

# HEBRIDEAN WHALE AND DOLPHIN TRUST



EDUCATION & RESEARCH  
REPORT 1999/2000



# Education and Research Report 1999/2000

## INTRODUCTION

The following report summarises the educational and research work of the Hebridean Whale and Dolphin Trust over the past year.

HWDT's education and research work is fundamental to achieving its aims of the conservation of whales, dolphins and porpoises of the Hebrides and their marine environment.

The 1999/2000 programme is in year two of a three-year programme funded by Scottish Natural Heritage and variety of other sources. The aims of the programme are to encourage learning about, and to generate a wider understanding of the ecology of the marine and coastal environments of the Hebrides, and threats they face, particularly the Argyll Islands area, with an emphasis on cetacean species and other marine mammals. The programme worked with pre-school groups, schools, local community organisations, marine-users, the general public and scientific/educational organisations.

The education programme was implemented primarily by the joint work of Scientific & Education Director Dr. Chris Parsons, part-time education officer Sarah Clark and volunteers via HWDT's environmental training programme.

HWDT's research programme has been running since the start of the Trust in 1994. The overall aims of HWDT's research programme are to:

- monitor the status of cetacean populations in West Scottish waters and the threats they face,
- conduct research into ways to promote the long-term conservation of the Hebridean marine environment.

The research programme was co-ordinated by HWDT's Scientific & Education Director Dr. Chris Parsons with individual projects carried out by HWDT Research Associates Alison Gill, Rene Swift, Juliette Shrimpton, Caroline Warburton, Ian Leaver and Jennifer Hill.

Over the past year, HWDT's education and research work has made a significant contribution to the conservation of the Hebrides' unique and spectacular marine environment. However, there is still much to be done to achieve our goals and we will be working towards this over the forthcoming years.

Cally Fleming  
Executive Director



## EDUCATION

### INTRODUCTION

One of HWDT's main aims is to promote an awareness of the Hebridean Marine Environment and the species that it contains, in particular whales and dolphins. In order to achieve this, HWDT has been running a Marine Education programme, which has been part-funded by Scottish Natural Heritage since 1997.

The Education Programme has several target groups including primary school children from Hebridean rural schools, secondary school children, university and college students, local marine users, wildlife tour operators, other environmental organisations, visitors/tourists to Scotland and internet users. Of these, those target groups that regularly come into contact with the Hebridean marine environment have been prioritised in particular.

One of HWDT's aims with its Education Programme has been to produce a variety of activities and materials which are as interactive, and using as many different media as possible to help interpret the rich and fragile marine environment of the Hebrides as the following project summaries will show.

THE 1999/2000 EDUCATION PROGRAMME  
WAS FUNDED BY



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Seal & Marine Centre,





## EDUCATION PROJECTS

### MARINE DISCOVERY CENTRE

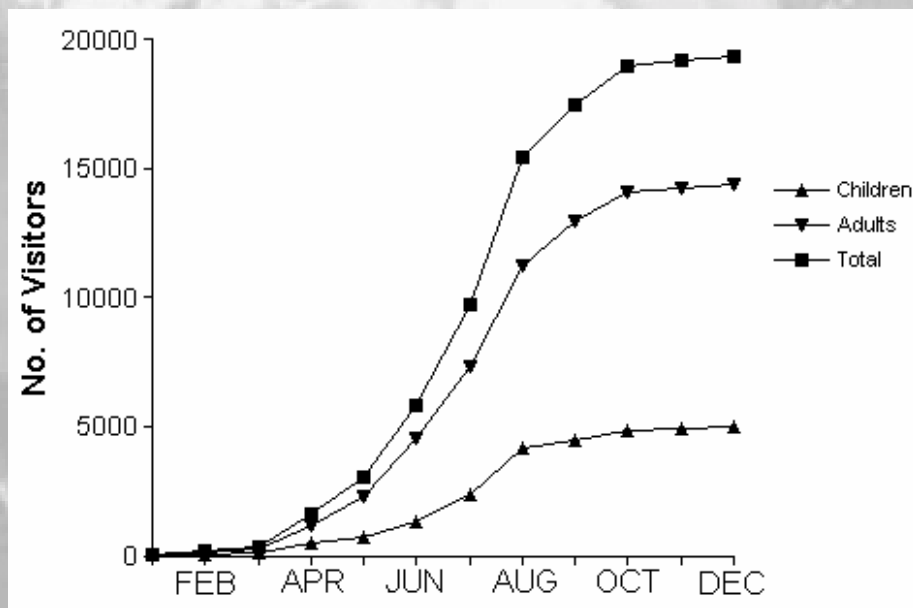
HWDT's Marine Discovery Centre was open throughout 1999, receiving visitors on weekdays in the winter and every day in the summer, making it one of Mull's only year-round visitor attractions.

In 1999, 19,342 people visited the Marine Discovery Centre, including visits from 4,971 children. This makes the Marine Discovery Centre one of the most popular visitor attractions on the Isle of Mull.



Photo credit: HWDT

This represents a 22% increase in the number of visitors in comparison with the same period in 1998. Elsewhere in the region the number of visitors have dropped from 5-15% when compared to previous years.



Graph showing visitor numbers at the Marine Discovery Centre during 1999

Over the year the centre received a complete renovation thanks to a generous donation from *Dulux*. Several new displays have also been added including a touchie-feelie submarine, kindly donated by *Atelier Creations in Wood*.



Throughout the summer visitor's impressions of the discovery centre were monitored by a questionnaire survey asking several questions about the centre's exhibits. The results of this survey are described below:

**What were your first impressions of the discovery centre?**

<b>Very impressive</b>	<b>43%</b>
<b>Impressive</b>	<b>57%</b>
<b>Interesting</b>	<b>95%</b>
<b>Exciting</b>	<b>5%</b>
<b>Very well laid out</b>	<b>40%</b>
<b>Well laid out</b>	<b>53%</b>
<b>Not very well laid out</b>	<b>7%</b>

**Can you suggest three ways in which the discovery centre could be improved?**

<b>Cannot suggest any improvements</b>	<b>57%</b>
<b>More hands-on displays</b>	<b>14%</b>
<b>Have a larger centre</b>	<b>10%</b>
<b>More details on cetacean sightings</b>	<b>4%</b>
<b>More computers</b>	<b>3%</b>
<b>More information on whale ecology</b>	<b>3%</b>
<b>More seating</b>	<b>3%</b>
<b>More membership details</b>	<b>3%</b>
<b>More invitations to use computers</b>	<b>1.5%</b>
<b>Remove gift shop area</b>	<b>1.5%</b>

**How informative were the displays?**

<b>Extremely informative</b>	<b>32%</b>
<b>Very informative</b>	<b>45.5%</b>
<b>Informative</b>	<b>23%</b>
<b>Not that informative</b>	<b>4.5%</b>

**Were the staff friendly and helpful?**

<b>Yes</b>	<b>100%</b>
<b>No</b>	<b>0%</b>

**Would you like to see more interactive displays?**

<b>Yes</b>	<b>83%</b>
<b>No</b>	<b>17%</b>



Within the centre how much space should we devote to?

