

WHALE-WATCHING IN THE CANARY ISLANDS

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(Submitted by Spain)

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INTRODUCTION

The Canary Archipelago is a group of oceanic islands located 100 Km. off the northeast African coast in the Atlantic Ocean. It is comprised of 7 major islands that differ considerably in their climatic conditions and geomorphologic characteristics. The region is considered a top tourist destination. Daily direct flights to different European cities and a good regional air and ferry transportation network ensure easy accessibility to and between the islands. In its unique natural environment, the Archipelago offers ideal conditions to carry out activities related to the observation and study of cetaceans and their habitat. Several facts have contributed to the spectacular development of the whale-watching¹ industry here: rich cetacean biodiversity; all-year-round favourable climatic conditions; numerous well equipped tourist facilities and wide range of services available for the visitor; quick and easy access to the whale-watching spots; and high carrying passenger capacity and sighting rate. Additionally, one of the most advanced WW regulations worldwide was implemented in order to minimise the negative impact of the activity. In this scenario, the industry has turned into a mature, competitive market. Here, international tour operators play an important role and a wide variety of WW products and operator companies coexist. Monitoring, research and educational programs have been supported by the public hand as key issues to ensure the conservation of the marine natural resources and increase public awareness.

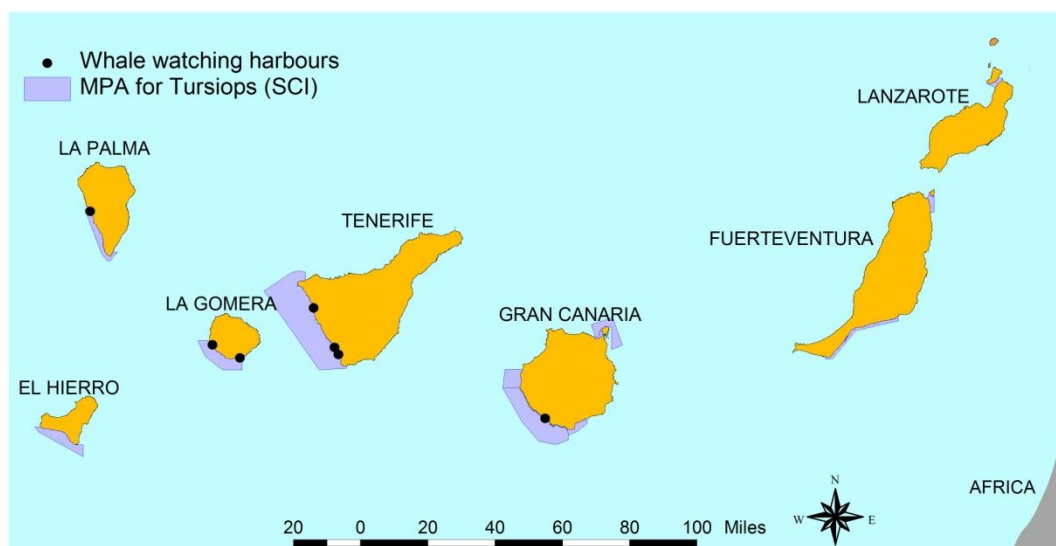


Figure 1. Canary Islands Archipelago

¹ Hereafter, also “WW”

1. ORIGINS AND EVOLUTION OF WW IN THE CANARY ISLANDS

Whale-watching activities (or its demand) were triggered in the Canary Islands by the first known filmed document of Tenerife's short-finned pilot whale community, made public by Jacques Cousteau in the late 80s. Then, local fishermen and private boat owners started to offer WW excursions (in response to the existing demand) as a supplementary source of income.

First official activity records date back to the mid 90s. Nowadays, WW is offered in four islands: Tenerife, Gran Canaria, La Gomera and La Palma.² The industry has evolved differently on each island, with most representative changes occurring in Tenerife. Since its beginnings, the industry has undergone different phases here: uncontrolled explosion, qualitative changes in adaptation to market conditions and quantitative consolidation. During 1996, the number of dedicated vessels increased significantly as a continuation of previous years' trend. This represents the explosion phase of an unstable market with broad outlook and coincides with the application of the WW regulation. The changes introduced and the expectations created by the first promulgated decree gave way to a stabilization phase after an all-time-high of 60 authorizations in 1997. This year marked a turning point for the industry that lead to a gradual decrease in the number of dedicated vessels and operator companies. The intense competitiveness and the new legal framework caused the market to self-regulate, affecting some operators and opportunistic private boat owners with irregular activity.

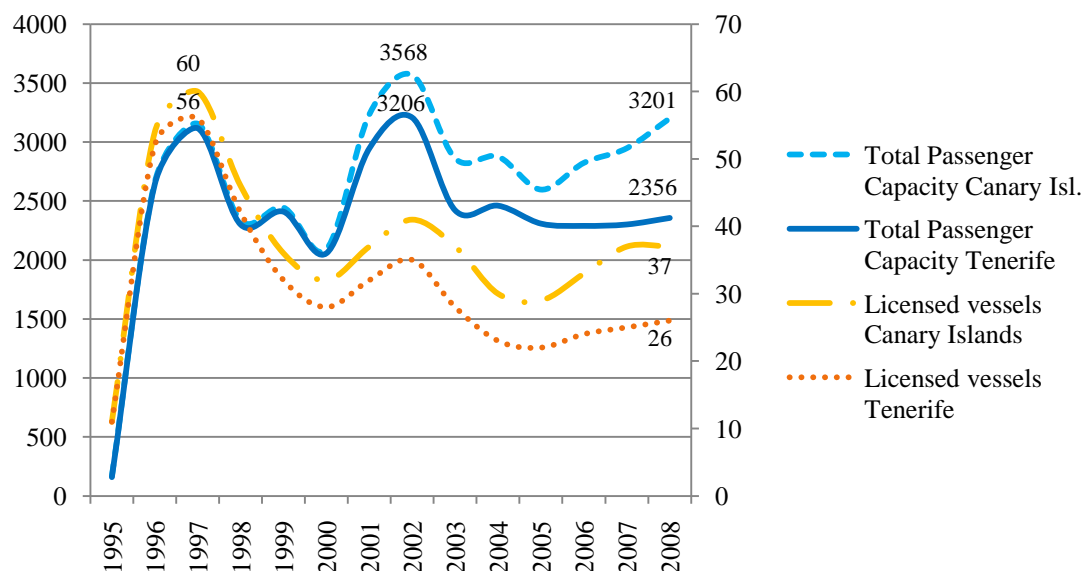


Figure 2: Total passenger capacity vs. no. of licensed vessels in Canary Islands & Tenerife (1995-2008)

Over the years, the number of licensed vessels and the total passenger capacity have gradually decreased in Tenerife, which still concentrates approximately 75% of the industry activity (Figure 2). On the other hand, data show an increase in the average boat capacity of active vessels. Driven by WW operators that strengthened their business-relationship with mass-tourism agents, the industry here focused on bigger boats with higher passenger-capacity, which gradually replaced the smaller ones in response to the growing visitor volume. In 2004, the average boat capacity reached an all time high of 107 pax. Nowadays, there are signs of slight decline, with data showing less active vessels and a comeback of smaller boats (Figure 3). On other islands, activity started later and has remained stable, untouched by mass tourism circuits. In the case of newcomer Gran Canaria, although it has not completely turned into a huge mass-

² Sporadically, authorized touristic WW services have been offered in Lanzarote as well.

tourism business, WW here has rapidly grown and strengthened its link to international tour-operators during the last few years.

