

CC2CV

**From Cape Clear to Cape Verdes, in search of *Port na bPucaí*
and the Irish Humpback Whales**



Humpback whale fluking off Cape Verdes © Simon Berrow

CC2CV

**From Cape Clear to Cape Verdes, in search of *Port na bPucaí*
and the Irish Humpback Whales**

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Introduction

The humpback whale is one of the most popular and enigmatic of all creatures. It is famous for breaching spectacularly from the water, and the recordings of their complex and ever-changing songs made in the 1970s became well-known throughout the world.

Historically humpbacks along with many other species of whale were hunted almost to extinction, and many populations are still greatly reduced despite nearly 50 years of protection. In the North Atlantic there are thought to be 5 or 6 feeding areas for humpbacks with whales faithful to their feeding grounds each year. There are two known breeding areas.

The West Indies is one well-known breeding site but the location of the other site is still uncertain. The best guess is around Cape Verde Islands, off the coast of West Africa, but despite three attempts to record whales, no humpback whale observed off Cape Verde has been matched to a feeding ground. At the recent International Whaling Commission meeting the Committee on North Atlantic Humpback Whales agreed that the highest priority for future work was obtaining additional photographic and genetic samples from Cape Verdes to find out which animals breed there.

The objective of this work is to locate, photograph, video, record and sample humpback whales in the eastern North Atlantic, from the south coast of Ireland along their supposed migration route to breeding grounds in the Cape Verde Islands off West Africa.

This report covers Phase I of the study, from southwest Ireland to Cape Verdes including survey effort around the Cape Verde Islands. Phase II continues during 2003 where we will attempt to locate humpback whales off the south coast of Ireland.

Objectives

The objectives of this expedition are to:

- i) raise awareness and interest in Ireland of the rich diversity of whale species in Irish and Cape Verde waters,
- ii) to survey the potential migratory path of humpbacks from Ireland to the Cape Verdes,
- iii) photograph tail flukes of humpback whales around Cape Verdes
- iv) record humpback whales singing on their breeding grounds,
- v) collect genetic samples of humpback whales around Cape Verdes,
- vi) contribute to the knowledge of cetaceans around the Cape Verde Islands.



Humpback whale © Simon Berrow

Humpback whales off Ireland and Cape Verdes

There have been few contemporary sightings of humpback whales in Irish waters (Rogan, 2000) although they would have been much more abundant in the past before over-exploitation devastated populations in the North Atlantic. The suggestion that humpback whales may have been more abundant in Irish waters is captured by the beautiful slow air, *Port na bPucaí* (translated as “Music of the Fairies”), from Inishvickillane Island in the Blaskets, Co Kerry. Legend tells that three islanders were rowing back to Inishvickillane when they heard these strange sounds emanating from the hull of their currach. One islander, a fiddler, picked up his bow and played along to this eerie sounds, thought to have been made by fairies. Many years later the connection was made between *Port na bPucaí* and the song of the humpback whale. Maybe it was indeed *Port na bPucaí* – the sound of the fairies – or perhaps the islanders heard a singing whale heading south to breeding grounds.

Irish waters may represent part of a migratory pathway for humpback whales, at least some of which originate in Norwegian, and possibly Icelandic, waters or an historical summer feeding ground. Most North Atlantic humpback whales breed in the Caribbean (Stevick et al., 1999) but not all the whales observed on summer feeding grounds have been located in the Caribbean suggesting another breeding ground exists.

Recent monitoring of underwater hydrophones located off the western seaboard has shown there is a passage of singing humpbacks between mid-October and late March, all heading south (Anon, 2000). Their migratory destination remains uncertain; they may well be bound for the Cape Verde Islands not the Caribbean, but there is no contemporary scientific data to confirm this hypothesis. Although around 5,300 individual whales are included in this catalogue only 26 of these individuals were photographed in Cape Verde Islands and none of these had, until recently, been matched to a summer feeding ground (Carrilo et al., 1999; Jann and Wenzel, 2001). Recently one humpback whale photographed in Cape Verde Islands has been observed off the Norwegian coast (Jann, B. unpublished data).