	More	Same	Less
Display boards (writing)	20%	75%	5%
Display boards (pictures)	45%	50%	5%
Exhibits area	32%	58%	10%
Computer area	39%	56%	5%
Reference library	37%	63%	0%
Gift shop	10.5%	63%	26.5%

Do you think that the displays should be made more hi-tech?

Yes	39%
No	61%

Commercially made display boards cost around £250 each. Do you think that it would be worthwhile investing in some for the discovery centre?

Yes	30%
No	70%

How effective do you find our various displays to be?

	Very Effective	Effective	Not very Effective
Display boards	52%	48%	0%
Exhibits area	22%	78%	0%
Computer area	35%	65%	0%
Reference library	32%	59%	9%
Gift shop	17%	79%	4%

Before you came to Mull, did you know about the whales and dolphins in the area?

Yes	67%
No	33%

Do you know what HWDT actually does?

Yes	67%
No	33%

If so, what does HWDT do?

Education	27%
Research	27%
Conservation	46%

Would you recommend the HWDT Discovery Centre as a place for others to visit?

Yes	100%
No	0%



## **ENVIRONMENTAL TRAINING PROGRAMME**

Over the past year 43 people have entered into HWDT's environmental training programme (compared to 26 in 1998). As part of this programme the volunteers were taught about the marine life and environment of West Scotland as well as a variety of other skills such as computer, interpretative, marketing and design skills. In addition these volunteers helped to develop and run HWDT's various research, conservation and education projects.



Photo credit: HWDT

Some of the 1999 trainees

## **SCHOOL VISITS**

Eight school visits were made over the year to a total of 280 pupils at local primary schools on the Islands of Mull (Salen, Tobermory and Ulva Ferry primary schools), Tiree and Coll, as well as Tiree Secondary School.

During the year HWDT staff worked closely with Tobermory Primary school pupils as they conducted a project on whales and dolphins this involved several visits from HWDT staff, helping the pupils to search for information, pictures and other materials that they could use in their projects.

## **PUBLIC TALKS**

Eight talks on whales and dolphins in the Hebrides were given on the Isle of Mull to members of the public, along with talks given in Kilchoan, Oban and on the Islands of Tiree, Coll and Islay. The audience for these talks totalled 386. A presentation was also given to a Special Needs Group on the Isle of Mull.

## **DISPLAYS**

Display boards about whales and dolphins in the Hebrides and the work of HWDT were prepared in conjunction with, and put on display by, the Oban Seal and Marine Centre, the most popular visitor attractions on the West Coast of Scotland.





## **CHILDREN'S ACTIVITY DAYS**

Twelve children's activity days were run throughout the summer and autumn. These involved a variety of environmental activities including painting, games playing, storytelling and field trips to some of Mull's beaches. Three beach cleans, involving local children, were also organised .



Photo credit: HWDT

## **MARINE MAMMAL AWARENESS COURSE FOR MARINE TOUR OPERATORS**

The number of boat operators on the West Coast of Scotland is increasing every year, and more and more of these operators are realising the potential for taking tourists to watch marine wildlife. To ensure that these operators minimise their impacts on marine mammal populations, HWDT has developed a Marine Mammal Awareness Pack for boat operators and new wildlife tour packages.

The pack details how to identify different species of marine mammal with information on their behaviour and ecology. The pack also identifies ways to minimise disturbance to marine mammals while watching them. Finally, the pack has suggestions of techniques to interpret marine wildlife to increase the educational value of marine tours and boat trips.





## SCIENTIFIC PRESENTATIONS

A presentation on the *Conservation Threats Faced by Whales and Dolphins in West Scotland Waters* was given to an audience of over 400 international whale biologists at the European Cetacean Society Conference in Valencia, Spain.

Displays were also presented at this conference on HWDT's work in the Atlantic Frontier, the feeding behaviour of the minke whale and the results of the previous year's Operation Sightings programme.

Another presentation, on cetacean diversity and the research activities of HWDT was given to the Scottish Association for Marine Science at Dunstaffnage Marine Laboratory.

## HIGHER EDUCATION COURSES

During the past year HWDT has designed a Marine Mammal Science module for the University of the Highlands and Islands' new Marine Science degree course. The course will run during the honours year of the degree course and will consist of series of practical sessions, field trips, lectures and assignments as follows:

*The Ecological Importance of Marine Mammals* (marine mammals as a bio-indicator and the impact of marine mammals on marine ecosystems);

*The Current Status of Marine Mammal Species* (species distribution, population sizes and the current status of marine mammals in the Highlands and Islands region);

*Ecology and Behaviour* (marine mammal habitat requirements; specialisations of pelagic, coastal and riverine species; foraging behaviour and adaptations; social behaviour; intelligence and acoustic behaviour);

*Marine Mammal Morphology and Physiology* (adaptations for a marine environment; sensory systems specialisations; diving physiology and internal anatomy).

*Conservation Biology* (a review of threats to marine mammals -commercial exploitation, fisheries by-catch, pollution, habitat loss; current International, European and UK legislation protecting marine mammals; conservation case studies and the practicalities and politics of marine mammal management/conservation).

*Marine Mammal Research Techniques* (line transect and acoustic surveys for cetaceans, seal counts, stranding analysis, behavioural survey techniques and acoustic analysis).



## EDUCATIONAL WEBSITE

Over the past year the HWDT website has received over 96,000 hits. Our internet server tell us that this puts the HWDT website into the top 50 most visited websites in the UK. The website contains 56 pages of information including factsheets (for both adults and children) on twenty species of whales dolphins and porpoises, describing their behaviour, habitats, ecology and the threats that they face. These are illustrated with the help of pictures and video clips. New webpages this year include: summaries of HWDT's research & education programme, maps and details of whale & dolphin sightings in West Scotland; ecotourism pages listing local operators, HWDT's whale and dolphin watching code of conduct and HWDT's ecotourism research; a research paper on threats facing Scottish cetaceans and their conservation; and careers advice for young people wishing to become marine and whale biologists.