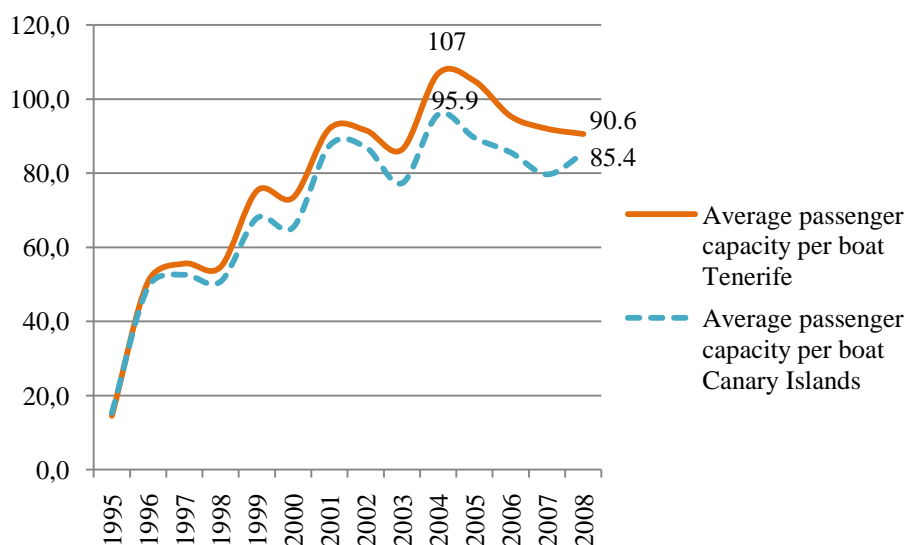


Figure 3: Average passenger capacity per boat in Canary Islands & Tenerife (1995-2008)

Visitor and direct income numbers have been estimated for several years since 1991, as an indication to assess the impact of the WW industry on local economy:

Year	No. of Whale watchers	Revenues per ticket selling only	Reference
1991	40,000	\$ 1,144,000 ³	Hoyt, E. (1995)
1994	250,000-600,000	\$ 7,150,000 ⁴	Hoyt, E. (1995)
1995	500,000	9,015,082 €	Urquiola, E. (1996)
1996	700,000	12,020,242 €	Montero, R. & Arechavaleta, M. (1997)
1997	1,000,000	12,022,626 €	Urquiola, E.; Martín, V. & Iani, V. (2000)
1998	-	16,227,326 € ⁵	Brito et al. – ULL (2000)
2001	437,684 ⁶	12,755,379 €	Elejabeitia, C.; Servidio, A.; Iani V. & López, T. - Sociedad Española de Cetáceos (SEC)(2002)
2002	394,388 ⁶	11,958,305 €	Ídem
2003	475,585 ⁶	16,578,036 €	Elejabeitia, C. & Servidio, A. - Sociedad Española de Cetáceos (SEC)(2004)
2008	625,000	19,800,000 €	Present report

Table1: WW visitor and direct revenue evolution in the Canary Islands (1991-2008)

³ 925,725 € at an 1991 USD-ECU average exchange rate of 0.809

⁴ 6,041,750 € at an 1994 USD-ECU average exchange rate of 0.845

⁵ 2,700,000,000 Pts

⁶ Value for Tenerife only

Business has gained in complexity and service quality requirements have become more demanding. Thus, not only WW operator companies but also professionals and additional service providers directly linked to the industry have benefited from its gradual expansion over the years. Further, the natural resources involved have caught the attention of other professionals as well. This has had an evident multiplying effect on local economies, especially in the case of Tenerife. Consequently, social benefits (public awareness, cooperation, cultural growth), which are difficult to quantify, have to be taken into account when considering the evolution of the impact on Canary local communities. In general terms, cooperation of the WW industry with research, educational activities have become more accepted and well considered with time. Despite the historical distant relation of the Canary people to the sea and the mass-tourist industry, the WW industry and the activity itself have both strengthened reasonably their connection to the local population. One of the reasons for this can be found in the ample display of awareness-raising, formative, and cultural activities related to cetaceans and their habitat developed by public institutions and private organizations.

2. ACTIVITY AREAS AND TARGET SPECIES

WW activity in the Canaries is carried out in areas that are located off the islands' southwest coasts. Sheltered from the typical trade winds due to the so-called "island-mass" effect, their waters benefit from the Canary Islands Stream, a branch of the Atlantic Gulf Stream that drives cold water masses towards the archipelago. Since the islands lack of a significant oceanic platform, there is also an "upwelling" effect occurring here that thrusts nutrient-rich deep waters towards the sea surface. Moreover, these areas benefit from mild weather conditions and stable water temperatures. Thus, they provide an ideal habitat for cetaceans to rest, feed, socialize and breed.

Areas used for WW are part of broader protected extensions that have been declared SCI (Site of Community Importance) for NATURA 2000, the European net of Special Areas of Conservation of natural habitats and species:

- In Tenerife, the SCI "Franja marina Teno-Rasca" (LIC ES7020017) extends over 69,500 Hectares, along approximately 75 Km. of coast. There are 3 departure ports for whale-watching operator companies along this strip, located in three of the most important tourist destinations on the island: Los Gigantes (municipality of Santiago del Teide), Puerto Colón (municipality Adeje) and Los Cristianos (municipality Arona).
- In Gran Canaria, Puerto Rico (municipality of Mogán) is port of call for WW service providers. The activity takes place in the SIC "Franja marina de Mogán" (LIC ES7010017), which covers 29,993 Ha and borders on the island's main tourist destination, Maspalomas.
- In La Gomera, the activity is carried out in the SCI "Franja marina Playa de Santiago - Valle Gran Rey" (LIC ES7020123). Excursions start in Port Vueltas (municipality of Valle Gran Rey) and the port of Playa de Santiago (municipality of Playa de Santiago). The area extends over 13,139 Ha along approximately 26 Km. of coast.
- La Palma has a single port of call, Tazacorte. From here, the only WW operator departs to the nearby SCI "Franja marina de Fuencaliente" (LIC ES7020122) to offer his service. The marine protected area (MPA) extends over 7,055.20 Ha and 29 Km. of coast here.

These are MPA due to existence of two priority threatened species: Bottlenose dolphin (*Tursiops truncatus*) and Loggerhead turtle (*Caretta caretta*). They also host other important protected natural resources such as sea grass prairies (*Cymodosea nodosa*) and include habitats representative of coastal biodiversity. Canary Islands waters, specially its WW areas, are also known for the continuous presence of other species of sea turtles and sea birds. Two other facts

are decisive to explain the uniqueness of Canary Island's waters and their importance for WW: the existence of stable communities of cetaceans and the high number of different species that have been registered (up to 26, seven of which were registered as stranding)⁷. In WW areas, species and seasonality vary from island to island:

- Tenerife is known for its stable communities of Short-finned pilot whale (*Globicephala macrorhynchus*) and bottlenose dolphin (*Tursiops truncatus*), which can be seen all year round. Other species, like Bryde's whale (*Balaenoptera edeni*), Fin whale (*Balaenoptera physalus*), Atlantic spotted dolphin (*Stenella frontalis*), Blainville's beaked whale (*Mesoplodon densirostris*) and Cuvier's beaked whale (*Ziphius cavirostris*) can be seen seasonally. Less frequently sightings have been made: Rough-toothed dolphin (*Steno bredanensis*), Sperm-whale (*Physeter macrocephalus*), Sei-Whale (*Balaenoptera borealis*), Striped dolphin (*Stenella coeruleoalba*), Common dolphin (*Delphinus delphis*), including even a few of Humpback whale (*Megaptera novaeangliae*) and one Northern Right-Whale (*Eubalaena glacialis*).
- Efforts in Gran Canaria aim at resident groups of bottlenose dolphin and Rough-toothed dolphin. Other species can be found seasonally (Striped dolphin, Common dolphin and Atlantic Spotted dolphin) or can be sighted at larger distances off coast (Short-finned pilot whale, Bryde's whale) or just occasionally (Sperm whale).
- La Gomera has the highest recorded number of different species sighted, but Short-finned pilot whale (off-coast) and Bottlenose dolphin remain priority target species for WW. Rough-toothed dolphin, Atlantic spotted dolphin and Bryde's whale are also very common in the area. Other present species are Fin whale, Common dolphin, Blainville's and Cuvier's beaked whale and, less frequently, Sperm Whale and Sei whale (*Balaenoptera borealis*). There are references of two anecdotic sightings of Blue whale (*Balaenoptera musculus*) and Northern Right whale.
- In La Palma, the two most frequent species are Bottlenose dolphin and Rough-toothed dolphin. Short finned pilot whales and spotted dolphins are also somewhat frequent, together with Common dolphins. Sporadically, beaked whales, Sei, Bryde, Fin, Sperm whales can be seen, as well as striped dolphins.