Previous expeditions to Cape Verde have demonstrated the feasibility of studying humpback whales and the collection of photographic and genetic samples, but some have been restricted by inclement weather. There is recent evidence that suggests humpback whales calve in Mordiera Bay on the southwest of Sal, and in Bahia Sal Rei by the Baixo Ingles in the west of Boavista.

The International Whaling Commission Sub-Committee on the Comprehensive Assessment of North Atlantic Humpback whales agreed in 2000 that “the highest priority for future data collection was obtaining additional photographic and genetic samples from Cape Verde Islands to elucidate the question of stock identity of animals which breed there” (Anon, 2001).

With this in mind the Irish Expedition to Cape Verdes in 2003 attempted to contribute to the knowledge of humpback whales in the North Atlantic.

Study Partners

This study was carried out by the Irish Whale and Dolphin Group in collaboration with Saoirse SeaSports and Ergo Films.

The Irish Whale and Dolphin Group (IWDG) is Ireland's premier group dedicated to the study and conservation of cetaceans in Irish waters and have been recording cetacean stranding and sightings since 1991. Dr Simon Berrow is a founder member and Chair of the IWDG and has been working on cetaceans in Ireland since 1989. He has carried out a number of cetacean surveys in Irish waters and in the Southern Ocean. For more information on the Irish Whale and Dolphin Group see www.iwdg.ie



Saoirse SeaSports own the Anna M is a 13.6m long schooner which carried out dolphin-watching in the Shannon estuary during the summer months. The Anna M has also carried out more extensive trips, including a pelagic study of common dolphins in August 2001. The Anna M is skippered by Joe Aston who has over 40 years of sailing experience. For more information see www.gannetsway.com.



ErgoFilms is an independent film company whose Director, Tony Whelan, is a documentary filmmaker. Having trained at the BBC, Tony has worked in broadcast television for over a decade and is currently working on a number of documentaries including CC2CV and the Search for the Irish Blue whales.



Methods

Cruise plan

The survey design was broken into four phases. Phases I to III were largely designed to transit the Anna M to the Cape Verdes along some of the potential migratory route of whales. Once in Cape Verdes the islands were surveyed for humpback whales (Phase IV), the actual survey route depending on the weather conditions and prevailing winds.

Phase I: Departed Baltimore, Co. Cork in November 2002 to sail to Southern Spain.

Phase II: Departed La Rompedo, Spain in February, 2003 for the Canary Islands.

Phase III: Departed Gran Canaria in March 2003 for the Cape Verde Islands.

Phase III: One month (April, 2003) survey time in Cape Verdes.

During passage to Cape Verdes, cetaceans were recorded opportunistically. The latitude and longitude was recorded when first sighted.

In Cape Verdes a continuous watch for cetaceans was maintained during daylight hours. Whenever possible one dedicated observer was stationed on the bow, or if the weather was too rough, on the wheelhouse to watch for cetaceans. The position of each sighting was recorded by entering a waypoint into a handheld GPS (Garmin eTrek). For humpback whales the position was marked as close to the actual whale as possible.

Photo-identification

Humpback whales have distinctive markings on the underside of their tail flukes, which can be used to identify individual animals. A catalogue of tail flukes (North Atlantic Humpback Whale Catalogue) is maintained by the College of the Atlantic in Bar Harbor, Maine. An attempt was made to obtain images of tail flukes from the Cape Verdes. A Canon EOS50 camera with 80-300 and 200-500mm lenses was used and 200-400ASA Kodachrome film. The position, behaviour, relative size and the number of associated whales was recorded during each encounter.

Acoustic monitoring and recording

Recordings of humpback whales were made with a HP30 hydrophone which was towed behind the survey vessel. On passage every 30 minutes the hydrophone was monitored for 3 minutes via headphones. This meant that in total 10% of transit time was monitored. If any vocalisations or dolphin clicks and whistles were heard they were recorded onto a Sony TCD-D8 DAT recorder.