The website can be found at: [www.hwdt.org](http://www.hwdt.org) and is also available to schools on CD-ROM.

## OPEN DAY

At the end of August HWDT held an Open Day and an Environmental Fair in Tobermory. Events at the open day included various games and activities for children, boat trips to see porpoises, sand sculpting on the beach, guided walks and T-shirt painting. The day was rounded off with live music and a fund-raising auction of items donated by various celebrities including author Douglas Adams and TV personalities Ben Elton, Rolf Harris, Michaela Strachan, Robbie Coltrane and Sean Connery.



Sammy the Seal visits Tobermory on HWDT's Open Day

## ENVIRONMENTAL LIBRARY

Throughout the year the Trust has been building up library of environmental resources, from children's story and activity books on the sea and environment, to Governmental reports and scientific journals. The children's section of the library recieved a particular boost, thanks to a donation from Hammicks Bookshops. This library is coming increasingly popular with not only children, but also the adult residents of Mull.



## RAISING AWARENESS AND THE MEDIA

Over the past year HWDT, has not only increased awareness of the marine environment through its educational programme, but also through the media. Newspaper articles and radio and TV interviews conducted by HWDT in the 1999 include:

### February:

The Herald  
The Times  
Scottish Post  
Channel 4 (The Big  
Breakfast)  
Am Muilleach\*

### March:

Oban Times  
Press & Journal  
Am Muilleach\*  
Round and About\*

### April:

Oban Times  
Press & Journal  
Am Muilleach\*  
Round and About\*

### May:

ITV (Wildthings)  
Oban Times  
Press & Journal  
Am Muilleach\*  
Round and About\*

### June:

Radio Scotland  
BBC Wildlife Magazine  
Press & Journal  
Am Muilleach\*

### July:

Oban FM  
BBC Wildlife  
Magazine  
The Scotsman  
Daily Record  
Oban Times

### August:

BBC Wildlife  
Magazine  
Press & Journal  
Am Muilleach\*

### September:

Sunday Post  
Round & About\*

### October:

Oban FM  
Press & Journal (x2)  
Oban Times (x5)  
Round & About\*  
Am Muilleach\*

### November:

Independent Radio  
Network

### December:

Oban Times (x3)

\* Local Mull Newspaper/ Magazine



Picture credit: Peter Cunningham





## CONFERENCES AND FORUMS

HWDT staff have attended several conferences and forums over the year to present information about whales and dolphins in the Hebrides and to take an active role in discussions and decision making. These include:

- ◆ *Representation at the International Whaling Commission Scientific Committee meeting.*
- ◆ *Delegates at the Marine Conservation Society Conference.*
- ◆ *Delegates at the Scottish Environment Link, Politics and the Environment Conference.*
- ◆ *Delegates at the Mammal Society Conference.*
- ◆ *Delegates at the European Cetacean Society Annual Conference.*
- ◆ *Delegates at the Wildcare (wildlife rescue) Conference.*
- ◆ *Delegates at the Argyll and Bute Environmental Education Forum.*
- ◆ *An information stall at the Scottish Wildlife and Countryside Fair, Loch Leven.*
- ◆ *Representing the interests of local wildlife tour operators and marine users in forums with the Royal Navy over the impact of military activities in the Hebrides.*
- ◆ *Representation on the Argyll and Bute Bio-Diversity Action Plan Marine Technical Group.*
- ◆ *Representation on the Mull and Iona Land and Sea Forum Steering Committee.*
- ◆ *Representation on the Mull and Iona Land Ranger Service Management Committee.*
- ◆ *Representation on the Nature and Development in the Argyll Islands Region Project.*
- ◆ *Regional representative for the Marine Animal Rescue Coalition.*

## NEWSLETTER

As part of its awareness-raising programme, HWDT produces a newsletter, "Wave", twice a year, which is distributed to its members, visitors to the Marine Discovery Centre and to environmental organisations and groups. The newsletter contains a variety of environmental articles, the latest whale and dolphin news and a children's page.

## DISTRIBUTING ENVIRONMENTAL INFORMATION

In addition to dealing with public enquiries in the Discovery Centre, HWDT is regularly called on by schools, children and members of the public to supply them with information. Over the year, 87 Whale and Dolphin Information Packs have been distributed, including packs to 9 schools and 37 primary pupils for school projects.

A total of 427 scientific research papers were distributed by HWDT staff by scientists from the UK and overseas (including: Argentina, Australia, the Bahamas, Belgium, Brazil, Canada, Chile, China, Columbia, Croatia, the Czech Republic, Eire, France, Germany, India, Israel, Japan, the Maldives, Norway, Poland, Singapore, South Africa, Spain, Switzerland, Thailand, Uruguay, USA and Venezuela).



## DUNCAN THE DOLPHIN

The West Coast of Scotland is home to several populations of bottlenose dolphins, many of which live close to Hebridean coastal communities. To increase public awareness of these dolphin populations HWDT has designed a colouring book about the adventures of a Hebridean bottlenose dolphin called Duncan and his friends Sally the Sea Eagle, Malcolm the Minke Whale and Fraser the Porpoise. The back of the colouring book has a set of notes for parents and teachers with facts about bottlenose dolphins and whales and dolphins in the Hebrides.

Picture credit: Chris Parsons



Duncan the Dolphin and friends

## WILDLIFE FACT SHEETS

A set 21 fact sheets have been developed to provide information on a variety of Mull wildlife species, in particular seabirds, fish and marine mammals. Packs of these factsheets have been distributed to over 50 hotels, B&Bs, Tourist Information Centres and wildlife tour operators throughout the Isle of Mull to provide wildlife interpretation to both visitors and local people working in the tourism industry.