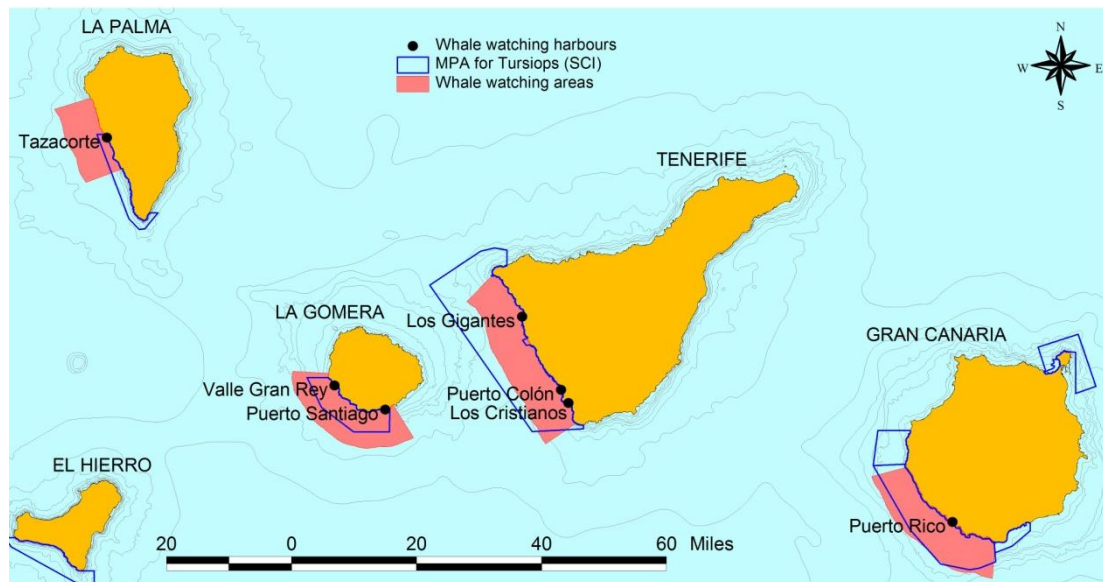


Figure 4. WW areas and ports of departure

⁷ Martín, V.; André, M.; Herrera R. & Fernández-Palacios, J. in MORO, I., MARTÍN J.L.; GARRIDO M.J. & IZQUIERDO, I. (eds.) 2003. *Lista de Especies Marinas de Canarias (algas, hongos, plantas y animales)* 2003. Consejería de Política Territorial y Medio Ambiente del Gobierno de Canarias, pp. 131-132.

3. REGULATION AND MANAGEMENT

There are undeniable risks that could affect both cetacean populations and their natural habitats in the Canary Islands. They can be mainly attributed to the unsustainable urbanization plans developed on coastal areas and the heavy traffic of ferries and fast ferries connecting the islands. Other activities actually add to the risk-factor count (abusive WW practices, intense sea-based tourist activity, commercial fisheries and aquaculture, private boat traffic, activities carried out with active sonar, insufficient information available and public outreach) or might do it in the future (mega-port structures, oil prospection, off-shore gas plants and wind-parks). Bearing in mind that WW is an important part of the wide choice of maritime and coastal tourist services offered in the Canary Islands, it is clear that the definition of an adequate regulatory framework has become a fundamental instrument for the regional policy of environmental conservation and for the management of marine natural resources. These efforts are carried out by the regional environmental agency (Viceconsejería de Medioambiente del Gobierno de Canarias) through its Dirección General del Medio Natural, which aims to integrate effective conservation, sustainable use, coordinated planning and public outreach.

Whale-watching began in the Canary Islands as a tourist service lacking a legal regulatory framework. It commenced being monitored by the public administration during its expansion phase in the early 90s, as the activity stepped up in response to the fast growing pace of the demand. The whale-watching regulation was enacted via regional decree in 1995 and last brought up to date in the year 2000⁸. It can be considered as one of the most complete worldwide. Conceived as part of a long-term policy for the management and protection of marine natural resources with special public interest, it aims to protect the cetacean populations by minimizing the risk of negative impact caused by human – cetacean interaction (mainly related to WW tourism on the affected areas). It also takes important step towards establishing adequate service quality standards through their managerial, environmental and educational requisites. Further to establishing a compulsory code of conduct, it covers educational and interpretative aspects of the WW activity. Among other aspects covered, the regulation⁹:

- Distinguishes sea or air based commercial whale-watching activities from those whale-watching activities with scientific, informative or merely recreational purposes.
- Determines the obligation of an authorization to carry out the activity, which is granted by the competent authority.
- Establish technical parameters that are to be respected by whale-watching vessels through a compulsory Environmental Impact Assessment, allowing further parameters to be defined by the authority.
- Determines the requirements that have to be fulfilled by commercial whale-watching operators as well as other whale-watching related activities, in order to obtain the specific authorization: development of an educative program, compulsory presence of officially entitled whale-watching guides on board during whale-watching trips, deposit of a warranty to meet obligations and liabilities in case of regulation abuse.
- Determines the obligations of commercial whale-watching service providers during their activity (follow the code of conduct, show the official distinctive “Blue Flag” on every licensed boat, carry on board a copy of the regulations’ content for informative purposes) as well as for other authorized whale-watching platforms.

⁸ Canary Islands, Spain. Decree 320/1995, of November 20th, by which cetacean observation activities in the Canary Islands are regulated. *Boletín Oficial de Canarias*, November 20th 1995, no. 1995/148.

Canary Islands, Spain. Decree 178/2000, of September 6th, by which cetacean observation activities in the Canary Islands are regulated. *Boletín Oficial de Canarias*, October 6th 2000, no. 2000/133.

⁹ Detailed information concerning some regulatory issues and the code of conduct was included in an informative leaflet published by the regional environmental agency of the Canary Islands Government. See Appendix I.

- Establishes the conduct guidelines that must be complied by authorized vessels or aircrafts during the activity, such as approaching maneuvers, behavior in presence of cetaceans, engine maneuvers and speed, time limits during the sightings, maximum number of vessels allowed in presence of cetaceans, distance & noise restrictions, and special guidelines for scientific trips, among others.
- Establishes the creation of a monitoring committee in which specialists of public agencies, private organizations and educational institutions take part, and its functions.

This regulation established an important precedent for the definition of a national legal framework, which was finally adopted via Royal Decree¹⁰. The national regulation broadens the regulatory scope by including any type of activity that may affect cetacean individuals or groups. Moreover, it includes an innovative concept: it defines a mobile protection area, which extends 500 m. around an animal or group of animals independently of their position.

The effort of the regional environmental agency has resulted in further actions throughout these past years, such as offering professional courses and qualification programs for WW guides, carrying out studies to assess short and long term effects of WW tourism on cetacean's behaviour and population and establishing a surveillance system with monthly reports on the observance of the code of conduct. A conservation plan for cetaceans in the Canary Islands is expected to be approved in 2009. This plan will include management and monitoring measures to ensure and promote high-quality whale watching activities and minimize their negative impact on cetacean populations.

4. FACTS ABOUT THE WW INDUSTRY

The Canary Islands are a preferred European tourist destination. The region offers a wide variety of other tourist attractions and activities and some of them are related to the sea (e.g. swimming, snorkelling, WW, charter sailing, jet skies and other water and underwater thrills, deep-sea fishing, "island-hopping", underwater photo & video, among others). As stated before, WW activities were quickly and strongly dragged by the regional tourism industry, which is still mainly focused on the "3S" segment (sun, sea & sand) and the generalist tourist demand. Thus, the WW industry developed towards being a notable socioeconomic resource, not only as a source of income but also as an industry that offers new chances for employment and entrepreneurship. In a region where tourism provides approx. 31% of regional GDP and employment rates,¹¹ every 15th visitor has taken part in a whale watching experience.¹²

In 2008, a total of 37 vessels were licensed for WW operations in the Canary Islands. The island of Tenerife concentrates a major part of the industry: approximately 70% of the vessels, 65% of the operator businesses and 75% of the passenger carrying capacity.

Estimates for 2008 suggest a total of 625.000 WW visitors in the Canary Islands. Ticket price range varies substantially and goes from 6 up to 60 € depending on the trip duration and type. At an average price of 31.8 € (average Tenerife), a.m. visitor volume makes around 19.8 million EURO of direct gross income only.

¹⁰ Spain. Royal Decree 1727/2007, of December 21st, by which protection measures for cetaceans are established. Boletín Oficial de España (BOE), January 12th 2008, no. 11.

¹¹ Data for 2007. Regional Institute of Statistics (ISTAC).