When amongst humpback whales recordings of humpback vocalisations were made for as long a period as possible, preferably uninterrupted. If the background noise became loud, or the songs, faint, high pass filters were used to try and minimise background noise or, if too intense, recordings were stopped.

Genetic samples

It was hoped that samples of sloughed skin could be obtained for genetic analyses. A fine mesh net and snorkel equipment was carried in order to enter the water to collect skin, if the opportunity presented itself.

Raise awareness in Ireland and Cape Verdes

After from the pre-departure publicity, we intended to provide frequent updates from the research vessel on the progress of the expedition. These logs and images were sent digitally to the IWDG webmaster who placed them on a dedicated webpage on the website www.iwdg.ie and also the Saoirse SeaSports website, www.gannetsway.com. Live uplinks with national radio in Ireland was also scheduled during the survey period in Cape Verdes. Contact was to be made in the Cape Verdes with local research workers and government agencies to identify possible opportunities to promote marine biodiversity and whalewatching in the island archipeligo.

Film producer Tony Whelan accompanied the research vessel throughout the expedition in order to make a film documentary of the survey.



Anna M surveying whales off Boavista © Tony Whelan



Humpback whale surfaces next to the Anna M © Tony Whelan

Results

On passage to Cape Verdes from Baltimore, Ireland

The Anna M departed Baltimore on 23 October 2002 for Portugal. The weather conditions during the first 4-5 days were severe. During the crossing of the Bay of Biscay the Anna M suffered damage to five ribs in the vessels bow and had to seek emergency repairs in Northern Portugal. After temporary repairs the vessel continued to La Rompedo in Southern Spain where the boat wintered and full repairs were carried out during January and February.

Table 1. Summary of trip records for Phases I to IV of CC2CV.

Phase	Journey	Dates	Distance	Sightings	Species
Phase I	Baltimore-Spain	23.10.02-9.11.02	1152.7	18	CD/BND/LFPW/UnidD
Phase II	Spain-Canary Islands	11.03.03-16.03.03	872.8	9	CD/UnidD
Phase III	Canary Islands-Cape Verde Islands	21.03.03-28.03.03	912.5	7	CD/SD/SFPW/UnidD/UnidW
Phase IV	Cape Verde Survey	29.03.03-23.04.03	778.2	30	HW/RTD/SFPW/UnidD

CD=Common dolphin *Delphinus delphis*, Rough-toothed dolphin *Steno bredanensis*, BND=Bottlenose dolphin *Tursiops truncatus*, SD=Spotted dolphin *Stenella attenuata*, LFPW=Long-finned Pilot whale *Globicephalus melas*, SFPW=Short-finned Pilot whale *Globicephalus macrorhynchus*, humpback whale *Megaptera novaeangliae*, UnidD=Unidentified dolphin, UnidW=Unidentified whale.

Phase II was a 872 nautical mile (1500km) sail to the Canary Islands where the vessel was fully provisioned with food and water for the journey to Cape Verdes (Phase III). The journey to Cape Verdes took nine days with Palmeira on the Isle of Sal the destination. The journey from Baltimore was a total of 2938 nautical miles ((5288km) and was completed in 28 days sailing at an average speed of around 4-5 knots.

The main species sighted during passage was common dolphins *Delphinus delphis*, with spotted *Stenella attenuata* and bottlenose dolphins *Tursiops truncatus* also recorded. Only one baleen whale was observed but this was not identified to species level.

Maps of the route taken are available on this CD can be viewed with Garmin MapSource© software.



Common dolphin bowriding © Joe Aston



Sunset in Boavista © Joe Aston











Cape Verde Islands

The Anna M arrived in Palmeiro on Sal in the Cape Verdes on 28 March. During the following 25 days of survey time in the Cape Verdes, 15 days were spent at sea searching for whales. Four days were lost with a broken engine which was finally repaired in Mindelo, Sao Vicente and 3 days on anchor during very heavy swell in Sal Rei, Boavista.