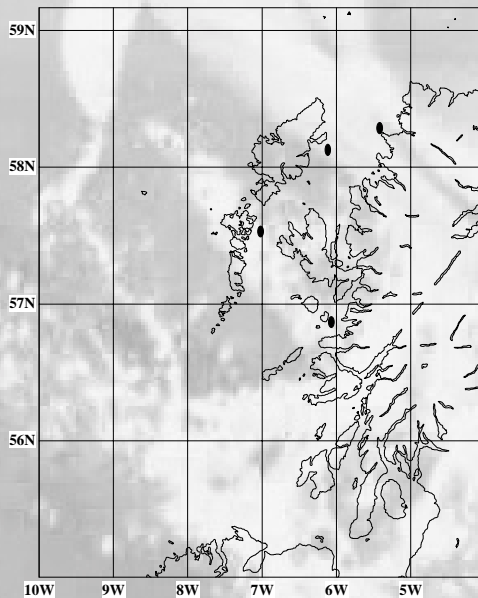


## OPERATION SIGHTINGS

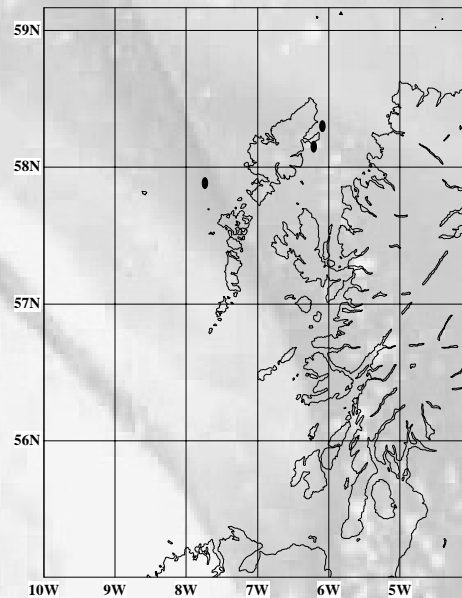
This scheme was launched to monitor the distribution of whales and dolphins, whilst involving local marine-users and members of the public in the collection of scientific data. Over 200 contributors have reported in excess of 800 sightings of whales and dolphins, otters and basking sharks over the past year and their sightings have been recorded on a constantly up-dated map and database in the Marine Discovery Centre. The sightings data for 1999 was also presented at the European Cetacean Society Conference in Cork and will be published in the journal *European Research on Cetaceans*. Summaries of these sightings have also been regularly published on the HWDT website, in local newspapers and in the magazine *British Wildlife*.