¹² Estimated for 2008

	Licensed Vessels	Licensed Operator Co.	Passenger Capacity
Tenerife	26	18	2,356
Puerto Colón	11	7	1270
Los Cristianos	6	6	740
Los Gigantes	9	5	346
Gran Canaria	7	6	668
La Gomera	3	3	124
La Palma	1	1	53
Total Canary Islands	37	28	3,201

Table 2: Number of licensed boats and businesses, with passenger capacity (2008)

According to interviews carried out in Tenerife¹³, whale-watchers' country of origin distribution matches the data shown by regional tourism stats (United Kingdom, 36%; Spanish mainland, 29%; and Germany 27%).¹⁴ Results also showed that WW service users were not particularly motivated by this activity when choosing this destination for their vacation trip. As a matter of fact, a substantial portion of whale-watching companies' clientele in Tenerife and Gran Canaria is provided by generalist tour-operators. Moreover, WW seasonality follows the general trend of the regional tourist industry, with visitor volume highs during spring (March-April) and summer months (July-August). With these facts in mind, it should not be surprising that the whale-watcher here seems not to differ from any generalist tourist who decides to visit the islands.

In mass tourism coastal areas like Los Cristianos & Las Américas (Tenerife) and Puerto Rico (Gran Canaria), WW is part of the wide offer that has been made available for the tourist to thrust visitor spending. Market conditions here (aggressive price competition, high number of operators, and stagnation of tourist entries over the last few years) forced some entrepreneurs to adapt their offer, combine "thematic" trips with whale-watching activity and design other types of products that would suit a mass-tourism market. This motivated other companies to introduce innovations in their product as well. Of course, WW related offer has been updated elsewhere in the Canaries too, though less dramatically. Some operators offer now WW as part of their water-taxi service and others have included in their portfolio products like jet skies & water thrills, charter sailing, accommodation, inland tours or even WW trips in other parts of the world.

Most operator companies have added "value" to their product by offering additional services before, during, and after the excursion in order to match market requirements. Some include a series of services that turns the excursion into a leisure activity with "mere" recreational purpose, eclipsing any educational approach: catering, merchandising, snorkeling and swimming (in absence of animals)¹⁵, photo & video, music & games, hotel transportation and other courtesy services. In other cases, the product keeps its focus on the animal encounter as the major attraction and complementary services are not always a substantial part of the experience. In this scenario, two types of WW trip can be distinguished:

¹³ Elejabeitia, C.; Servidio, A.; Iani, V. & López, T.-Sociedad Española de Cetáceos (SEC) (2002)

¹⁴ Data for 2008. Regional Institute of Statistics (ISTAC).

¹⁵ Swim-with-dolphins experience is not offered. In any case, swimming with these animals in the Canary Islands is prohibited except for scientific or educational purposes and requires a special permit.

- Excursion offered in bigger, high capacity vessels (55 - 250 pax.). It's the WW trip for the big crowds. These maritime excursions of mid-long time duration (3 to 5 hours) are offered according to the requirements of mass tour-operation: rigid schedule and route, a wide range of standardized services and activities (among which whale-watching is included). Service, comfort, exclusivity and even the vessel itself play in many cases a starring role. Only the bigger companies offer 5-hour-trips.
- Excursion planned as a tour to the sighting area (1 to 2.5 hours), for which small to medium passenger capacity boats (8 - 50 pax) are generally used. This type of trip represents about 2/3 of the daily industry activity, but not so of the passenger volume. It offers a somewhat flexible program and route, with limited additional services (not in all cases provided). The atmosphere so created is more suitable for a WW experience, favoring a closer type of encounter and an individualized customer care, especially in smaller boats. Though, also some bigger companies offer short trips in big vessels with limited services.

On average, a WW boat offers 2 to 3 daily excursions of 2 – 3 hours duration, which makes a total of 51 to 54 excursions daily only in Tenerife. Trips are scheduled within the period from 9 A.M. to 7 P.M. daily, with activity peak between noon and 3 P.M.¹⁶ During high season, more operators include a third daily trip to enjoy the longer summer evenings. Whale watching spots are located fairly close to coast, at 10-15 minute sailing distance from the port of call. Depending on the species, groups of animals can be found within the range of 1.5 – 4 miles off coast. There is good communication between boat crews to locate the whales and dolphins. Boats do not tend to concentrate, since several groups of animals can generally be sighted in the same WW area.¹⁷ When more boats are on one same group, turns and time spent with the animals are commonly respected in accordance with the code of conduct. Some operators use a smaller support boat to bring catering, merchandising or hikers onboard.¹⁸ There is occasional illegal activity occurring, mainly WW trips that are marketed without the required license or other opportunistic boats owners that offer charter sailing and deep sea fishing. It is especially obvious in Tenerife but remains quite controlled and limited overall. A new and very important disturbance factor is the growing number of fish farms installed in WW areas (Tenerife), since both cetacean and (consequently) humans tend to concentrate there, as described further on.¹⁹

Boat crews are well aware of the necessary procedures in case of an encounter with hurt, entangled or stranded animal, and also of the importance of protecting the marine environment. Whale watching guides display an acceptable quality level, good knowledge and a notable enthusiasm for their profession. Though, among bigger crowds, their role often bears resemblance to an entertainer, more than an educational guide. This is due to the characteristics of the “mass-WW” product, which demands intense onboard service support, entertainment and communication in up to 4 - 5 different languages. The effectiveness of their interpretative function, based on a close relation guide-visitor, becomes thus negatively affected.

The type of whale-watching operator company is heterogeneous. There is great variety in organization and number of workers, going from the small family business (mostly locals) to the corporate operator company. Most licensed WW businesses operate with one boat but there are a few bigger companies that operate with 2 or more high capacity vessels, all of them established in Puerto Colón and Los Cristianos (Tenerife).

¹⁶ Tenerife averages 25 out of 26 licensed boats at sea at this time.

¹⁷ This is indeed to be considered when studying the carrying capacity or the impact caused by WW activity to the cetacean population.

¹⁸ In Tenerife, some operators offer pick up service for hikers, carrying them from the meeting point (generally Masca's gorge mouth) back to the port of departure

¹⁹ GESPLAN. *Monitoring & management control of whale watching activities specially affecting Natura2000 SCI areas in the Canary Islands. Final report (April 2009)*. Unpublished. Tenerife, 2009. 46 pp. Technical report for the Canary Islands Government.

WW related research and educational activities

Many groups and scientists worldwide have dedicated their work to the marine mammals of the Canary Islands. Meaningful examples are represented by James and Sara Heimlich-Boran, who studied the social structure of Tenerife's short-finned pilot whales, or Vidal Martín, a local scientist who has studied the cetacean population in the Archipelago and its biology for the last 28 years and is founder president of the NGO Sociedad para el Estudio de los Cetáceos en el Archipiélago Canario (SECAC)²⁰. Also local NGO Canarias Conservación and the Cetacean Unit of La Laguna University Faculty of Biology are active local organizations that design programs and carry out projects for the study and conservation of cetaceans. Since 1998, the Department of Pathology of the Veterinary Faculty in Gran Canaria University (ULPGC) has studied mortality causes of stranded cetaceans found in the Canary Islands.

Nowadays, local and international professionals and research groups still focus on the marine mammals of the Canary Islands with a variety of approaches concerning their ecology, natural history, behaviour, anatomy, pathology, therapeutic interaction with humans and significance as a resource to promote economic activity, culture and education. The high number of dedicated vessels provides a valuable opportunity platform for some of them. Aware of this, some operators collaborate by allowing different organizations to carry out their activities and volunteer programs. For example, SECAC has developed a long time stable relationship with operators in Tenerife, Gran Canaria and Gomera. Also, over the last years, local organization BALFIN has developed an important educative program for scholars in all seven islands, with the support of the Canary Island Government. For this program, WW vessels have been used as an opportunity platform where available.²¹ In Tenerife, also UK based Atlantic Whale Foundation is active with volunteer campaigns carried out in WW vessels. Nonetheless, La Gomera has been long term base for M.E.E.R. This German NGO has traditionally focused their studies on the interaction between whale watching boats and cetaceans. They combine successfully cetacean research and volunteer programs in tight cooperation with a local WW service provider.

