



# Inter-island movements of Bottlenose dolphins (*Tursiops truncatus*) in the Canary Islands: implications for conservation and SAC design



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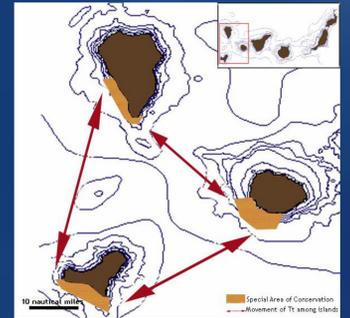


Figure 1: Area of study in the occidental Canary Islands showing SACs designated for the conservation of Bottlenose dolphins (*Tursiops truncatus*). Here we show that the three islands may share one population.

## Background

The bottlenose dolphin is a protected species considered as “critical” by the EU. Populations of bottlenose dolphin have been identified in several of the Canary Islands and Special Areas of Conservation (SACs) have been designed under the Habitat Directive to protect this species in the Archipelago. Information on the distribution of bottlenose dolphins and on the degree of individual movements among the islands is essential for the design of SACs and to allow accurate estimates of population abundance in the Canary Islands.

### One archipelagic population or seven insular populations?

- Bottlenose dolphins may have spatial fidelity and insular populations strongly associated to each island.
- Dolphins may move among islands.

	La Gomera	La Palma	El Hierro	Fin outlines	
					NARVAL
					MOCCHILLO
					CALDERON
					CARLOTON
					MAMA GRUBERE
					NAMA KOUJET
					NAMA ZEN
					OSISPO
					SAITIBANCO
					SANJUAN
					SECOHI
					TRIBENT
					TROMPA
					UNGLA

Figure 2. Dolphins observed in at least two of the islands of El Hierro, La Palma and La Gomera. Software Darwin 2.0 was used to aid matching individuals dolphins.

## Methods

Photos were gathered from dorsal fins of bottlenose dolphins in the three most occidental of the Canary Islands (Table 1). Dorsal fin images were analyzed using photo-identification protocols and entered into a digital database using the software Darwin (2.0)(Eckerd Collage) which was used to assist in matching individual dolphins (Fig.2).

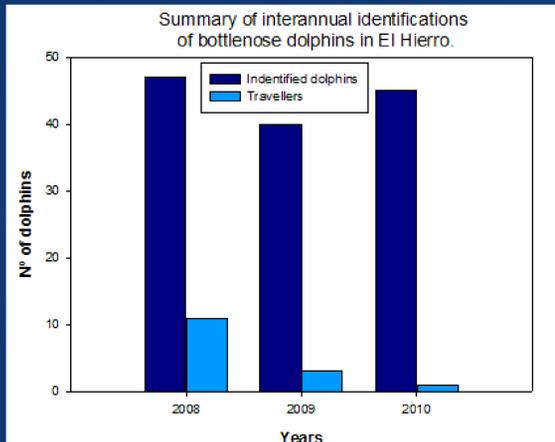


Figure 3. El Hierro: 13% of the dolphins were observed in La Palma and/or in La Gomera (travellers).

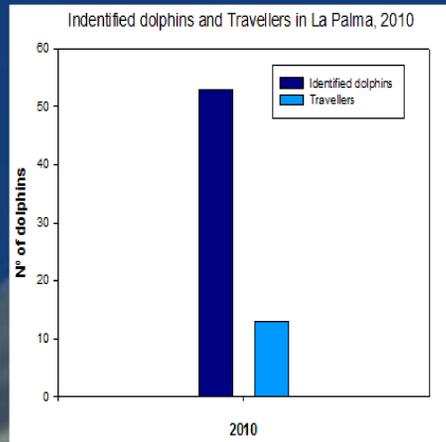


Figure 4. La Palma: 23% of the dolphins identified were observed in El Hierro and/or La Gomera

Island	El Hierro	La Palma	La Gomera
Years of study	2008 2009 2010	2010	2009
Photo-ID days	38	19	1
Nº dolphins marked	100	53	4
Re-sighted in other islands	14	14	2

Table 1. Effort invested and number of dolphins marked and observed in each island.

## Results and conclusions

- Dolphins move among the occidental Canary Islands (Fig1, Fig2). The percentages of individuals re-sighted between pairs of islands with the current sample size are 50% between La Gomera and El Hierro, and 23% between La Palma and El Hierro (Fig 3). The low sampling effort in La Palma and La Gomera may have led to an underestimation of the number of dolphins common to the three study islands
- From the 142 individual dolphins identified, at least 14 are inter-islands “travelers” (19.8%). This percentage is much higher than reports from other volcanic archipelagos, such as Azores (7% of the dolphins perform inter-insular movements, Silva 2007) or Hawaii. In Hawaii there is evidence of territorial fidelity in bottlenose dolphins and less than 1% of the dolphins move among islands (Baird et al., 2010).
- The distribution of bottlenose dolphins exceeds the limits of the SACs designated for their protection in the occidental Canary Islands: SAC Santiago-Valle Gran Rey (La Gomera), SAC Mar de las Calmas (El Hierro) and SAC Fuencliente (La Palma). Dolphins move among the islands and therefore the channels are part of their habitat. This should be considered for future revisions of the limits of the SACs that may include the inter-island channels

**INSULAR PHOTO-ID CATALOGUES NEED TO BE COMBINED TO PROVIDE AN ACCURATE ESTIMATE OF THE ARCHIPELAGIC POPULATION ABUNDANCE, WHICH MAY BE OVERESTIMATED BY JUST SUMMING THE NUMBER OF DOLPHINS IN EACH ISLAND.**

## References

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