### Maps Showing the 1999 Results of the Operation Sightings Programme

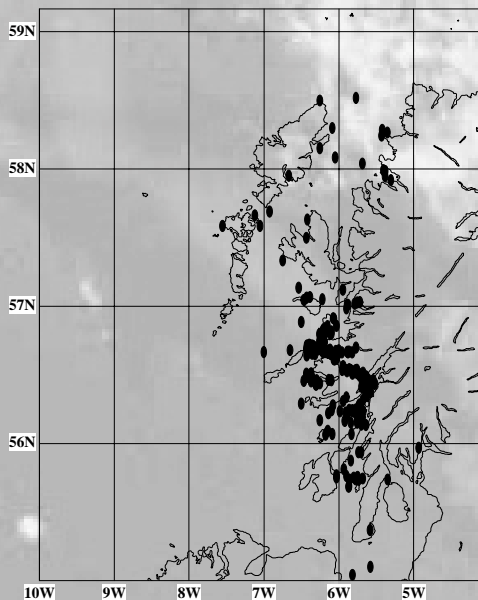
ATLANTIC WHITE-SIDED DOLPHIN



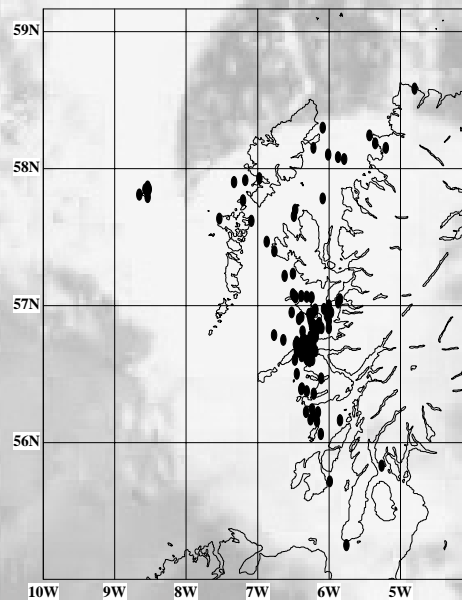
WHITE-BEAKED DOLPHIN



HARBOUR PORPOISE



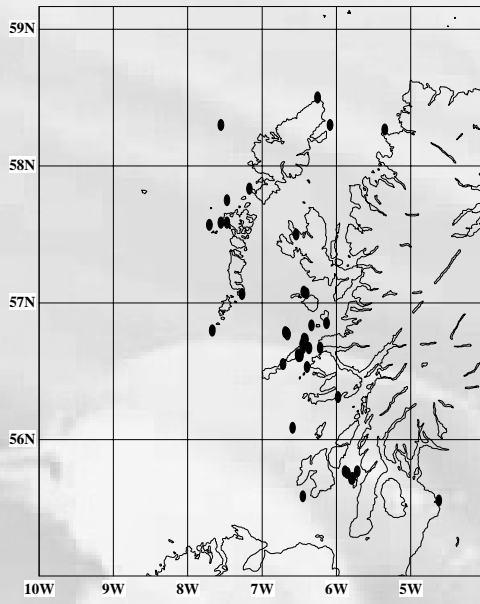
MINKE WHALE







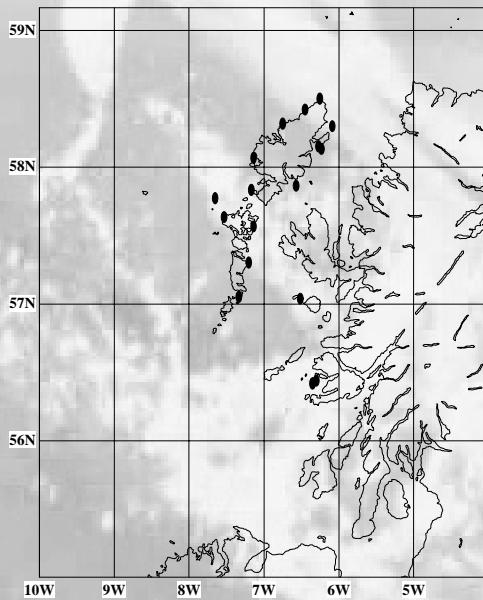
**BASKING SHARK**



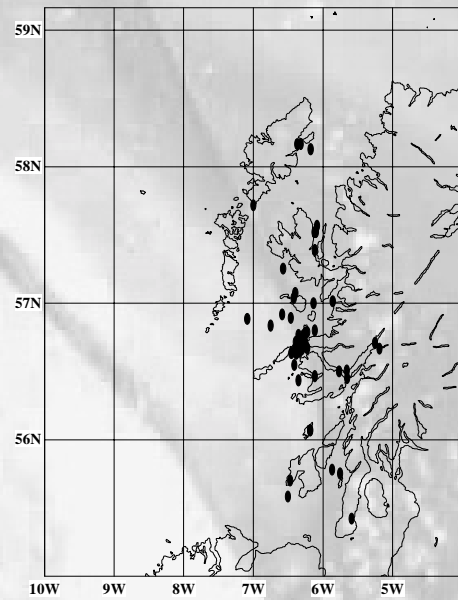
**LEATHERBACK TURTLE**



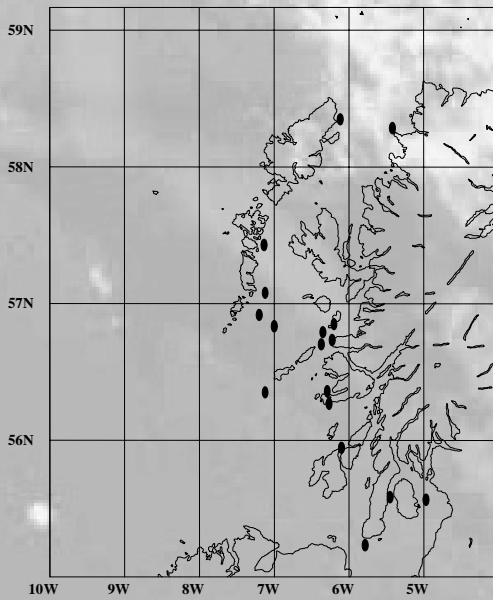
**RISSO'S DOLPHIN**



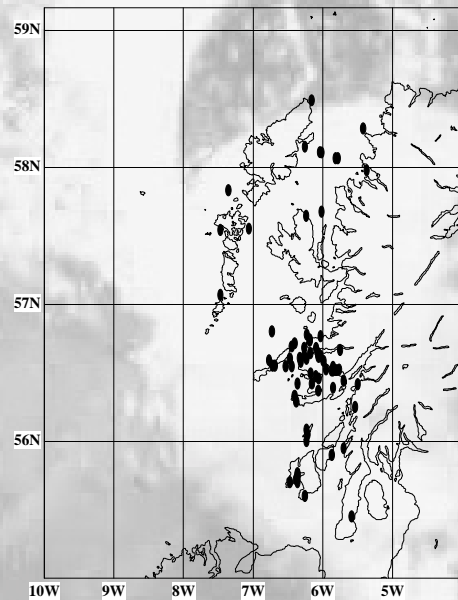
**COMMON DOLPHIN**



**KILLER WHALE**



**BOTTLENOSE DOLPHIN**





# RESEARCH

## INTRODUCTION

The past year has been a very busy one for HWDT's research department. In addition to continuing with HWDT's research on minke whales and harbour porpoises, four new research projects were launched in 1999 to investigate threats to West Scotland's whales and dolphins, to investigate the threats posed by oil spills to the Hebridean marine environment and to look at the impact of marine wildlife tourism on the Isle of Mull. These four projects are summarised in this report. The minke whale research project being carried out by HWDT is now in its tenth year and a summary of some of the project findings are also summarised.



Photo credit: HWDT

## RESEARCH PROJECTS

### WHALE & DOLPHIN CONSERVATION IN THE HEBRIDES

West Scotland is one of the top locations in Europe for sighting whales and dolphins with 24 species being recorded from the area. The health of these seas is fundamental, not only ecologically, but also to rural coastal communities who rely upon the sea for employment. However, as the range and scale of human activities increase in this area, the marine health, and consequently that of whales and dolphins living in the region, is at risk.

Juliet Shrimpton was commissioned by the Hebridean Whale and Dolphin Trust and funded by the Mammal Society to write a report which identified and brought together the many conservation issues that face whales and dolphins in West Scottish waters.

The report collated information data on the distribution of all whale and dolphin species throughout West Scotland, assessed laws currently in place to protect cetaceans and summarised threats to Scottish whales and dolphins.



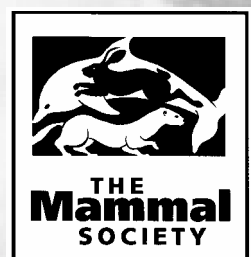
A wide range of possible threats to whale and dolphins in West Scotland have been identified. These include Norwegian whaling activities, accidental entanglement in fishing nets, pollution (from pesticides, sewage, radioactive substances and oil industry and fish farm-related chemicals) and habitat degradation. The priority issues identified by the report as needing immediate investigation were the threats posed by military and fish farming activities, both of which are widespread and have received little research into the way they effect the animals living in the Scottish seas.

West Scotland possesses a large fish farm industry which over recent years has experienced a rapid and largely unchecked expansion. As a result, a range of pollutants has entered the seas from these fish farms. These pollutants include: antibiotics, sealice treatments, antifoulants and large volumes of untreated sewage. Of more concern are the seal scaring devices that fish farms use to chase seals from fish cages. These devices chase away seals and could also effect other marine mammals such as whales and dolphins, which are even more sensitive to noises than seals. Shrimpton estimated that 8102 km<sup>2</sup> of water could be affected by these seal scarers - a major loss of whale and dolphin habitat. The species most at risk are the harbour porpoise, bottlenose dolphin and Risso's dolphin - all species which inhabit coastal waters near fish farms.

Due to its remote location the West Scotland is used extensively by the military for training exercises. In addition to the threats associated with any other marine vessels such as direct collisions and oil spills, military activities create significant additional underwater noise due to use of explosives, live-firing and sonar. Military activities are carried out year round in both inshore and offshore waters, but the level of these activities increases dramatically during tri-annual NATO training exercises. Discussion with local marine wildlife tour operators has revealed that whales and dolphins often appear to vanish from various areas during these military training exercises.

The report made several recommendations for the conservation of West Scotland's whales and dolphins. These included: a *Whale & Dolphin Protection Act for Scotland* and the adoption of an effective *Management Framework* overseeing regional whale and dolphin management groups; a series of specific actions for *Threat Minimisation*; the establishment of *Marine Protected Areas*; a programme of *Scientific Research*; and a set of *Education Initiatives*.

The Conservation Review project was  
funded by the Mammal Society







## **OIL SPILL RESEARCH**

The seas and coastline of the Inner Hebrides contain abundant populations of marine mammals, fish, shellfish and seabirds. It is a relatively undeveloped and pristine environment widely recognised for its natural beauty and conservation value. Moreover, the natural resources of the region sustain the local economy through fishing, fish farming and tourism. However, regular oil tanker traffic passes through the region, especially through the Minches. In the first five months of 1999 over a hundred tankers passed through the narrow and treacherous passages of the Minch. If one of these oil tankers were to run aground or suffer a similar accident, the resulting oil would be potentially disastrous to both the environment and economy of the region.

To address this problem, two Masters students from Herriot-Watt University were contracted by HWDT to write up oil spill contingency plans for the West of Scotland.