WW related studies

Other research work relevant for the whale-watching activity in the Canary Islands has been completed throughout the years²²:

- Studies started with mentioned work by James Heimlich-Boran, who dedicated his PhD thesis to study the social structure of the short-finned pilot whales (1989-1992).
- In 1993, Martín, V. & Montero, R. studied the impact caused by WW vessels on short-finned pilot whale resident population in Tenerife.
- Few years later Montero, R. & Arechavaleta, M. wrote for the Atlantic Cetacean Institute (1995-1997) that was created by the regional Tourism Agency two documents analysing the WW activity as a tourist service (1996-1997) and the impact of the vessels on the population of short-finned pilot whales in Tenerife (1997), both unpublished.
- German research group Project Context developed a study on short-finned pilot whales acoustics and their relationship with WW vessels, during the summer of 1996.
- The work carried out by Urquiola between 1996 and 2000 was focused on socioeconomic and management aspects of the whale watching activity in Tenerife and

²⁰ With a current team of 8 researchers, this organization has been dedicated to the study and conservation of Canary Islands' cetaceans since 1993.

²¹ The program "Whales & Dolphins at school" includes classroom session and WW trip. More information available at www.balfin.org

²² See Appendix II for a complete list of studies on WW activities in the Canary Islands.

Andalucía. It was developed in collaboration with CIRCE and the Spanish Cetacean Society (SEC).

- In the year 2000, financed by the European LIFE programme and the Canary Islands Government Environmental Agency, La Laguna University (Tenerife) took part in a study on human interaction with bottlenose dolphins and short-finned pilot whales in Tenerife.
- In La Gomera, ONG MEER founder RITTER, F. focused his Diploma Thesis on the study of the abundance, distribution and behaviour of cetaceans off La Gomera (Canary Islands) and their interaction with whale watching-boats and swimmers.
- Between 2002 and 2004, Spanish Cetacean Society (SEC) members Elejabeitia, C. & Servidio, A. Carried out an ample study on the socioeconomic aspects of the whale watching industry in Tenerife for the Canary Islands Government, which included assessment of economic, social and educative issues.

5. PROBLEMS IDENTIFIED AND ACTION TAKEN

5.1. Regulation and Management

Defining & implementing the WW regulation

The regulation implemented in 1995 helped to overcome the lack of control during the initial explosion phase of the WW industry in Tenerife. Licensed WW operator businesses and vessels became legally registered and were so comparable to any other touristic service provider. Not only did it help to distinguish illegal activity, but also to minimise other abuses and irregularities (trespassing maximum boat capacity allowance, out of date documentation, etc.)

However, one of the main problems arose derived from the insufficient communication between the public hand and the affected WW agents. These were not taken into consideration when defining the regulation content. The result was lack of confidence and insufficient information, which led WW agents to not fully understand the purpose of the regulation and to misinterpret it. The benefit of a regulation, a license-based management system and activity monitoring was understood, since the need to protect cetaceans was evident. Though, there were discussion points for which even nowadays agreement between the parts still has to be reached. WW agents mainly argued with issues related to the code of conduct. For one, they did not quite understand why they would pose a threat and in which way they would threat, stress or harm the animals. They also compared their threat to the one caused by other means of transportation such as fast ferries or jet foils active in the area. Other questions arose in relation to the minimum distance that was to be kept during the sightings and the effect of the presence of a vessel on cetaceans. This showed how essential it is to communicate useful information in a timely manner and opening a two way channel before applying a regulation, even before starting to define its content. Getting continuous involvement from the affected parts can be complex but helps to ensure long term effectiveness.

Control and supervision

At first, an inspection service was included as part of the WW regulation. With time, it became clear that a continuous presence of representatives of the authority or the responsible public administration would be needed in WW areas. This was considered as a high priority to ensure compliance with WW regulation, considering the small size of the WW areas and the intense activity occurring there. Also, because it was understood that insufficient or non-existing supervision could make a big difference in law observance, as it happens in most cases, and this would have indeed its impact on the effectiveness of the management measures defined.

Not only supervision has become a way to control operator compliance with the regulation and denounce abusive conducts but it also is a way to inform WW operators and others in the WW area (sailors, fishers, divers, and jet sky and water thrills operators) about the regulation and the need to observe a code of conduct, and to assist them, contributing in this way to maintain a high quality WW activity. Also, if continuity is given, supervising personnel gains experience and might advance in their learning curve, adding quality to WW with their improved professional and interpersonal skills.

Supervision in the Canary Islands has been carried out in a discontinuous manner (1996-1998, 1999-2000, 2002-2003 and from July 2008 on). Initially, it was official authorities in charge of surveillance activities. Insufficient budget and resources has obliged to implement monitoring activities as an alternative. It is currently carried out by a team that patrols the WW area in Tenerife. The information gathered by this boat has been highly interesting for management purposes, since it has provided data about the position of active boats; the relation between them and their behavior in presence of cetaceans; to what extent regulation is complied with; the kind of infractions committed; and what difficulties WW boat captains have in order to comply with WW code of conduct. It also has provided valuable scientific information that has permitted increase knowledge about the cetacean population (sightings, animal behavior, and interaction with humans). It is an ideal platform of opportunity for data gathering. Monitoring activities are planned to be extended to Gran Canaria as the next step. This patrol boat also serves as occasional platform of opportunity for WW inspections by authority agents. Obviously, the ideal situation would be to see authority boats themselves patrolling the WW areas again.

Identification of authorized WW boats

Another controversial problem surged at initial stages from the difficulty for tourists to distinguish licensed vessels when deciding to buy a WW excursion ticket. Since information regarding legal requirements for the WW activity had not been widely spread, they were not concerned with it. After the update decree in 2000, the “blue boat” identification flag was made mandatory for all licensed vessels. This way, authorised vessels would be easily recognised by tourists, other operators in the area, and supervising personnel. This flag has turned out to be one of the most efficient management measures introduced, not only as a way to ensure legality but also as a means of improving overall quality in the WW industry. The flag is yearly renewable and only conceded after all requisites have been complied with (environmental impact assessment and other administrative and requisites included in the regulation).

Environmental Impact Assessment (EIA)

One of the goals pursued with the implementation of a WW regulation was to ensure that only those vessels fulfilling all technical and administrative requirements would be granted authorization to carry out the activity. A correct environmental behaviour was included as a major consideration here. Thus, a basic EIA study was made mandatory, which included characteristics and aspects relevant to the interaction with cetaceans or that could affect directly or indirectly the animals or their environment. This way, not only the fulfilment of all requirements included in the regulation would be ensured. It also made possible to allow the activity according to specific requirements defined for each vessel from both, the technical point of view and according to the type of activity carried out and its characteristics.

The impact study content must include, among others, information regarding general characteristics of the vessel, operator company data, natural resources used or consumed, waste, noise and emissions management, habitats and important natural resources in areas of operation,

collaboration activities with researchers, environmental education, and self-assessment on the level of impact caused.²³

Together with the “blue flag”, the EIA has turned out to be one of the most efficient management measures implemented. It has helped to deal with singular cases (specific to a certain vessel or type of vessel) and also to increase awareness in operators regarding their responsibility towards generic and WW activity related environmental conservation measures. It also gave the opportunity to divulge legal aspects specific to the conservation of marine fauna and protected areas.

Officially entitled whale watching guide

Having a monitor guide aboard during the WW activity was one of the important prescriptions included in the first decree. It was meant to ensure that whale watchers were provided with enough and good information on cetaceans and its conservation. The latter Decree included the figure of the Whale Watching Tourist Guide in accordance with regional tourist laws. With it, access to this officially recognised title became regulated. Having considered the guide as a fundamental part of the quality-WW activity, knowledge, interpretation and interpersonal skills would be accordingly required.

Also, during the design phase of the regulation, it became clear that the most effective way to ensure boat crew compliance with the code of conduct was to get them involved with a sense of pride in presence of cetaceans, and to strengthen their perception of the WW guide as a valuable conservation agent. This sentiment would take years to develop but giving access to an officially recognised title was thought to serve as encouragement. Introducing the figure of the officially entitled WW guide gave boat crew members and long-time active guides the chance to get involved and to have their WW guide functions officially recognized. Many of them did not fulfill the requirements defined in the first place, so a program of qualification courses was offered to allow opt in. Nowadays, all applicants must have a university degree, must be academic students of Tourism or have passed these specific courses established by the Environmental Agency.