Of the 15 days at sea, 4 days were spent on passage between Sal-Boavista and Boavista-Sao Vicente and Sao Nicolau. Eleven days were spent searching for humpback whales off Boavista, which is widely acknowledged as the best location in Cape Verdes for encountering this species. An attempt was made to survey the waters between Sal and Boavista and Boavista and Sao Vicente however strong winds (up to Force 6/7) meant sea conditions were rarely favourable (Table 2).

Table 2. Summary of routes and sighting locations during 15 days at sea in the Cape Verdes.

Date	Location	Distance travelled	Seastate	Route and location		
29 March	Palmeiro on Sal-Boavista	40.7	2	robot Docum		
30 March	Boavista	28.9	1/2	robot Docum		
31 March	Boavista	-	-	Ashore		
1 April	Boavista-Sao Vicente	180.1	3/4	robot Docum	robot Docum	robot Docum
2-7 April	Mindelo	-	-			
8-9 April	Santa Antao	-	-			
10 April	Mindelo-Tarrafel on Sao Nicolau	66.7	3/4	robot Docum	robot Docum	
11 April	Tarrafel-Boavista	107.5	3	robot Docum	robot Docum	
12 April	Boavista	32.8	3	robot Docum		
13-14 April	Boavista	-	-	Storm bound		

15 April	Boavista	27.7	4	 robot Docum		
16 April	Boavista	46.2	3	 robot Docum		
17 April	Boavista	40.6	3	 robot Docum		
18 April	Boavista	67.0	3	 robot Docum	 robot Docum	
19 April	Boavista	39.5	3	 robot Docum		
20 April	Boavista	20.2	2/3	 robot Docum		
21 April	Boavista	24.3	2/3	 robot Docum		
22 April	Boavista-Santa Maria on Sal	37.8	3	 robot Docum		
23 April	Santa Maria-Palmeiro	18.2	2/3	 robot Docum		

Cetaceans encountered in the Cape Verde Islands

A summary of cetacean sightings and acoustic detections are presented in Table 3. During 15 days at sea there were 19 encounters with humpback whales and ten with other cetacean species.

Rough-toothed dolphins *Steno bredanensis* were the most frequently encountered dolphin species. Sperm whales *Physeter macrocephalus* were only detected acoustically, on 11 March in deep water, about 20 nautical miles to the west of Boavista.

Table 3. Whale and dolphin encounters around the Cape Verdes, 29 March-23 April, 2003.

	Sighting	Date	Location	Position	Numbers
HP1	Humpback whale	29.03	Boavista	N16 14.068 W22 57.980	6-12
RTD1	Rough-toothed dolphin	30.03	Boavista	N16 12.248 W22 57.790	6-10
HP2	Humpback whale	30.03	Boavista	N16 13.369 W22 58.642	2
HP3	Humpback whale	30.03	Boavista	N16 15.158 W22 58.372	4
HP4	Humpback whale	30.03	Boavista	N16 07.955 W22 55.550	3
RTD2	Rough-toothed dolphin	30.03	Boavista	N16 11.454 W22 57.078	15-20
HP5	Humpback whale	01.04	Boavista	N16 14.738 W22 59.516	3-4
HP6	Humpback whale	01.04	Boavista	N16 13.221 W22 59.067	1
HP7	Humpback whale	01.04	Boavista	N16 10.058 W23 00.050	1
HP8	Humpback whale	01.04	Boavista	N16 12.235 W23 00.258	4
HP9	Humpback whale	08.04	Santo Antao	N17 12.193 W25 05.731	3
PW1	Pilot whales	10.04	Santa Luzia	N16 39.000 W24 48.000	2-3
Unid1	Unidentified dolphins	10.04	Sao Vicente	N16 34.000 W24 23.000	?
SpW1	Sperm whale	11.04	Nr Boavista	N16 15.221 W23 19.884	?
SpW2	Sperm whale	11.04	Nr Boavista	N16 14.521 W23 17.409	?
SpW3	Sperm whale	11.04	Nr Boavista	N16 13.862 W23 14.803	?
SpW4	Sperm whale	11.04	Nr Boavista	N16 13.070 W23 12.000	?
HP10	Humpback whale	12.04	Boavista	N16 12.357 W22 57.081	1
HP11	Humpback whale	15.04	Boavista	N16 10.020 W22 58.850	2
HP12	Humpback whale	16.04	Boavista	N16 10.020 W22 58.850	1
HP13	Humpback whale	18.04	Boavista	N15 55.682 W22 56.923	1
Unid2	Unidentified dolphins	18.04	Boavista	N15 53.824 W22 56.052	?
HP14	Humpback whale	19.04	Boavista	N15 55.682 W22 56.923	1
RTD3	Rough-toothed dolphin	19.04	Boavista	N16 11.567 W23 00.380	5
HP15	Humpback whale	19.04	Boavista	N16 11.529 W22 58.841	1
HP16	Humpback whale	20.04	Boavista	N16 09.398 W22 57.205	2
HP17	Humpback whale	21.04	Boavista	N16 09.242 W22 57.382	1
RTD4	Rough-toothed dolphin	21.04	Boavista	N16 09.321 W22 56.257	3
HP18	Humpback whale	22.04	Boavista	N16 09.672 W22 56.880	2
HP19	Humpback whale	22.04	Boavista	N16 12.004 W22 59.917	1