The first study, conducted by Ian Leaver, aimed to examine the potential for oil spill incidents in West Scotland. The study developed several oil spill accident scenarios including tanker collisions, groundings and at-sea oil discharges, in a variety of areas, including in the Minch, the Sea of Hebrides and incidents off Barra and Campbeltown. The scenarios used computer models to predict where and when oil spills would hit environmentally sensitive areas in a variety of weather and sea conditions. The study concluded that there is risk of serious oil spill incidents in West Scotland waters, with those areas most at risk being west-facing coastlines. If an oil spill was to occur within the Hebrides, due to fast currents and tidal streams, in some areas environmentally sensitive beaches and coastlines could become coated with oil within a couple of hours. Moreover, the study concluded that there is no nearby source of equipment or facilities to deal with an oil spill and by the time emergency equipment and oil dispersing chemicals could be available most of the oil spill would have already reached the coastline. Such an oil spill would not only be damaging to marine wildlife, but would seriously impact the fishing industry, with oil tainting and poisoning shellfish and farmed-fish in particular.

The study recommended that:

- oil dispersants and oil spill emergency equipment should be stockpiled in Oban to enable a fast response to oil spill incidents;
- the Oban coastguard station should be retained as it would be invaluable in providing a command centre for oil spill marine emergency response;



- tanker movements on the west coast should be under tighter controls, with satellite tags placed on tankers to enable the identification of oil spill culprits and vessels illegally discharging at sea;
- a ban on all tanker traffic should be enforced in the Minch.

The second study, conducted by Jennifer Hill, investigated the potential impacts of an oil spill on coastal and marine wildlife around the Isle of Mull. The study listed species of seabirds and marine mammals found in the area, the effects that an oil spill would have on them, their vulnerability to oil spills and how to establish priorities for their protection. The study then examined current rescue and rehabilitation techniques for these species and rescue recommendations resulting from previous wildlife rescue efforts. Finally the study identified local facilities, personnel, equipment and other information vital to mobilising and conducting an emergency oil spill clean-up operation and treating effected marine wildlife.



Map of Mull courtesy of Ronnie Leckie

One of the points highlighted by the study was that although the Mull region has many environmentally sensitive areas there has been, until this study, no consideration of how to protect these areas in the event of an oil spill. The study recommended that a forum should be set up, comprising wildlife NGOs, government bodies and local experts (such as vets) to co-ordinate oil spill responses, to arrange oil spill training and workshops, and to keep a database of oil spill facilities and personnel that could be called upon to assist in case of an emergency.

HWDT's Oil Spill Research Projects were part-funded by Scottish Natural Heritage





## **MARINE ECOTOURISM RESEARCH**

**One of HWDT's main aims is the promotion of the sustainable use of the marine environment. One of the most sustainable uses of the Mull marine environment and its wildlife is marine wildlife-watching.**

**The tourism industry is the largest employer on the Isle of Mull. To investigate the importance of marine wildlife watching (in particular whale and dolphin watching) a study was conducted by Caroline Warburton. The study, conducted during May and June 1999, was the first of its kind to be conducted on the island of Mull, and asked tourists about their reasons for visiting Mull, their activities while they were here and their overall impressions of the island.**

**The main findings were**

- Wildlife and scenery were the main reasons for visiting the island.**
- When asked to provide the most enjoyable aspect of their stay:  
42% said that seeing wildlife was the highlight of their trip, either on organised trips or unaccompanied.  
a further 30% gave the scenery or walking in the countryside.**
- When asked to provide the least enjoyable aspect of their stay:  
39% complained about the weather and the midges.  
30% mentioned tourism-associated factors such as poor roads and public transport.  
But 22% of respondents gave either 'nothing' or 'leaving' as a response.**
- Visitors tended to be middle-aged, affluent, and well-educated**
- An impressive 85% would recommend the Isle of Mull as a wildlife destination.**

**The report also studied the direct value of marine wildlife tourism on Mull - over £0.65million per year.**

**Marine wildlife tourism brings a further £8.6 million per year to the island's community indirectly through extra nights spent in accommodation and buying souvenirs.**

**There are wildlife trips on Mull to suit all budgets, interests and sea-legs. For those interested in seeing wildlife, there are opportunities to see whales, dolphins, basking sharks, puffins and seals at close quarters along with the occasional rare species such as the storm petrel, red and black throated divers.**

**The waters around Mull include some of the best whale watching areas in Europe. Eighty-three percent of respondents who went whale watching saw whales during their trips.**





The potential for marine wildlife-watching, in particular whale-watching in Western Scotland, and the positive benefits that it could bring to coastal communities must not be underestimated. People will pay considerable amounts to go whale watching in Canada and New Zealand when they can see whales and dolphins here on their doorstep.

The report recommended that more could be made of the wildlife-watching opportunities on Mull in particular and, indeed, throughout Scotland. Rather than encouraging more visitors the report proposed encouraging longer stays and lengthening the tourist season. There is a large potential for autumn and winter wildlife tourism for example, as many species are actually easier to see at this time of the year. This would increase revenue to local communities without necessarily compromising the environment or putting a strain on facilities.

These findings and recommendations come at a time when there is concern over the struggling rural agricultural industry and declining tourist numbers in the region. Tourism-related businesses are the main employer on Mull. However numbers fell by 8.2% between 1997-1998. With only 2,500 residents, tourism on Mull is obviously crucial to the island's economy and, therefore, it is crucial to ensure that it is a sustainable industry.

The growing interest in wildlife tourism globally and the diverse range of Scottish habitats and species on offer place Scotland in a position to become one of the prime nature destinations in Europe.

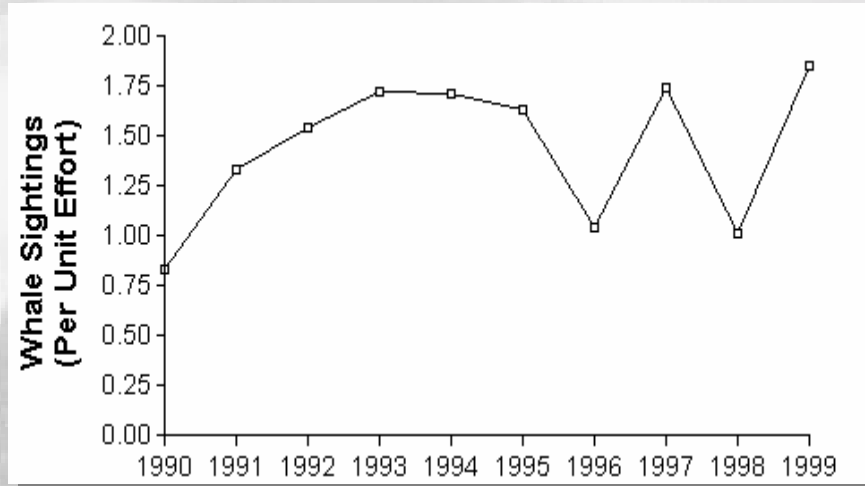


Photo Credit: Sealife Surveys



## MINKE WHALE RESEARCH

In 1999, 87 survey days were conducted, during which 161 encounters were made with minke whales, bringing the total number of minke whales encountered during the entire project to 1417. The sighting rate of minke whales in 1999 is compared with data from previous years in the figure below. As can be seen from this, there is a general increase in sightings rate as the project progresses, apart from two abnormal years -1996 and