Present time

The regulation has proven to be complete and useful but some conflicts related to its application continue:

- Budget for supervision activities are not constant and make it difficult to control regulation compliance during the WW activity on a continuous basis.
- There are still ambiguous aspects that are difficult to control like “do not make any noise that can disturb the animals underwater” or “leave the area if you see any sign of alarm, alteration or anxiety”).
- Illegal activity seems to have taken on in recent times, probably due to the situation derived from the present economic crisis. Smaller and medium size boat operators that offer charter trips take advantage to offer opportunistic WW without having the required license. Up to of these 10 boats have been detected in Tenerife over the last few months.
- A representative speaker of all WW operator businesses is missing. Thus, companies have less chance to start a dialogue process in which they are able to defend their interests and to communicate their priorities and opinions. Only half of the operator companies have associated and there is no representative of boat crews, guides or other personnel involved whatsoever.

²³ See Appendix III

- Other problems are not directly caused by WW activity, neither connected with the WW regulation. Though, they still cause an impact on the animals and the environment that is actually more significant than the impact of WW activity itself. Because these problems remain unsolved, a negative sentiment has spread among participants of the WW industry: e.g. a growing activity of fast ferries, the continuous and increased presence of jet skis and other water thrills, specially, the high number of fish-farms (aquiculture cages) installed in WW areas or next to them. Over the past few years, a high number of concession operated fish farms have been authorized in WW areas where populations of Bottlenose dolphins are resident. This has caused modified behavior on some individuals, mainly on females and mothers with their calves that spend a high amount of time around the aquiculture cages. There is even sporadic human contact since people sometimes take the chance to feed them. Despite control efforts, dolphins are still attracted to these cages, leaving their regular distribution environments, that is, the areas where WW vessels would usually find them. Consequently, WW vessels tend to approach to these fish farms too, causing high boat concentration. This situation is new to the industry and the area. Moreover, since the entry to areas occupied by these farms is in any case prohibited, WW activity has experienced a slight drawback. Some boats jet skis and other water thrills even offer swim-with-dolphin experience near these farms, which is in any case prohibited in the Canary Islands. Thus, control over this conduct is a priority to protect both cetaceans and humans as well as to minimize detriment to the WW industry.
- Another problem to be approached derives from the need to facilitate application processes and to minimize administration efforts and red tape related to WW licenses.

What needs to be done from now on

Certainly, there are management issues that may be common to many WW locations. Others should be adapted to suit the particular features of the specific location to be managed. The experience in the Canary Islands has shown that it is essential to have an effective, continuous control system; an agile management capable to offer quick response from the public administration; to provide adequate training and information for operators and vessel crews; and have information available for the general public, particularly whale watchers. Training for WW guides should be continued with yearly formation courses, mainly targeted at boat crews, operator company representatives and other guides-interpreters. Also, special emphasis should be made on the educative program developed on each WW trip, in order to enhance its quality and keep its content updated.

Sufficient budget and resources have to be made available to carry out effectively these action lines, which is one of the fundamental problems for the management of WW and affected natural resources. Budget planning must include costs of continuous control program, administrative efforts, informative activities and tools, professional formation and training courses, and research activity needed to improve management.

Besides direct measures, other regulation and management measures must derive from existing legal instruments, such as:

- The declaration of Canary Islands WW areas as Special Areas of Conservation for the European NATURA 2000 network. Having these areas been declared part of the most important European network of protected natural habitats and important areas for priority species, the design of the required management plans should include aspects relevant for WW and other aspects relevant for cetacean conservation such as pollution, maritime transport, fisheries, aquiculture, invasive species, etc.
- Conservation Plan for cetaceans in the Archipelago, which is to be approved and implemented as a next step

From a scientific point of view, there is need to learn more about the biology of the species observed in order to understand human-cetacean interaction issues and provide a preliminary approach on the sustainable carrying capacity of WW areas in the Canary Islands. In order to manage WW activities effectively, it is necessary to define the parameters that determine when and to what extent a cetacean or group of cetaceans are disturbed, altered or harmed. The target of any WW regulation is the development of the activity but only as long as it does not affect negatively a cetacean population. Extra effort is needed when target species are recognized vulnerable, like in the Canaries Islands case. Therefore, it is crucial to elaborate trustworthy population size estimates of at least both main target species (Bottlenose dolphin - *Tursiops truncatus* and Short-finned pilot whale - *Globicephala macrorhynchus*). These data provide a solid framework in order to determine population tendencies and to prevent decline and possible negative impacts.

5.2. Socioeconomic and commercial aspects

The Canary Islands is a unique WW destination in Europe, due to the favorable climatic and natural conditions, its rich marine biodiversity, the many tourist facilities and the ample choice of services existing. Though, it is not recognized neither promoted as such, since WW is no priority or strategic segment for the regional or local tourist boards. The industry has grown mainly based on mass tourism and only few entrepreneurs have been able to develop a WW offer according to values inherent to the activity (up-close animal encounter, educational experience, and hassle free and individualized leisure) and to fully meet the expectations of a tourist concerned with sustainable and responsible tourism. High quality WW offer is present in all islands, although especially in Tenerife and Gran Canaria, it has to compete with service providers that market luxury, comfort and exclusivity as part of the WW experience, sometimes even overshadowing the marine wildlife encounter.

In terms of market evolution, Gran Canaria and Tenerife can be considered as mature markets characterized by:

- Clearly defined demand segments: the highest visitor volume is serviced through big international tour operators and only a few smaller entrepreneurs market their offer directly.
- Insignificant product differentiation (“me too” products) which include similar complementary services, somewhat obsolete and improvable.
- Tour operator’s dominant market position has caused smaller commercial margins and benefits, which has led to aggressive competitiveness and price wars.
- WW user’s profile does not differ from the generalist tourist that visits the island and no WW demand segments are particularly addressed. Subsequently, demand trend lines show seasonal tendencies according to the islands tourism visitor volume.

Tour-operators and point of sale on the street (e.g.: ticket booths) are the main selling channels. Though it has been relevant for the development of the WW in the region, commercial collaboration between local whale-watching operators and international tour-operators seems to be over-biased in some cases (many of them work on a 50% commission basis, which would be a common import-leakage rate for the case of small economies in developing countries). Internet remains a somewhat poorly grasped opportunity for many operator businesses, in line with the tendency showed by small & medium size businesses in the region. Many companies have already gone online on their own or just as reference for online travel agencies and other information reservation portals. Meaningful advances are showing, yet the benefits of internet presence, e-commerce and online net building seem not to have been fully taken advantage of.

Despite good cooperation at sea, other business and commercial relationships among operators are still dull. There is poor communication and trust sentiment due to the highly competitive market conditions. The bigger operator companies in Tenerife have associated, but

mainly as a means to confront what they consider unthrifty requisites imposed by the public administration. Cooperation between whale–watching operators and the public administrations (fisheries, environmental, tourist boards) could have been reinforced if constant communication and integration had been introduced at early stages during the definition of a regulatory framework. Also, the historic lack of interest of the public administration for marine resources has affected negatively in the long run. Nevertheless, at least participation and collaboration of whale-watching companies with research projects and educational programmes of nongovernmental, non-profit organizations, and universities have increased over the last few years. These projects allow a better understanding, increase the information flow and support the integration of local communities.

According to the last study carried out (Tenerife, 2002) labour market appears to be unstable and immature. It is characterised by a high rotation rate and it does not seem to offer enough guarantees to its professionals, especially in Tenerife. WW industry related labour regulation is clearly insufficient as a means of supporting high quality services. There is an urgent need of a specific policy that can provide stability and security, motivate the workers to be better professionals, and enhance the special bond between WW workers and marine resources and environmental protection. This status derives from the conversion of former fishermen-entrepreneurs into whale-watching service providers, the poor interest of the regional public administration in marine related issues and the general situation of Spain's labour market. A further aspect that has caused controversy is the idea that income generated through industry WW is not reinvested in the local community. This idea has damaged the already weak link between the local communities and the WW industry. On top, Canary people surprisingly show and historical lack of interest towards issues related to the sea.

Regional WW industry has recently shown some signs of stagnation: due to the global economic slowdown, visitor volumes have lowered. This has caused cost & price related issues to play now an even more important role and some operators have been forced to cut down their offer or even stop operations. Further, the number of operators remains stable, while the use of smaller boats has increased. Even though this cannot be considered as a structural change, present market conditions have put emphasis on the need of adjustments and innovations for WW and related products.