Humpback whales

All sightings of humpback whales with the exception of one off Ponto do Sol on the northwest corner of Santa Antao were off the west coast of Boavista. Encounters with humpback whales included a sighting as whales could be heard singing off Boavista for a large period of the time at sea in this area.

The mean group size was 1.9, with groups up to four whales observed. One adult with a young calf was recorded in Bhai de Sal Rei on 30 March and off Calheta do Velho on 22 March. These were likely to be the same whales but no fluke shots were obtained on either encounter.

The location of humpback whale sightings is shown in Figure 1. HP4, HP16 and HP18 were an adult with young calf and likely to be the same individuals. Whales were heard singing in two-

thirds of these locations suggesting most of them are breeding males. Although the area to the south was surveyed both visually and acoustically, only one whale was observed off the southwest coast near to Pta Lacacao in Bhai do Curralinho (HP14).

The distribution of these singing males is quite regular, and about 1-2 nautical miles apart. It seemed reminiscent of a lek, with males holding a singing territory in order to attract a potential mate.



Humpback whale © Simon Berrow



Fig. 1 Humpback whale sightings off Boavista

A number of fluke shots and recordings were taken during the survey period (Table 4). Fluke shots from 12 individual whales were obtained, all from an area off the western side of Boavista. These images have been submitted to the North Atlantic Humpback Whale Catalogue and to Beatrice Jann of the Swiss Whale Society, to see if any matches can be obtained.

Around 3 hours of humpback whale vocalisations were recorded. No analyses of these recordings have been carried out to date.



Tarrafal on Sao Nicolau © Joe Aston



Expedition team filming humpback whales © Joe Aston

Rough-toothed dolphins

Rough-toothed dolphins were the most frequently encountered dolphin species. They were recorded on four occasions near to Boavista. Group size varied from 3 to 20 individuals and included a young calf (born this year) on one occasion. Vocalisations were recorded on three occasions but for only a short duration.



Fig. 2. Distribution of rough-toothed dolphin sightings off Boavista.

Awareness raising

Considerable publicity on this expedition was gained helping to raise awareness of whales and dolphins in Ireland and Cape Verdes. Articles in national newspapers were published prior to and during the expedition and features written in specialised wildlife publications (see Appendix II). Radio interviews, including a live link up with the research vessel in Cape Verdes were also delivered.

The expedition had its own page on the Irish Whale and Dolphin Group website (www.iwdg.ie/cc2cv) on which regular logs were posted during the trip. During the month in Cape Verdes 20 logs were posted on the webpage, complete with images. These logs are still available.

The documentary is still being produced as it will feature humpback whales off the south coast of Ireland, which are still to be filmed this summer.

Although it is hard to quantify the impact of this publicity the showing of a hour long documentary (scheduled for the spring 2004) on national television is expected to draw great attention to this work.

Table 4. Images and acoustic recordings obtained in Cape Verdes, 29 March-23 April 2003.