To date, 74 individual Minke whales have been identified from photographs in the Argyll region. Four Minke whales which have been identified in previous years were re-sighted in 1999. In addition, 7 new individuals were added to the catalogue in 1999.

A total of thirty-five whales have been re-sighted over the duration of the project and the greatest number of re-sightings for any one individual being 27, over 9 years. Thirty-five of the whales have been re-sighted more than once, and of these 25 have been re-sighted in different years. This latter fact demonstrates that the whales return to the same areas year after year, i.e. they display site fidelity. Sightings and re-sightings of identified Minke whales throughout the research period are summarised in the following table.

Twenty-four whales have been sighted at least twice within any one year, 15 of these have been sighted in at least two different months in any one year. The data above suggests that Minke whales are summer residents in the coastal waters of the Hebrides.



Photo credit: Sealife Surveys







**Table summarising identified individual Minke whales showing years in which animals were re-sighted- continued.**

M-61				1	
M-62				1	
M-63			1	2	
M-64				1	
M-65				1	
M-66				1	
M-67		1		1	
M-68					2
M-69					1
M-70					2
M-71					1
M-72					1
M-73					1
M-74					1

## CONSERVATION ISSUES

As the part of the minke whale project, data relating to two possible conservation issues facing Scottish minke whales has been examined in more detail: military activity and the entanglement of whales in fishing gear and marine debris.

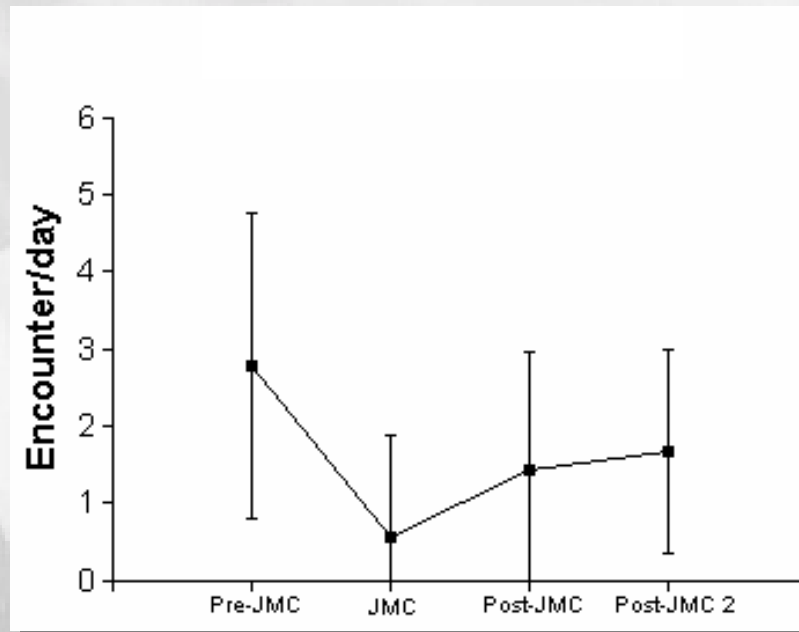
### MILITARY ACTIVITY

In addition to being an important habitat for minke whales, the current study area also experiences a considerable amount of military activity. There are submarine exercise grounds in the Sea of Hebrides and the Minches in which military sonar, both from submarines and vessels searching for submarines, is used. These sonar systems operate on frequencies used by whales and dolphins. In March, June and November, the military undertakes a joint services training exercise ('the JMC') in the Minches and Sea of Hebrides and concerns have been raised over the impacts of this exercise on cetaceans. Military jets, submarines, warships (including minesweepers and sub-hunters), landing craft, power boats and sonobouys are used during these exercises.

The sighting rates of minke whales recorded during this study were examined in relation to the summer JMC. A decrease in the sighting rate of minke whales (*Balaenoptera acutorostrata*) was noted with subsequent recoveries after the exercise had finished (see figures following). This decrease was statistically significant for minke whale sightings in 1998. Concerns over the impact of military activities upon whales led to the creation of a forum in November 1999, with representatives of cetacean NGOs and representatives of the military discussing concerns over the impacts of military activities upon cetaceans in West Scotland.



Chart showing the decrease in minke whale sightings during the Joint military training exercise (JMC)



### ENTANGLEMENT

Of the 74 minke whales in the Photo-ID catalogue, nine show evidence of entanglement in marine debris: 2 whales have plastic packing strips wrapped around their rostrums, another has a white scar thought to be caused by packing strips, 3 whales have evidence of creel ropes wrapped around their heads, 2 whales have marks on the tip of their mouths which look to be caused by physical abrasion of some sort, and 1 whale has scars around its flank. During May 1999 a minke whale was encountered, but not photographed, whose head was completely covered in green trawler netting. Entanglement in marine debris and fishing gear, is therefore a potential threat to the health of Scottish minke whales.

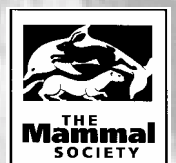
### Photographs of minke whales entangled in marine debris



Photo credit: Sealife Surveys



HWDT's Minke Whale Project is funded by the Worldwide Fund for Nature with support from the Mammal Society and Sealife





## SCIENTIFIC PUBLICATIONS BY HWDT STAFF

### *Hebridean Cetacean Papers Published in Scientific Journals*

**Gill, A.,** Fairbairns, B.R. and Fairbairns, R.S. 2000. Some observations of minke whale (*Balaenoptera acutorostrata*) feeding behaviour and associations with seabirds in the coastal waters of the Isle of Mull, Scotland. *European Research on Cetaceans* 13 (ed. P.G.H. Evans, J. Cruz & J.A. Raga), pp. 61-64. Valencia: European Cetacean Society.

