

# 2007 FIELD SEASON REPORT

## HEBRIDEAN WHALE AND DOLPHIN TRUST

### RESEARCH

#### *Silurian*

With the end of the 2007 research season, HWDT now has five years of data collected from *Silurian*, a significant body of information with which long-term trends or changes in activity can begin to be assessed.



*Silurian* at anchor, Fairy Isles, Loch Sween © M.Brook/HWDT

This year HWDT conducted twelve survey trips from April to September 2007, resulting in over 100 survey days. Both visual and acoustic survey effort increased dramatically this year (Table 1). Seven of these trips were run through Earthwatch, and five directly through HWDT, although the survey methodology was identical. Trips were either nine or twelve days long (seven and ten of those respectively being dedicated survey days, with an arrival and departure day at the beginning and end of the trip). The usual distance covered was between 300 – 500 nautical miles depending on the weather conditions and the duration of trip. Surveying was generally carried out for eight to nine hours per day, again depending on conditions and levels of light available at the time of year. During these surveys we undertook the following:

- Visual observations for all cetacean species, plus basking sharks, seals, seabirds, marine litter, and other vessels
- Photographic identification images of minke whales, bottlenose dolphins, common dolphins, white-beaked dolphins, killer whales, Risso's dolphins and basking sharks showing the dorsal fins and any body scars or flank patterns. A Canon EOS 10D with a 300mm lens was used for photo-identification. Images have been contributed to the appropriate catalogues
- Continuous acoustic monitoring of harbour porpoises and other cetacean species using a high frequency towed hydrophone and detection/analysis software
- Recordings of any anthropogenic sounds detected, in particular Acoustic Deterrent Devices (ADDs)
- All data were collected and stored using the real time data logging program LOGGER (developed by International Fund for Animal Welfare).

**Table 1. Visual and acoustic effort from *Silurian*, 2003 - 2007**

<b>Survey Effort (km)</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Visual</b>	4007	3104	4371	6416	8187
<b>Acoustic</b>	N/A	5407	4634	7395	11170

### **Volunteers**

A total of 62 volunteers worked on *Silurian* monitoring trips this season, with a maximum of six per trip. Volunteers stay onboard *Silurian*, and work as observers to collect data during visual surveys for cetaceans. They also conduct acoustic monitoring, enter data and assist with the deployment of hydrophones and other project equipment. For all these tasks, volunteers receive full training from our staff. In addition to training provided for research work, our science staff also deliver lectures and lead discussions on a variety of topics related to marine research and conservation. *Silurian* is a fully-equipped sailing vessel, and being involved in its running is an important aspect of the survey. Volunteers have ample opportunity to learn about sailing, and also assist with the day-to-day running of the research vessel, including cooking and cleaning.

Volunteers can come from any walk of life, and each volunteer brings with them an invaluable range of skills and experience, from those who understand the sea and sailing to those who may never have set foot on a boat, or seen a cetacean in the wild before. Our volunteers make our research possible. They work long hours carrying out visual observations and logging data, especially in the middle of summer when daylight hours are very long. Teams of two rotate as visual observers, entering data into our computer system and logging seabird sightings. Teamwork is extremely important if the research is to run smoothly.

What volunteers learn and gain from volunteering on one of our surveys is as varied as their backgrounds. They get full training in scientific research techniques, and benefit greatly from having marine science and sailing experts constantly at hand. They have the opportunity to see an amazing variety of wildlife in its natural habitat, visit remote

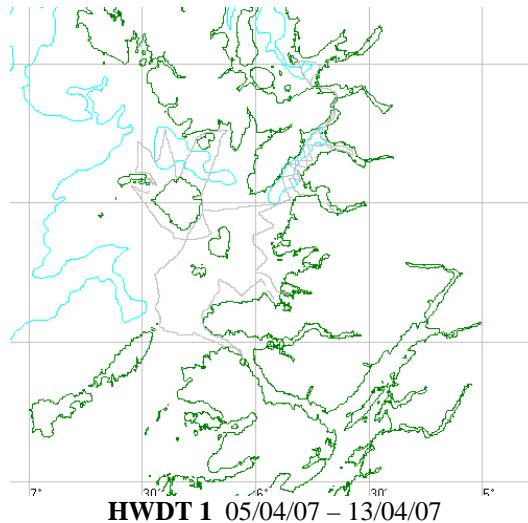
and beautiful places, and get to know and work closely with a small team of like-minded people. Volunteers know that their hard work and enthusiasm contribute directly to knowledge and conservation of cetaceans in the Hebrides.