Effective resource (natural, cultural, human) management must be based on an agreed upon, coordinated strategy based on a three-legged balance: minimizing negative impacts caused to the natural resources, maximizing long term economic yield and social benefits, and promoting integration and quality participation of the local communities in its design and implementation. Tenerife's whale-watching industry benefits from the existing tourism and doesn't specifically attract whale–watchers to the island. This implies the existence of both, an economic potential and the possibility to improve the quality of the regional tourism industry, which have not been yet completely understood and supported by the public hand. The traditional lack of communication and coordination among the interested parts is an important barrier to break down. Meanwhile, WW related research and cultural projects and activities are growing, bringing benefits for local communities, favouring knowledge, integration, and increasing life quality standards.



APPENDIX I

LEAFLET PUBLISHED BY THE CANARY ISLANDS GOVERNMENT ENVIRONMENTAL AGENCY


Decree 178/2000, adopted by the Canary Island Government, regulating the activity of whale watching, requires compliance with a code of conduct and a special authorization for whale watching boats, which must also have a monitor/guide who is a specialist in cetaceans on board (BOC 133 of the 6/10/2000).

Royal decree 1727/2007 for the establishment of protection measures for cetaceans also regulates all and any activities that could have an impact on the conservation of whales, dolphins and porpoises anywhere in Spain territory (BOE nº 11 of the 12/01/2008).

Any activity which might have a negative effect on the survival and conservation status of cetaceans is regulated, and any activity within the mobile area for the protection of cetaceans must comply with rules of conduct, with certain exceptions for scientific, educational, technical, cultural, awareness or conservation reasons, or for some shell fish, aquaculture, professional fishing, civil protection, maritime rescue and anti-pollution, public maritime and air safety, national defence, maritime charting and maritime environment measurement system activities.





FRIENDS OF THE WHALES AND DOLPHINS




The "blue boat" flag is an emblem awarded to vessels that are authorised for tourist whale watching activities. The year for which the activity is authorized appears on the flag.

ONLY USE BOATS FLYING THIS FLAG!



PRINTED IN ECOLOGICAL PAPER



CARE FOR WHALES AND DOLPHINS



The waters of the Canary Islands are a privileged site for whale watching. Over 27 species have been reported in recent years. The high degree of diversity is due to the special oceanographic, geo-morphological and climatic characteristics. The fact that they are oceanic islands with very little shelf around them means that both coastal and oceanic species are found in the Canary Islands, as the islands are on the route of migratory species and represent the habitat for other resident species like the short finned pilot whale (*Globicephala macrorhynchus*) and the bottle nosed dolphin (*Tursiops truncatus*). These two species are the most frequently seen by boats.

Whale watching is not a negative activity per se, but it should be done with suitable regulation. Marine mammals constitute one of our most attractive and fragile natural resources.

Gobierno de Canarias
Consejería de Medio Ambiente y Ordenación Territorial

LEAFLET PUBLISHED BY THE CANARY ISLANDS GOVERNMENT ENVIRONMENTAL AGENCY (reverse)

CODE OF CONDUCT

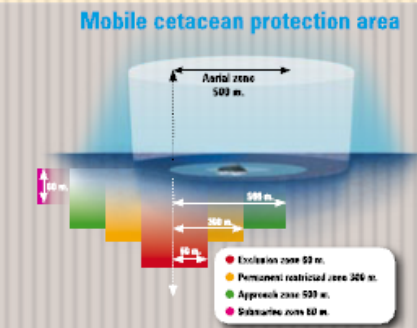
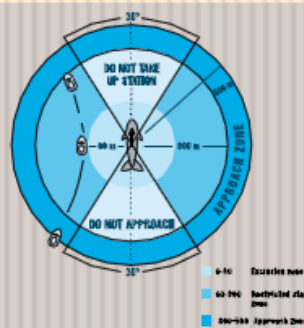
OBLIGATIONS

- 1 Do not intercept the course of the whales, sail through or around a group of them and never get between a mother and her calf.
- 2 Keep at least 60 m from the animals, except in an emergency situation or with express authorisation.
- 3 Avoid the presence of more than two boats at the same time within 100 m and of three boats at the same time within 500 m. of the whales and dolphins.
- 4 No swimming or diving in the proximity of the animals without explicit authorization and do not throw food or waste material into the sea around them.
- 5 No whale watching from the air in a motorised aircraft within 1500 feet (500 metres) of the cetaceans.
- 6 No whale watching from jet ski within 500 m of the cetaceans.

BEHAVIOUR WITH THE ANIMALS


- 1 Leave the area if you see any sign of alarm, alteration or anxiety, such as a sudden change of direction or speed, successive dives or blowing air under water.
- 2 Do not make any noise that can disturb the animals under water and do not make any noises to attract them.
- 3 If two or more vessels approach the same animal or group of animals, they should coordinate their approach and manoeuvres to keep their impact on the whales to a minimum.
- 4 Should you cause serious harm to one of the animals, or should you find a dead or injured animal floating in the water, please inform the competent authorities, indicating the position of the specimen: **telephone number 112**.
- 5 If, while diving outside of the exclusion zone, a group of cetaceans were to approach the divers, they should not interact with the cetaceans and, if behaviour associated with the presence of divers is observed, the divers should move away as soon as possible, while always bearing in mind the safety of the divers.

MOBILE AREA FOR THE PROTECTION OF CETACEANS

METHODS OF APPROACH

- 1 Whales and dolphins should be approached gradually and on a converging course with their direction. Never approach them from head on and under no circumstances impede their movements.
- 2 During the approach, all vessels will try to maintain a course running parallel to that of the cetaceans and they will avoid any sudden change in direction or speed.
- 3 If a vessel finds itself within 500 m of the cetaceans, it should maintain its speed below that of the slowest animal in the group and not exceed four knots at any time.
- 4 Never enter the restricted stay zone (300 m) if there are isolated adults with calves or isolated calves.
- 5 Do not remain within 100 m of an animal or group of animals, for more than 30 minutes.
- 6 Do not start the engine, or increase speed if the engine is running, while the whales and/or dolphins remain within 60 m of the vessel.
- 7 Should animals approach to within 60 m of the vessel or appear suddenly, all efforts will be made to cease whale watching activities, or the vessel will continue, but without making any sudden changes.
- 8 Whenever a vessel intends to make a stop to watch the whales, it must put the engines in neutral. Vessels should also put the engines in neutral if a whale approaches them.
- 9 Never engage reverse gear, except in situations of emergency or to prevent a collision with another boat or cetacean.



APPENDIX II

STUDIES AND PUBLICATIONS RELATED TO CETACEAN WATCHING ACTIVITY IN THE CANARY ISLANDS.

Regulations

Canary Islands, Spain. Decree 320/1995, of November 20th, by which cetacean observation activities in the Canary Islands are regulated. Boletín Oficial de Canarias (BOC), November 20th 1995, no. 1995/148.

Canary Islands, Spain. Decree 178/2000, of September 6th, by which cetacean observation activities in the Canary Islands are regulated. Boletín Oficial de Canarias (BOC), October 6th 2000, no. 2000/133.

Spain. Royal Decree 1727/2007, of December 21st, by which protection measures for cetaceans are established. Boletín Oficial de España (BOE), January 12th 2008, no. 11.

Publications

i. Publications on whale watching:

1995- Hoyt, E. 1995. *The Worldwide Value and Extent of Whale Watching: 1995*. Whale and Dolphin Conservation Society, Bath, UK, 36 pp.

1996 - Urquiola, E. 1996. *Cetáceos en Canarias: Normas para su observación*. Revista de Medio Ambiente. No. 0

1996 Ritter F. & Ladner, U.A. 1996. *Whale-watch in La Gomera: an interdisciplinary approach*. European Research on Cetaceans -10. Proceedings of the tenth annual conference of the European Cetacean Society, Lisboa, Portugal. 11-13 March. P. 48-52.

1996 – Ritter, F. 1996. *Abundance, distribution and behaviour of cetaceans off La Gomera (Canary Islands) and their interaction with whale watching-boats and swimmers*. Diploma Thesis. University of Bremen. Faculty of Biology. 112 pp.