**Jeewoonarain, T., Parsons, E.C.M.** and Evans, P.G.H. 2000. Operation sightings: sightings of cetaceans in the southern Hebrides, Scotland. *European Research on Cetaceans* 13. (ed. P.G.H. Evans, J. Cruz & J.A. Raga), pp. 237-241. Valencia: European Cetacean Society.

**Parsons, E.C.M., Shrimpton, J.** and Evans, P.G.H. 2000. Cetacean conservation in Northwest Scotland: perceived threats to cetaceans. *European Research on Cetaceans* 13. (ed. P.G.H. Evans, J. Cruz & J.A. Raga), pp. 128-133. Valencia: European Cetacean Society.

Benoldi, C., **Gill, A.,** Evans, P.G.H., Manghi, M., Pavan, G. and Priano, M. 1999. Comparison between Risso's dolphin vocal behaviour in Scottish waters and in the Mediterranean Sea. In *European Research on Cetaceans* 12 (ed. P.G.H. Evans & E.C.M. Parsons), pp. 109-111. Valencia: European Cetacean Society.

Rendell, L.E., Matthews, J.N., **Gill, A.,** Gordon, J.C.D. and Macdonald, D.W. 1999. Quantitative analysis of tonal calls from five odontocete species, examining interspecific and intraspecific variation. *Journal of Zoology* 249: 403-410.

### *Other Papers Published in Scientific Journals*

Barros, N.B., **Parsons, E.C.M.** and Jefferson, T.A. 2000. Prey of offshore bottlenose dolphins from Hong Kong. Submitted to *Aquatic Mammals* 26: in press.

**Parsons, E.C.M.** and Jefferson, T.A. 2000. Post-mortem investigations on stranded dolphins and porpoises from Hong Kong waters. *Journal of Wildlife Diseases* 36: 342-356.

**Parsons, E.C.M.** 1999. The determination of trace metals in whole fish from North Lantau waters, Hong Kong. *ICES Journal of Marine Science* 56: 791-794.

**Parsons, E.C.M.** 1999. Trace metal concentrations in the tissues of cetaceans from Hong Kong's territorial waters. *Environmental Conservation* 26: 30-40.

**Parsons, E.C.M.,** Kinoshita, R. and Chan, H.M. 1999. A summary of Indo-Pacific hump-backed dolphin mortality in Hong Kong: implications for the conservation of the population. In *European Research on Cetaceans* 12 (ed. P.G.H. Evans & E.C.M. Parsons), pp. 18-125. Valencia: European Cetacean Society.





**Parsons, E.C.M., Chan, H.M. and Kinoshita, R. 1999.** Organochlorine and trace metal concentrations in a Pygmy Bryde's whale (*Balaenoptera edeni*) from the South China Sea. *Marine Pollution Bulletin* 38: 51-55.

**Parsons, E.C.M., Bossart, G. and Kinoshita, R. 1999.** Necropsy of a finless porpoise calf stranded in Hong Kong. *Veterinary Record* 144: 75-76.

### **Research Theses**

**Hill, J.A. 1999.** Oil spills and marine wildlife: guidelines for a response plan for the Isle of Mull. MSc thesis. Heriot-Watt University, Edinburgh. 117pp.

**Leaver, I.D. 1999.** A contingency plan for the at sea response to an oil spill incident in the waters of the Inner Hebrides. MSc thesis. Heriot-Watt University, Edinburgh. 54pp.

**Shrimpton, J. 1999.** Cetacean conservation in the Hebrides: review and management recommendations. MSc thesis. Heriot-Watt University, Edinburgh. 122pp.

**Warburton, C. 1999.** Marine wildlife tourism and whale-watching on the Island of Mull, West Scotland. MSc thesis. University of Kent. 102pp.

### **Books & Journals**

Evans, P.G.H. and **Parsons, E.C.M.** (Eds.). 1999. *European Research on Cetaceans* 12. The European Cetacean Society, Valencia, Spain. 436pp.

### **Other Publications**

**Barry, S. and Parsons, E.C.M. 1999.** Sealife: West Scotland. *British Wildlife* 11: 127-129.

**Jeewoonarain, T. and Parsons, E.C.M. 1999.** Cetaceans: North-west Scotland. *British Wildlife* 10: 422-423.

**Gill, A. 1999.** Cetaceans: North-west Scotland. *British Wildlife* 10: 118-119.

**Gill, A. 1999.** The Hebrides - a wildlife haven. *Mammal News* 120: 12.

**Taylor, A. 1999.** Who's looking out for whales in Scotland? *Mammalaction News* 85: 6-7.



## ANNUAL ACCOUNTS 1999/2000

<b><i>INCOME</i></b>	<b>£</b>
<b>EDUCATIONAL GRANTS</b>	<b>29 909.00</b>
<b>RESEARCH GRANTS</b>	
Porpoise Project	4 380.00
Minke Whale Project	4 250.00
Conservation Review	250.00
Other research grants	450.00
<b>MEMBERSHIP</b>	<b>2 924.00</b>
<b>MERCHANDISE</b>	<b>11 136.00</b>
<b>DONATIONS</b>	<b>4 812.00</b>
<b>FUND-RAISING EVENTS</b>	<b>9 130.00</b>
<b>MISC. INCOME</b>	<b>3 267.00</b>
<b>TOTAL</b>	<b>71 508.00</b>

<b><i>IN KIND INCOME</i></b>	
<b>VOLUNTEER SALARIES</b>	<b>41 675.00</b>
<b>VAN VLISSIGEN</b>	<b>1 800.00</b>
<b>CENTRE RENOVATION</b>	<b>580</b>
<b>TOTAL</b>	<b>44 055.00</b>

<b><i>EXPENDITURE</i></b>	
<b>SALARIES</b>	<b>83 189.00</b>
<b>COMMUNICATIONS</b>	<b>6 526.00</b>
<b>MERCHANDISE</b>	<b>7 236.00</b>
<b>MANAGEMENT COSTS</b>	<b>1 547.00</b>
<b>EDUCATION COSTS</b>	<b>6 314.00</b>
<b>TRAVEL</b>	<b>3 284.00</b>
<b>SUNDRY PROJECT COSTS</b>	<b>2 599.00</b>
<b>FINANCIAL/LEGAL COSTS</b>	<b>2 941.00</b>
<b>MISC. EXPENSES</b>	<b>874.00</b>
<b>DISCOVERY CENTRE</b>	
Rent	3 000.00
Rates & water	109.00
Insurance	377.00
Heating & Light	765.00
<b>TOTAL</b>	<b>118 876.00</b>

<b>LOSS/PROFIT FOR YEAR</b>	<b>- 3 198.00</b>
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