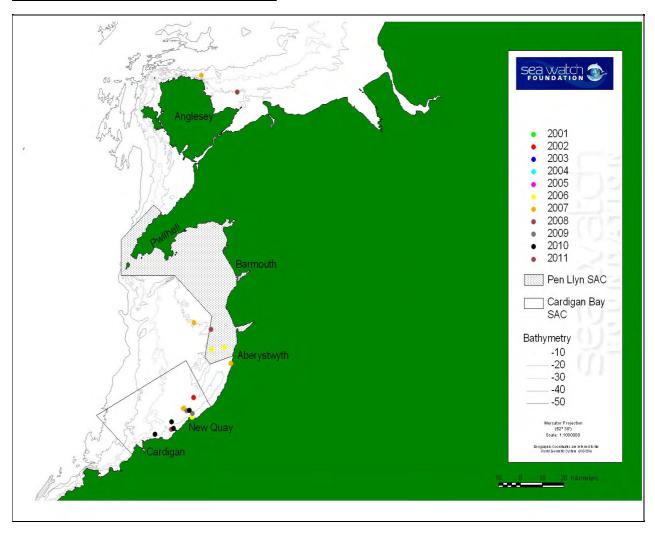
AGE CATEGORY: Adult

GENDER: Possible Male

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 18/09/2002

NUMBERS OF TIMES SEEN: 18



2001 2002





SWF CATALOGUE NAME: 119-01W

CBMWC NAME: None

ELB NAME: None

ARNOLD NAME: None

NICKNAME: None

AGE CATEGORY: Adult

GENDER: Unknown

MARKING CATEGORY: Well-marked

FIRST TIME SEEN: 22/06/2001

NUMBERS OF TIMES SEEN: 7