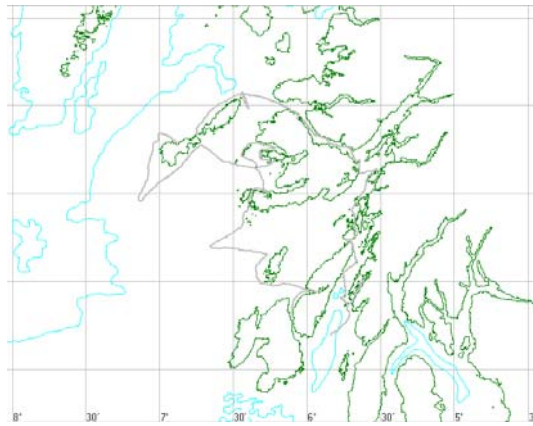


Observers at work © M.Brook/HWDT and G.Leaper

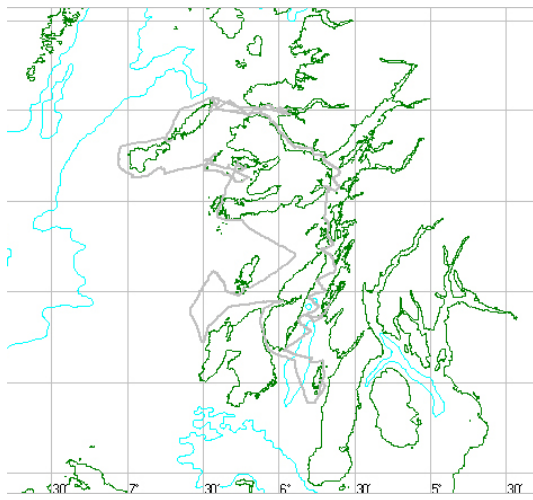
### Survey routes

The maps below indicate the survey routes undertaken during each trip. The route was chosen to take into account weather and sea conditions and to obtain an even coverage of survey effort throughout the area. In spite of poor weather on some trips, we achieved good coverage of all our core survey areas. We were also able to extend coverage to investigate previously unsurveyed regions, in particular to the north and west, notably to the south and west of the Outer Hebrides, and the North Minch.