	Images Film (Frames)	ID Catalogue No.	Acoustic Tape (Time)	Behaviour	Comments
HP1	1(4-17)	CVIHump01	1(00:24-36:22)	Breaching/Pec Slapping	
RTD1	-		1(37:12-49:55)	Bowriding	
HP2	1(16-36)	CVIHump02 CVIHump03	1(49:55-51:00)		Fluke shots
HP3	2(1-20)	CVIHump04 CVIHump05 CVIHump06	1(51:00-54:40)	Logging	Calf/Juv present (dark fluke)
HP4	2(21-27)	CVIHump07	1(54:40-57:30)		Adult and calf present
RTD2	2(28-32)		1(57:20-1:00:19)	Bowriding	At least 1 calf
HP5	2(33-36)		-	Fluking	Fluke (F30)
HP6	3(1-3)	CVIHump07	-		1 small individual (juv?)
HP7	3(7-9)	CVIHump08	-	Fluking	Fluke shots
HP8	3(11-12)	CVIHump09 CVIHump10 CVIHump11	-	Breaching	BJ next to breaching ind.
HP9	-		-	-	Off Santo Antao, 1 calf present
PW1	-		2(00:00-02:00)		Surfaced near boat
Unid1	-		-		At night
SpW1-4	-		2(02:00-17:00)		At night
HP10	-		2(17:00-1:32:40) 3(00:00-20:00)		Breached after 15 mins
HP11	-		3(20:00-55:00)	Pec	No fluking
HP12	-		3(55:00-1:30:00) 4(00:00-33:00)		No fluking
HP13	-		-	Pec	No fluking
Unid2	-		4(33:00-35:00)		Acoustic only
HP14	-		4(35:00-1:21:00)		
RTD			4(1:21:00- 1:25:17)		
HP15	4(18-19)		-		Surfaced once
HP16	4(20-36)		-		Adult and calf, no fluking
HP17	5(1-13)	CVIHump12	-	Breaching	
RTD4	-		-	Bowriding	
HP18	5(14-21)		-		
HP19	5(22-26)		-		Fluke shots



Fixing ripped sails © Joe Aston



Sailing to Sao Vicente in gale force winds © Tony Whelan

Summary

The proposed expedition to Cape Verde in search of humpback whales (CC2CV) was successful. A yacht was sailed nearly 3,000 nautical miles to the Cape Verde and humpback whales were encountered.

Fluke shots of 12 individuals were obtained and have been submitted to the North Atlantic Humpback Whale Catalogue for matches. Over 3 hours of humpback whale vocalisations were recorded and await analyses. The data collected from CC2CV will be made available to international research programmes on humpback whales. Awareness of whales off Ireland and Cape Verde was also raised significantly and links made with the Cape Verde Marine Institute, which will facilitate future collaboration.

The potential for whale research and the development of wildlife tourism, including whalewatching, has been demonstrated and has the potential to contribute significantly to the local economy of the Cape Verde, especially Boavista.

This report covers phase I-IV of CC2CV which involved sailing to the Cape Verde Islands in search of humpback whales. The second part of this work programme occurs off the south coast of Ireland during 2003. This programme involves surveying coastal waters for humpback and fin whales and will be completed by December 2003.



Humpback whale blowing © Simon Berrow

Acknowledgements

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Appendix I: Photo-identification catalogue of humpback whales from Cape Verdes



CVI Hump01



CVI Hump02



CVI Hump03



CVI Hump04



CVI Hump05



CVI Hump06



CVI Hump07



CVI Hump08



CVI Hump09



CVI Hump10



CVI Hump11



CVI Hump12

Appendix II: CC2CV articles and publicity

1. A promotional flier for CC2CV was printed and widely distributed (Print Run 1000).

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2. A number of articles were written or commissioned by national newspapers on the expedition and survey.

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3. Articles were written for specialist publications.

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4. Radio Interviews were given for a number of national RTE programmes including Seascapes (50,000 listeners) prior to departure and a live up link with Mooney goes Wild (120,000 listeners) from the Cape Verdes.