1998 - Urquiola, E.; Sevilla, J. & Iani, V. 1998. “*The evolution of whale watching in the Canaries after the regulation of 1995: a year of study*”. In European Research on Cetacean -11. Proc. 11th Ann. Conf. ECS, Stralsund. Germany March 1997. (Eds. P.G.H. Evans). European Cetacean Society.

1998 - Urquiola, E. 1998. *Ballenas y delfines de Canarias: Cetáceos en Tenerife*. In: BOOK Tenerife y el Mar. Pp. 109-117 (Ed. Excmo. Cabildo Insular de Tenerife). Canarias. España

1998 - Urquiola, E. & Sevilla, J. 1998. *Observación de cetáceos en Canarias. Situación actual (I)*. Revista de Medio Ambiente. Nº 10. & Urquiola, E. 1998. *Observación de cetáceos en Canarias.: Conservación, problemática y evolución (II)*. Revista de Medio Ambiente. Nº 11.

2000 - Urquiola, E.; Martín, V. & Iani, V. 2000. *Whale watching, pilot whales and bottlenose dolphins in the Canary Islands: A sustainable activity?* Proceedings of 13th Ann. Conf. European Cetacean Society, Valencia, Spain, 5-8 April 1999. By P.G.H. Evans.

2001 - Urquiola, E. & de Stephanis, R. 2001. *Growth of whale watching in Spain. The success of the platforms in south mainland. New rules.* Proceedings of 14th Ann. Conf. European Cetacean Society, Abril Cork, Ireland 2000. By P.G.H. Evans

2001 - Urquiola, E. & Martín, V. 2001. “*La observación de cetáceos*” In: BOOK “*Naturaleza de las Islas canarias, Ecología y Conservación*”. Capítulo 35 pp. 289-295 (Ed. Fernández Palacios & Martín Esquivel). Publicaciones Turquesa S.L. España

2003 – Ritter, F. 2003. *Interactions of cetaceans with whale watching boats: Implications for the management of the whale watching tourism.* M.E.E.R. e.V., Berlin, Germany, 91 pp. Special report from M.E.E.R. e.V., La Gomera, 1995-2001.

ii. Other publications for reference:

1990 - Heimlich-Boran, S & Heimlich-Boran, J. 1990. *Occurrence and group structure of short-finned pilot whales *Globicephala macrorhynchus* off the western coast of Tenerife, Canary Islands.* In European Research on Cetacean. Pp. 102-104 - 4. Proc. 4th Ann. Conf. ECS, Palma de Mallorca, España March, 2-4, 1990.(Eds. P.G.H. Evans, A. Aguilar & C. Smeenk). European Cetacean Society, Cambridge, England. 140 pp.

1992 - Martín, V., R. Montero, J. Heimlich-Boran. 1992. *Preliminary observations of the cetacean of the Canary Islands.* In European Research on Cetacean. Pp. 61-65. - 6. Proc. 6th Ann. Conf. ECS, San Remo, Italia 20-22 Feb., 1992. (Eds. P.G.H. Evans). European Cetacean Society.

1993 - Heimlich-Boran, J. 1993. *Social organisation of the short finned pilot-whale, with special reference to the comparative social ecology of delphinids.* Ph. D. Thesis. University of Cambridge. 235 pp.

1996 - Martín, V. 1996. *Diurnal activity patterns and behaviour in the short-finned pilot whale (*Globicephala macrorhynchus*) off the SW coast of Tenerife, Canary Islands.* In European Research on Cetacean -10. Proc. 10th Ann. Conf. ECS, Lisboa, Portugal, 1996. (Eds. P.G.H. Evans). European Cetacean Society

1988 - Vonk, R. & Martín, V. 1988. First list of odontocetes from the Canary Islands. Second Annual Conference of the European Cetacean Society. Setubal, Portugal. Pp 31-36. In European Research on Cetacean -2. Proc. 2th Ann. Conf. ECS, Setubal, Portugal 1988.(Eds. P.G.H. Evans). European Cetacean Society

1988 – Scheer, M., Hoffman, B. & Behr (Project Context). 1998. *Discrete po-specific call repertoires among short-finned pilot whales (*Globicephala macrorhynchus*) off the SW coast of Tenerife, Canary islands.* I World Marine Mammal Conference, Monaco 1998. Poster.

2003 - Scheer, M.; Hofmann, B. & Behr, I.P. 2003. *Vocalizations of free-ranging short-finned pilot whales (*Globicephala macrorhynchus*) off Tenerife: signal repertoire and characteristics.* Poster presented at the annual conference of the European Cetacean Society, Las Palmas de Gran Canaria, Spain, March10-13th, 2003.

2004 – Hofmann, B; Scheer, M; & Behr, I.P. 2004 – Underwater behaviors of short-finned pilot whales (*Globicephala macrorhynchus*) off Tenerife. *Mammalia* 68 (2-3): 221-224.

Reports

i. Directly related to whale watching:

1993 - Martín, V. & Montero, R. 1993. “*Estudio de impacto que provocan las embarcaciones en la población de calderones residentes en las aguas del SO de Tenerife*”. Unpublished.

1997 - Montero, R. & Arechavaleta, M. 1997. “*La Observación de cetáceos de Canarias como actividad turística en Canarias. 1996-1997. Descripción y diagnóstico*” & “*Impacto de las embarcaciones sobre la población de calderón tropical*”. Unpublished. Canary Islands Government.

2000 - Brito, et al. ULL (University of La Laguna) 2001. *Estudio del impacto de las embarcaciones de observación comercial de cetáceos*” & “*Análisis socioeconómico de la actividad de Observación de cetáceos*”, included in the report: *LIFE Tursiops y Caretta en Gran Canaria y Tenerife 1996-2000: “Proyecto de apoyo para la conservación de Caretta caretta y Tursiops truncatus en las Islas Canarias”*. EU LIFE program financed project, carried out by the Canary Islands Government and directed by Las Palmas de Gran Canaria University.

2002 - Elejabeitia, C.; Servidio, A.; Ianni, V. & López, T. –Sociedad Española de Cetáceos (SEC). *Socio-economic study of the watching activities of cetaceans in Tenerife*. 2002. Unpublished. Canary Islands Government.

2004 - Elejabeitia, C & Servidio, A. –Sociedad Española de Cetáceos (SEC). *Monitoring of touristic whale watching activities. Management of maritime touristic activities*. 2004. Commissioned by GESPLAN, S.A on behalf of the Canary Islands Government within the Project Interreg II Macaronesia “OGAMP” 2003-2004.

ii. Other reports:

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APPENDIX III

CONTENT OF THE IMPACT STUDY REQUIRED BY REGIONAL WW REGULATION

Vessel characteristics: length, width, year of construction, materials, engines, registration, etc.

Natural resources used or consumed: affected species, maritime routes carried out (with cartographic appendix), description of the different routes, frequency and duration of the excursions, characteristics of the excursions, timetables, seasons, etc.

Release of substances, energy or noise to the environment (including prevention measures):

- Waste generated (bilge water and/or waste waters): average volume of waste generated, provision of storage system of bilge water and /or waste waters, solid waste and collection system.
- Noise emission:
 - acoustic analysis of motor noise emissions in air and in water (noise study for engines running at tick-over and at 1,000 rpm (preferably) at 10 m. and at 60 m. to port, starboard, bow and stern). Existence and description of sound insulation system used. Mechanisms used to minimise unnecessary noise (banging of metallic objects, screeching, etc)?
 - Engine technical data (cylinder capacity, revolutions, fuel type used, etc.)
 - Use of propellers screws to minimise cavitations?
- Emission of toxic substances: Type of anti-fouling used, emission of exhaust gases to the air.

Habitats and specific natural elements

- Protected species of flora and fauna. Protected species of flora and fauna in the area covered during the activity (name of the species, category of protection, type of interaction)
- Effect on Protected Natural Spaces and Sensitive Ecological Areas.

Other considerations of interest

Is there equipment available to avoid possible collisions with cetaceans and to facilitate compliance with current legislation (telemeter, binoculars)?

Is there equipment available to carry out eventual collaboration tasks for the research of cetaceans and other species (GPS, video camera, photographic camera, and marker buoys for injured or dead animals)?

Collaboration activities with research and environmental education

Ecological Impact Assessment

The overall impact is considered as: Not significant; Only Slightly Significant; Significant; Very Significant.