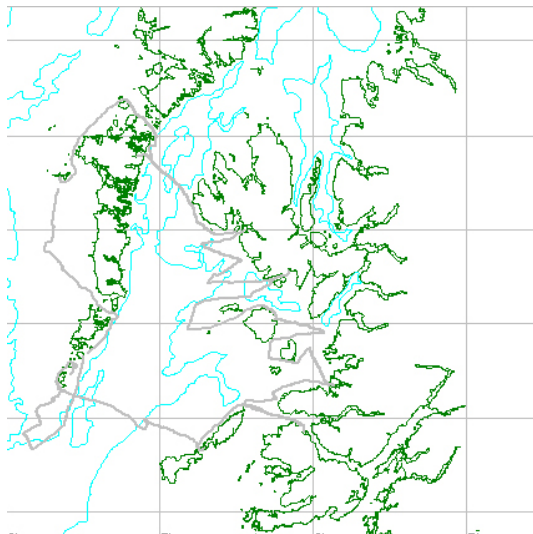




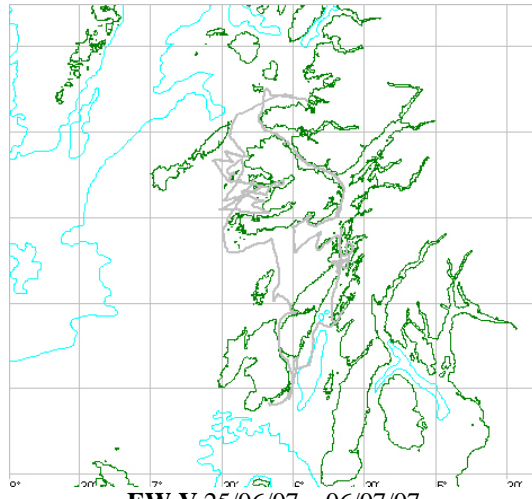
**EW I** 20/04/07 – 28/04/07



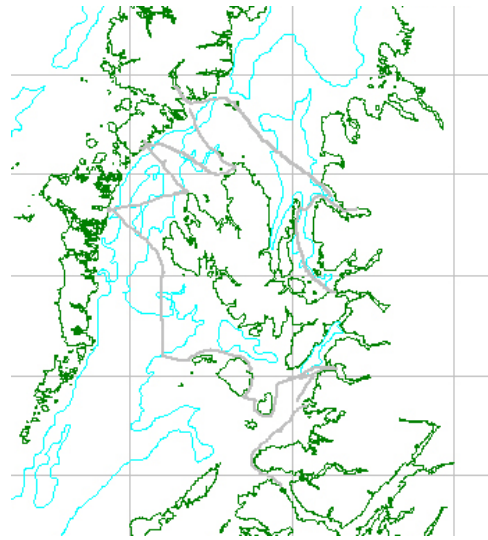
**EW II** 07/05/07 – 18/05/07



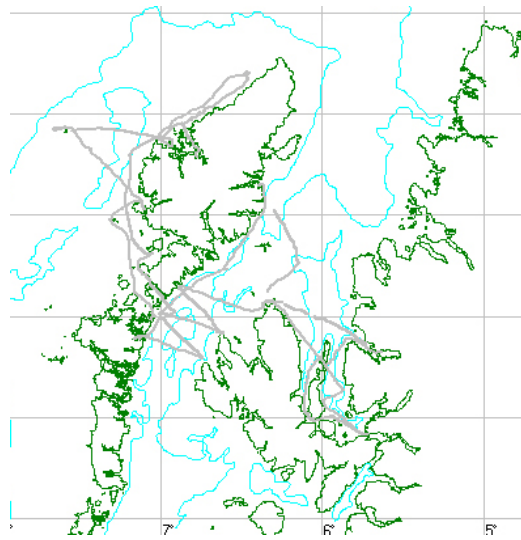
**EW IV** 04/06/07 – 15/06/07



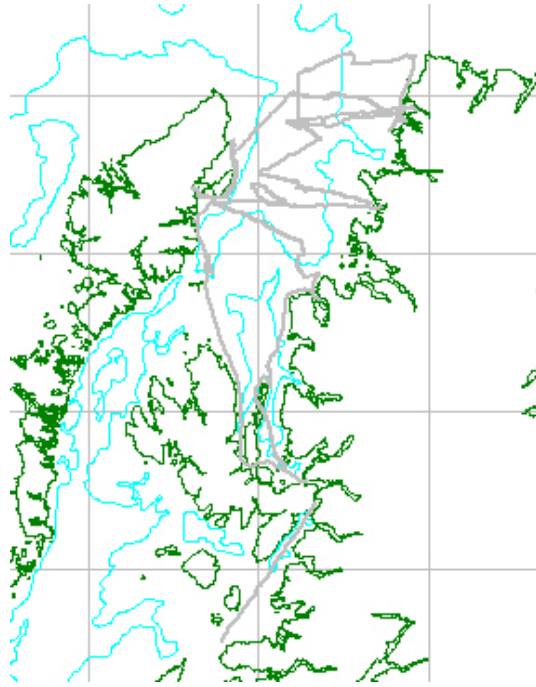
**EW V 25/06/07 – 06/07/07**



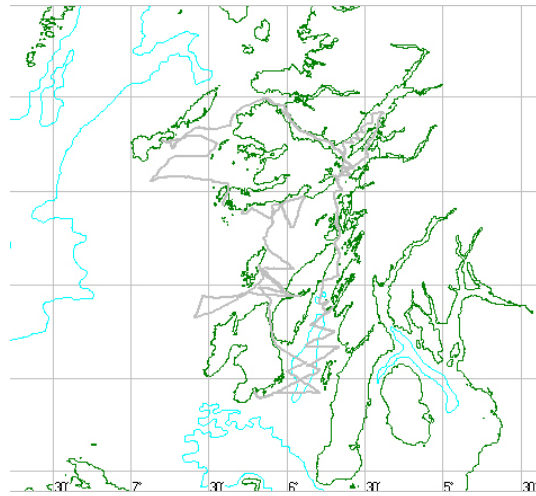
**HWDT 2 11/07/07 – 19/07/07**



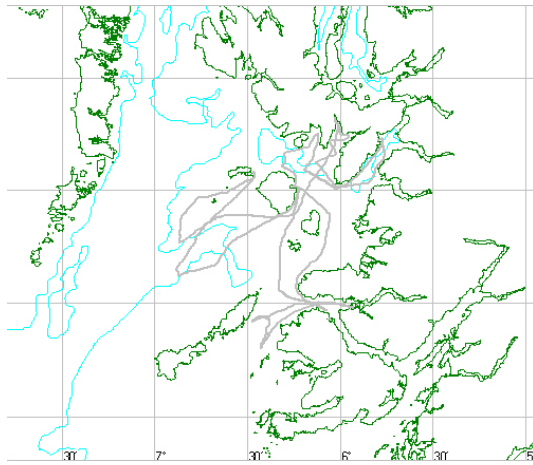
**HWDT 3 20/07/07 – 31/07/07**



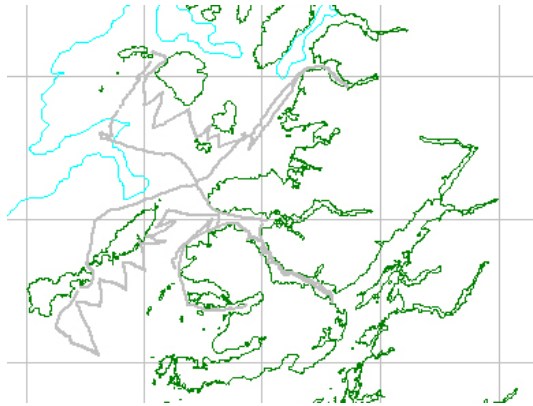
**HWDT 4** 01/08/07 – 12/08/07



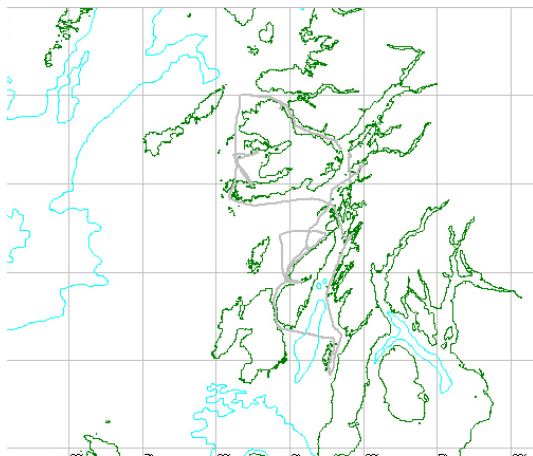
**EW VI** 13/08/07 – 24/08/07



**EW VII** 26/08/07 – 03/09/07



**HWDT 5** 04/09/07 – 12/09/07



**EW VIII** 13/09/07 – 21/09/07

The species and number of animals encountered during each trip are as follows:

**Table 2. Cetacean and basking shark sightings from Silurian trips 2007**

<b>Team</b>	<b>Harbour porpoise</b>	<b>Bottlenose dolphin</b>	<b>Risso's dolphin</b>	<b>Common dolphin</b>	<b>White-beaked dolphin</b>	<b>Killer whale</b>	<b>Minke whale</b>	<b>Basking shark</b>
<b>HWDT 1</b> 05/04/07 – 13/04/07	9	0	0	0	0	0	0	0
<b>EW I</b> 20/04/07 – 28/04/07	4	0	0	0	0	0	0	0
<b>EW II</b> 07/05/07 – 18/05/07	58	3	0	9	0	0	6	32
<b>EW IV</b> 04/06/07 – 15/06/07	33	7	3	>200	11	0	12	7
<b>EW V</b> 25/06/07 – 06/07/07	54	0	0	0	0	0	6	15
<b>HWDT 2</b> 11/07/07 – 19/07/07	53	0	0	28	0	0	6	1
<b>HWDT 3</b> 20/07/07 – 31/07/07	75	7	6	55	13	0	7	23
<b>HWDT 4</b> 01/08/07 – 12/08/07	244	0	6	~1500	71	0	11	1
<b>EW VI</b> 13/08/07 – 24/08/07	155	12	0	3	0	0	2	26
<b>EW VII</b> 26/08/07 – 03/09/07	27	0	0	65	0	4	2	19
<b>HWDT 5</b> 04/09/07 – 12/09/07	84	0	10	0	0	2	2	3
<b>EW VIII</b> 13/09/07 – 21/09/07	14	0	0	0	0	3	0	4



As for previous years, harbour porpoise continued to be the most frequently sighted cetacean in 2007. It was as apparent as ever how heavily influenced these visual sightings are by sea state, with anything but the calmest conditions significantly negatively impacting on sightings rates. The worth of our acoustic survey equipment was, again, clear. Over the 2007 season our visual surveys (both Earthwatch and non-Earthwatch) resulted in 442 porpoise encounters (a total of 830 individual animals), whilst 1608 porpoise events were detected acoustically (it is not possible to determine the exact number of individual animals). The distribution of harbour porpoise on the west coast of Scotland is amongst the highest in Europe, but it is apparent that, although these animals are distributed throughout our survey area, there are certain areas with environmental and oceanographic features more conducive to harbour porpoise occurrence. This study of high-use areas, investigated by Clare Embling, from the Sea Mammal Research Unit (SMRU), University of St Andrews, as part of her PhD, is now being intensively developed by Cormac Booth, also at SMRU, who started his PhD research in conjunction with HWDT last year. To this end, survey design has been modified this year, allowing considerable time to be spent intensively surveying in areas which have been identified as potential harbour porpoise hotspots or which may help to refine the habitat models.

Minke whale sightings remained low in 2007, compared to numbers seen before 2005. Minke sightings began in mid-May, but had tailed off noticeably by mid-August, peak months being June, July and early August. Many of our sightings were outside our traditional core area of the Argyll Islands regions, suggesting that minke whale distribution may be higher in more northerly and westerly areas of the Hebrides. The probable cause of these changes in distribution, an alteration in the patterns of availability of the small schooling fish on which minke whales feed, is clearly continuing to affect the region's whales. Anecdotal reports also suggest another poor breeding season for those seabirds in the area which feed on sandeel.



**Minke whales near Waternish Point, Isle of Skye © M.Brook/HWDT**

We were able to devote one of this season's surveys to collaborative research with Ketos Ecology into the distribution of white-beaked dolphins in the North Minch. The Minch, has historically been an area of high white-beaked dolphin occurrence, but recent studies have suggested that the species may be declining in this region. This dedicated survey provided valuable information on the current status of this poorly-understood species, focusing on spatial distribution, relative abundance, habitat preferences, group composition and photo-identification.

Large groups of common dolphins were sighted this summer, in particular during the white-beaked dolphin survey of the Northern Minch area in August, where several common dolphin groups numbering a few hundred each were observed. In the past, common dolphins have not been a regularly sighted species in Hebridean waters, especially not as far north and west as current observations are indicating. This is an emerging trend which will be interesting to track.



Common dolphin in the Sea of the Hebrides, June 2007 © M.Brook/HWDT

### ***Photographic Identification***

Bottlenose dolphin photo-identification work this season has been very successful, with 11 encounters. Typically for this species, some encounters have been of only a few animals, whilst others have comprised 12 or 15 animals yet many of the same individuals are identified in groups of different size. In 2007, a government-funded project to study the distribution of bottlenose dolphins in Scotland which began in 2006, has continued. HWDT has been collaborating with Aberdeen University, the Sea Mammal Research Unit and the Scottish Association for Marine Science on the three-year study. HWDT operates a public sightings hotline for the project. This access to prompt information on dolphin location has proven vital to the success of the programme. This season has also seen a substantial increase in submission of identification photographs by the public and tour operators, adding considerable depth to the data from the 2007 season. Sightings and

photo-identification images made during dedicated HWDT surveys are also used in these analyses. Of the bottlenose dolphins encountered and photographically identified by HWDT in 2007, only one animal was a new addition to our catalogue, having not previously been sighted in their area of distribution between the Kintyre Peninsula in the south to Skye in the north. This supports our previous findings that a very small number of bottlenose dolphins (~30) is present in the Inner Hebrides, while a small and highly local group of about 12 animals is regularly found in Barra Sound.



**Bottlenose dolphins in Barra Sound © M.Brooke/HWDT**

Our photo-identification catalogues for minke whales, common dolphins, Risso's dolphins, white-beaked dolphins and killer whales have all been added to this season. Basking sharks are also photographed and the images sent to the Shark Trust. Photo-identification images of minke whales were collected both by Sea Life Surveys and *Silurian*. These data have yet to be analysed, but currently matches have been confirmed with Kasey and Nick 1 (from HDWT catalogue).

There is only a very small group of killer whales present in Hebridean waters, and sightings are rare. However in 2007, *Silurian* encountered killer whales four times towards the end of August and beginning of September. Two of these encounters were excellent and provided high-quality images for photo-identification purposes, and recordings of their vocalisations. The same two animals, a large male and small female, comprised both encounters, one of which took place southwest of the Small Isles, the other west of Mull a few days later. The male is an individual known to us as Comet and previously identified in 1998 and 1999 while the female is a new addition to our catalogue. We are working closely with PhD candidate Andrew Foote from Aberdeen University on analysis of the killer whale data from the west coast in the context of the eastern North Atlantic population as a whole. The total number of individuals identified on the west coast is <10, some animals have been identified over many years, the re-

sighting rate is high, and the only long-distance re-sighting to date is to Ireland, suggesting a small and localised population in the area.



**Killer whales, west coast of Mull (male is Comet) © G.Leaper**

Because obtaining adequate photographs for individual identification requires us to interact with animals for a longer period of time and at closer range than we might otherwise, we operate under a research permit from Scottish Natural Heritage. The total time in ‘encounter effort’ with each species sighted in 2007 is as follows:

**Table 3. Encounter effort from *Silurian*, 2007**

<b>Species</b>	<b>Total encounter time (mins)</b>
Bottlenose dolphin	233
Common dolphin	532
Harbour porpoise	38
Killer whale	108
Minke whale	493
Risso's dolphin	68
White-beaked dolphin	190
Basking shark	301

This year we have continued our research into marine litter, as its presence, particularly plastics, is a significant conservation concern for cetaceans owing to ingestion and entanglement. The litter data from 2006 and 2007 are similar in that in both years, approximately 70% of items observed were confirmed as plastics (either plastic bags, bottles, or other plastic items). However, fewer litter items were recorded in 2007 than in 2006 (368 compared to 547). Possible explanations for this decrease have not yet been

investigated. We have also continued to track other anthropogenic impacts on the marine environment, logging boat traffic and the use of Acoustic Deterrent Devices (ADDs), employed to deter seals from salmon farms. Recordings are made of these devices whenever they are heard using our hydrophone. Their presence is especially high in the Sound of Mull/Firth of Lorne area.

Our seabird research initiated in the 2006 season has also continued this year.

### ***Sea Life Surveys***

The data collection system used on *Silurian* (LOGGER) is also installed on one of the local whale watching vessels run by Sea Life Surveys. The vessel, *Sula Beag*, is operated chiefly for eight-hour trips, which run daily. Crew onboard Sea Life Surveys boats also took images for photo-identification purposes. Data collection took place from June to September 2007, resulting in 299 sightings.

### ***Public sightings***

This season, the collecting of sightings reported by the public was made more efficient through the provision of an online data recording facility. Of the ~400 sightings reported, the majority were of minke whales and bottlenose dolphins. The particularly high number of bottlenose dolphin reports (169) can be attributed to the increased publicity surrounding the Scottish Bottlenose Dolphin Project (see above).

2007 was also a good year for sightings of less common species, such as killer whales and humpback whales. There have been four humpback whale sightings this season, from east of St Kilda, Staffa, Loch Gairloch and Loch Hourn. 2007 has been an extraordinary year for killer whales with 15 sighting reports for the Hebrides. Four of these sightings were from encounters during *Silurian* surveys (see above).

### ***Communication of results***

It is essential that our research be communicated to a wide audience, both in the scientific community and amongst the general public. In 2007 we disseminated our results in the following ways:

#### **Printed**

Embling, C.B. (2007) Predictive models of cetacean distribution off the West Coast of Scotland from passive acoustic survey data. PhD thesis, School of Biology, University of St Andrews

Foote, A.D., Vikingsson, G., Oien, N., Bloch, D., Davis, C.G., Dunn, T.E., Harvey, P., Mandleberg, L.C., Whooley, P., Thompson, R.M. (2007) Distribution and abundance of killer whales in the Eastern North Atlantic. Document # SC-59-SM5. Submitted to the Scientific Committee of the International Whaling Committee, May 2007

*Wave*, the newsletter of HWDT, published three times per year

## **Visual**

HWDT runs a Visitor Centre, which is open all year to the general public and provides educational and interpretative information.

## **Digital**

During the field research season, *Silurian* volunteers file a daily blog about their onboard experiences which is available through the HWDT website.

## **Mass media**

BBC TV 'Saving Planet Earth' (July 2007)

The Times, 20/06/07 'Dolphins far from home could signal sea warming'

Timesonline, 25/09/07 'At home with the sharks on Coll'

[http://travel.timesonline.co.uk/tol/life\\_and\\_style/travel/destinations/scotland/article2530884.ece](http://travel.timesonline.co.uk/tol/life_and_style/travel/destinations/scotland/article2530884.ece)

The Scotsman, 17/10/07 'Giants who are a barometer of ocean's health'

## **Meetings and conferences**

An Integrated approach to non-lethal research on minke whales in European waters. A workshop held at 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007.

Embling, C.B., Gordon, J., Shrimpton, J., Hammond, P.S. Using environmental models to predict harbour porpoise distribution and relative abundance from visual and acoustic survey data Talk for 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007

Calderan, S.V., Stevick, P.T., Mandleberg, L.C. Density estimates of marine litter in a key cetacean habitat in North West Scotland' Poster for 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007

Stevick, P.T., Calderan, S.V., Speedie, C., Shrimpton, J., Embling, C.B. A trophic shift off West Scotland: minke whales and basking sharks Poster for 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007

Mandleberg, L.C., Stevick, P.T., Tetley, M.J., Gaillard, T., Johnston, P.J. Characteristics of the bottlenose dolphin population off the west coast of Scotland Poster for 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007

Ingram, S.N., Culloch, R., Cheney, B., Mandleberg, L.C., Stevick, P.T., Hammond, P.S., Wilson, B., Thompson, P.N. Distribution and abundance of bottlenose dolphins off the West Coast of Scotland Poster for 21<sup>st</sup> Annual Conference of the European Cetacean Society, San Sebastián, Spain, 2007

## PUBLIC OUTREACH

### *Public workshops, talks and events*

The science and education teams have coordinated to provide a wide ranging and high quality outreach and education programme. Our event coverage has included a diversity of audiences and locations. This table provides a record of all the events and talks HWDT has offered by the science and education teams between April 2007 and October 2007:

**Table 4. Public events attended by HWDT, April to October 2007**

<b>Event</b>	<b>Description</b>	<b>Date</b>	<b>Location</b>
Open evening on <i>Silurian</i>	Open boat	30 <sup>th</sup> April	Isle of Coll
Scottish outdoor learning festival	Stand at national event for educators	30 <sup>th</sup> April	Edinburgh
Open evening on <i>Silurian</i>	Open boat	2 <sup>nd</sup> May	Isle of Tiree
Talk	Sightings talk	4 <sup>th</sup> May	Isle of Mull
Wildlife from the boat	Wildlife guide on ferry	5 <sup>th</sup> and 6 <sup>th</sup> May	Isle of Mull
Wild isles week	Talk for the public	7 <sup>th</sup> May	Isle of Mull
Beach workshop	Workshop for public	15 <sup>th</sup> May	Fionnphort, Isle of Mull
Beach workshop	Workshop for primary students offered in collaboration with the local Argyll and Bute biodiversity partnership	21 <sup>st</sup> May	Oban
World Oceans Day	Shop window display	8 <sup>th</sup> June	Tobermory, Isle of Mull
Open evening on <i>Silurian</i>	Open boat	18 <sup>th</sup> June	Isle of Islay
National Whale and Dolphin Watch	Watch in Tobermory	23 <sup>rd</sup> June	Tobermory, Isle of Mull
National Whale and Dolphin Watch	Watch at Ardnamurchan lighthouse	28 <sup>th</sup> June	Ardnamurchan
Highland Games, Tobermory	Stand at community event	19 <sup>th</sup> July	Tobermory, Isle of Mull
Waters edge event	Marine event for the public	21 <sup>st</sup> July	Loch Lomondside
Beach workshop	Workshop for the young public	30 <sup>th</sup> July	Tobermory, Mull
Show	Stand at community show	3 <sup>rd</sup> August	Isle of Coll
Agricultural show	Stand at local show	9 <sup>th</sup> August	Isle of Islay
Agricultural show	Stand at local show	9 <sup>th</sup> August	Salen, Isle of Mull
Beach workshop	Workshop for the	12 <sup>th</sup> August	Calgary, Mull

	young public		
Highland games	Stand at large show	23 <sup>rd</sup> August	Oban
Visit	Talk and activities for visiting group of teenagers in Tobermory	3 <sup>rd</sup> September	Tobermory, Isle of Mull
Invited speaker	Presentation organised on Killer Whale Ecology	3 <sup>rd</sup> September	Tobermory, Isle of Mull
Beach clean	Involving Lochdonhead Primary and members of the public	14 <sup>th</sup> September	Loch Buie, Mull
Forum	Presenters at beach forum event – for interested parties	23 <sup>rd</sup> October	Oban

The open evenings on *Silurian* were introduced to encourage participation from communities where the education trips were located. These proved successful and allowed parents and interested public to learn about the work of the Trust and cetaceans. Some children came aboard for a second look around and to share their experiences with their parents.

Beach workshops were developed this year for children (both visitors and locals) and took place in a variety of locations on Mull. The aim of these events was to educate and inspire children about the local beach environment and its life. We also offered beach sculpture competitions at some events, which, for example, attracted 60 people to create marine themed sand sculptures on Tobermory beach. Participation in workshops varied enormously from event to event which will be taken into account when planning next years workshops. The workshops were advertised with other summer events on Mull on line and in brochures and we offered an event to support the Mull Food Festival (a beach walk and picnic) and the Wildlife Week.

At the community shows and games HWDT ran stalls providing both information (such as leaflets and newsletters) and merchandise. We also targeted young people by running competitions and providing information which was appropriate for this audience. The overall numbers attracted to the events varied significantly and therefore so did the numbers which HWDT attracted to our stand. These events were valuable as a large amount of information was distributed, many participated, they continued to raise the profile of HWDT and strengthened our local community involvement.



### ***Newsletter***

Two editions of our members magazine *Wave*, and junior magazine *Wavelet*, were printed in the last six months. At the beginning of June a summer edition was printed and then the autumn edition was printed at the beginning of September. This magazine continues to offer members an update of our work and provides information about issues concerning the marine environment of the west coast of Scotland and cetaceans. It is also made available in our shop and given to participating schools. Currently an internal review of our magazines is underway to assess the need for changes in the future.

### ***Website***

The news pages have been updated frequently to provide latest sightings information and raise awareness of forthcoming events. The web log has been updated daily this season to provide a wide audience information about both our monitoring and education trips on *Silurian*. The website generated 'ask us' questions have continued to keep the Education Team busy - over the first three months of this period we received 42 enquiries, for example.

Visits to the website have continued to rise:

**Table 5. Website use 2006 - 2007**

<b>Period covered</b>	<b>Number of months</b>	<b>Total numbers of users</b>	<b>Average number of users per month</b>
<b>April 2006 – September 2006</b>	6	247, 032	41, 172
<b>October 2006 – march 2007</b>	6	287, 640	47, 940
<b>April 2007 – September 2007</b>	6	325, 497	54, 250

These data refer to total sessions served i.e. individual user visits (the number of visitors to the site) and do *not* refer to hits. With continued improvement to our site we look forward to a further increase in the number of users.

Recent updates have been made to the content of some of the main website pages and this renewal will continue over the winter period. We plan to make substantial changes to our website to ensure that it provides the most up to date information possible and to make use of ever progressing technical changes.

## EDUCATION

### *School visits*

**Table 6. School visits by HWDT Education Team, April to October 2007**

<b>School</b>	<b>Island / Mainland</b>	<b>Number of Children</b>	<b>Dates Visited 2006</b>	<b>Location of Visit</b>
Arinagour Primary	Isle of Coll	19	30 <sup>th</sup> April and 1 <sup>st</sup> May	Boat
Tiree Primary	Isle of Tiree	42	2 <sup>nd</sup> and 3 <sup>rd</sup> May	Boat
Tiree High	Isle of Tiree	8	4 <sup>th</sup> May	Boat
Islay High	Isle of Islay	45	18 <sup>th</sup> and 19 <sup>th</sup> June	Boat
Home school	Isle of Islay	3	19 <sup>th</sup> June	Boat
Bowmore Primary	Isle of Islay	36	20 <sup>th</sup> June	Boat
Port Ellen Primary	Isle of Islay	24	21 <sup>st</sup> June	Boat
Small Isles Primary	Isle of Jura	12	22 <sup>nd</sup> June	Boat
Garelochhead Primary	Balloch, Mainland	24	6 <sup>th</sup> September	ABREEF
Parklands	Balloch, Mainland	5 (Special Needs students)	6 <sup>th</sup> September	ABREEF
St Joseph's Primary	Balloch, Mainland	12	6 <sup>th</sup> September	ABREEF
Colgrain Primary	Balloch, Mainland	10	6 <sup>th</sup> September	ABREEF
Hermitage Primary	Balloch, Mainland	22	6 <sup>th</sup> September	ABREEF
Lomond Primary	Balloch, Mainland	24	7 <sup>th</sup> September	ABREEF
Kilcreggan Primary	Balloch, Mainland	10	7 <sup>th</sup> September	ABREEF
Cardross Primary	Balloch, Mainland	12	7 <sup>th</sup> September	ABREEF
Rhu Primary	Balloch, Mainland	10	7 <sup>th</sup> September	ABREEF
St Kessogs Primary	Balloch, Mainland	12	7 <sup>th</sup> September	ABREEF
Lochdonhead Primary	Isle of Mull	15	14 <sup>th</sup> September	Beach
Tobermory High	Isle of Mull	12	24 <sup>th</sup> September	Boat

Salen Primary	Isle of Mull	48	25 <sup>th</sup> and 26 <sup>th</sup> September	Boat
Bunessan Primary	Isle of Mull	28	27 <sup>th</sup> September	Boat
Iona Primary	Isle of Iona	12	28 <sup>th</sup> September	Boat
Total number: 23		Total number: 455		

Between April and October 2007 20 primary and 3 high schools were visited and a total of 455 students have participated in our school visits programme in the last six months.

During this 6 month period we have mostly taught established programmes on board *Silurian*. Feedback from teachers has highlighted the value that they place on these outdoor learning experiences.



Outdoor learning onboard *Silurian*, Isle of Coll © D.Christian

Here are some examples of general comments:

- *Excellent visit. Well differentiated.* Head Teacher, Bunessan Primary
- *All aspects were informative and relevant.* Teacher, Islay High school
- *Excellent environment, staff and activities. More of this please!* Teacher, Tiree High School
- *This visit was excellent on all counts. From safety information to technical information. Although these children see these animals on the shore, they had little knowledge of them The respect shown for the animals was an important element. The Trust staff managed the exercise very efficiently, were skilled at delivery and handling questions. The visit was very much appreciated.* Teacher, Tiree High School
- *This was an excellent field trip, well organised, age appropriate, with a good variety of activities.* Teacher, Salen Primary

Despite having established programmes we are continuing to develop what we offer and always working improve its quality. We have continued to work hard to integrate our workshops into the curriculum, to give lasting educational impact, rather than simply being one-off 'entertaining' visits. We are continuing to work at these challenges.

### **Primary education**

During three education trips with *Silurian* we visited 9 primary schools and delivered marine life workshops. These included engaging learning tasks such as investigating the boat, being animal detectives, learning about the research equipment and touch tank activities. Most workshops lasted between one and half and three hours depending on the needs of the students and schools. Small Isles Primary was an exception to this as, due to the small size of the school, students had the whole day on *Silurian*; therefore including more depth and breadth of work. The feedback was excellent for all these trips and some of these comments are included above.

At the Argyll and Bute Regional Environmental Education Fair (ABREEF) we worked with numerous primary schools and presented an active learning exercise on the research technique of photo-identification. Students enjoyed completing a matching activity using photographs of minke whale dorsal fins. Teachers were interested in the work we presented and positive feedback was received.



**Junior observer on *Silurian* © D.Christian**

### **High school education**

Three high school schools benefited from educational visits to *Silurian* this season. The age range of these students varied from 12 to 18 and so in response to this the content of the workshops varied. Many visited *Silurian* as part of their science curriculum and also one eco-committee visited for general interest. All students learnt about cetacean research techniques and local marine life and were able to link their learning on board with previously learnt concepts such as food webs and ecosystems.

Our monitoring of the education programme reveals that these workshops are delivering the four capacities of the Curriculum for Excellence. We will continue to monitor feedback received and develop our workshops in response to the new curriculum as it comes on stream in the near future.

### ***Courses***

We have continued to extend and develop our outreach and education activities in the areas of university level education, teacher training, the education of interested adults and educating people whose work is associated with conservation.

**Table 7. HWDT courses, 2007**

<b>Title</b>	<b>Dates</b>	<b>Land or boat based</b>
Marine mammal course	30 <sup>th</sup> March – 1 <sup>st</sup> April 2007 13 <sup>th</sup> – 15 <sup>th</sup> April 2007	Land and boat
University marine biological station, Millport. Part of the University of London	8 <sup>th</sup> , 9 <sup>th</sup> and 10 <sup>th</sup> July 2007	Boat

The refined marine mammal course content was well received during the two courses at the beginning of the season. The courses were filled by a good range of participants from those with a general interest to those whose work involved conservation (for example, wildlife trusts, and SNH). Feedback from all was positive even with the wide range of knowledge and interests of those involved, reflecting the flexibility and individualised delivery which is planned into the course.

### ***Resource development***

The Education Team now has a wide range of resources both for school visits and boat based workshops and will continue to create new materials as the need arises. We aim to improve and re-use materials that have proved successful and so raise the quality of what we offer based on previous experience. Our resources have been developed with current curriculum changes in mind to ensure their relevance for teachers and students alike.

A CD-ROM for high school teachers on the topic of marine litter has been written and produced this summer. This CD will educate teachers and students about the issue of marine litter and includes 14 activities for use in the classroom, a PowerPoint presentation (with 35 slides) and photo galleries (containing nearly 150 images). The 250 copies have been distributed to schools on the west coast of Scotland from Dumfries to Sutherland, marine rangers, other environmental organisations, teacher training establishments and so on.

### ***Other work***

Some other significant work has included:

- Hosting a volunteer to complete a project to prepare a common dolphin skeleton for classroom use.
- Completing the writing of the Education Strategy 2008 – 2013.