NPWS

West Connacht Coast SAC (site code: 2998)

Conservation objectives supporting document-marine species

Version 1

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Introduction

The West Connacht Coast SAC is designated for the Annex II species *Tursiops truncatus* (common bottlenose dolphin, also known as bottlenose dolphin or bottle-nosed dolphin), a comparatively large dolphin species that occurs extensively in Irish and European waters, both coastally and offshore.

Following initial investigations in the 1990s of a distinct resident bottlenose dolphin community occurring in the Shannon Estuary, numerous surveys examining the occurrence, distribution, ecology, community structure and size of the population(s) inhabiting coastal waters off the south-west/west of Ireland have been conducted since the early-2000s (e.g. Ingram et al., 2001; Ingram & Rogan, 2003; Ingram et al., 2003; Ó Cadhla et al., 2003; Oudejans et al., 2008; DEHLG, 2009; Ingram et al., 2009; O'Brien, 2009; Oudejans et al., 2010; Mirimin et al., 2011; Anderwald et al., 2012; Englund, 2014; Oudejans et al., 2015). These localised and regional studies, in combination with recent research effort focused specifically in, what is now, the West Connacht Coast SAC and in adjacent areas off the west and north-west coasts (Nykanen et al., 2015), have facilitated (a) the estimation and monitoring of this genetically-distinct dolphin population (Mirimin et al., 2011) and (b) knowledge of the ecology of the species within the site.

Aspects of the biology and ecology of this Annex II species are provided in Section 1. The corresponding site-specific conservation objective will facilitate Ireland delivering on its surveillance and reporting obligations under the EU Habitats Directive (92/43/EC).

Ireland also has an obligation to ensure that consent decisions concerning operations/activities planned for Natura 2000 sites are informed by an appropriate assessment where the likelihood of such operations or activities having a significant effect on the site cannot be excluded. Further ancillary information concerning the practical application of the site-specific objectives and targets in the completion of such assessments is provided in Section 2.

Section 1

Annex II species

TURSIOPS TRUNCATUS (BOTTLENOSE DOLPHIN)

This toothed cetacean species (from the mammal Order Cetacea - whales, dolphins and porpoises) occurs in estuarine, coastal and offshore waters where it carries out breeding, foraging, resting, social activity and other life history functions. As air-breathing mammals, bottlenose dolphins must return to the water surface to breathe but they are otherwise wholly aquatic. Individual dolphins of all ages use sound as their primary sensory tool in order to navigate, communicate, avoid predators, or locate and facilitate the capture of prey under water. As a comparatively large dolphin species, it is conspicuous due to its regular occurrence in shallower coastal areas and its willingness to approach vessels and persons at sea. Its distribution extends throughout continental shelf and slope waters and groups have also been recorded in waters more than 2,500m deep. Several resident coastal populations are described in western European waters. However individuals and/or groups of the species may also range over many hundreds or even thousands of kilometres. Recently there have been records of a few individual dolphins ranging extensively through Irish coastal waters and into Northern Irish, Scottish and southern English waters.

The occurrence of dolphins within a prescribed marine area can be estimated using visual observation, photo-identification (for certain species including *Tursiops truncatus*) and passive acoustic methods in order to deliver an assessment of community or population size (i.e. relative abundance or absolute abundance), density and distribution. The size, community structure, distribution and habitat use of bottlenose dolphin inhabiting the West Connacht Coast SAC are quite well understood, although the general picture is somewhat more complex and dynamic than that described by the Lower River Shannon population, from which it is genetically distinct. Hence, the West Connacht Coast SAC is split into two spatial components in western Connemara and Mayo respectively (see Figure 1).

The West Connacht Coast population of bottlenose dolphins is described as resident within the SAC, with groups of dolphins being present in the wider Connemara-Mayo region throughout the year. There is repeated occurrence of known individuals within and between years (i.e. site fidelity) and a fine scale genetic distinction is evident between members of this population and populations/communities occurring in the Shannon Estuary and offshore. Survey efforts primarily targeting the summer-autumn period and using a photo-ID based mark-recapture technique have so far delivered population estimates of relevance to the SAC within the wider west/north-west region in 2009, 2010, 2013 and 2014. The figures generated have been relatively consistent between years although the statistical precision of the estimates has been quite variable. This is due to methodological constraints as well as, for example, effort-related and natural variability and animal movements. The most recent population estimation surveys conducted in the summers of 2013 and 2014 resulted in estimates of 140-296 individual dolphins (i.e. lower and upper 95% Confidence Intervals) with the 2014 estimate being considerably more precise and thus more reliable for a single sampling year (i.e. N=159±15 individuals; 95% Confidence Intervals: 140-190; Coefficient of Variation=0.10).

It should be noted that this population estimate for the west coast of Ireland incorporates dolphins encountered in Donegal Bay from which there is evidence emerging of fluid dolphin movement and community exchange or integration between dolphin groups. Some more extensive movements of several individually-recognisable individuals are also documented (e.g. to south-west Ireland). Overall, studies of community (social) structure undertaken so far within the West Connacht Coast site describe a very dynamic, changeable model often termed a 'fission-fusion' model of social structure but with a high degree of interconnection between all individuals in the population. Mean group sizes tend to peak between 10-20 individuals but dolphin groups may be highly variable in composition and larger aggregations of 50 dolphins or more may also be recorded.

Important cohorts within the West Connacht Coast population, such as free-ranging and site-faithful adults, juveniles and newborn calves, have consistently been recorded since research studies began at the site. The species breeds annually in Irish waters and indications are that the birth and early rearing of newborn calves takes place predominantly during the summer and early autumn months (i.e. May to September). Calving in the West Connacht Coast SAC is thought to occur within the same period. However female bottlenose dolphins do not produce a new calf each year and instead an average interval of 3-4 years or more between individual calving is described for the species. Newborn dolphin calves depend primarily upon their mother's nutrient-rich milk for at least their first year and are generally weaned before they are two years old. Maternal investment in the growing juvenile typically continues until the birth of a new calf, while successful mating activity appears to take place primarily during the same season that calving is taking place.

Individual and groups of bottlenose dolphins are known to range widely throughout the West Connacht Coast SAC, and some further afield as described above. Due to its spatial extent, the challenges of exposure to Atlantic Sea conditions and the more consistent data available from a range of sources, research effort has tended to focus on waters situated inshore of the islands (e.g. High Island, Inishbofin, Inishturk, Clare Island, the Inishkea Islands). Yet the majority of recorded encounters with bottlenose dolphins have taken place within just 5-6km of the mainland. Based on the available data it is currently considered that the population of dolphins inhabiting the West Connacht Coast SAC is more coastal in its habits and may be specialised in its life history, ecology and habitat use accordingly. While there are indications that certain areas in which important clusters of dolphin records occur, e.g. outer Killary Harbour (Co. Galway/Co. Mayo) or off the Mullet Peninsula (Co. Mayo), could represent high-value habitats used preferentially by the species (e.g. for foraging or socialising) it should be noted that all suitable aquatic habitat (Figure 1) is considered relevant to the species range and ecological requirements within the site and is therefore of potential use by bottlenose dolphins.

Bottlenose dolphin is a successful aquatic predator that feeds on a wide variety of fish (e.g. mackerel, horse mackerel, salmonids, gadoids, eels, *Trisopterus* spp., flatfish and dogfish), cephalopods (e.g. squid) and occasionally crustacean species occurring in the water column or close to/within the seabed. Foraging areas for bottlenose dolphin are often associated with areas of strong tidal current and associated eddies, therefore the occurrence of foraging dolphins close to shore or adjacent to cliffs, islands, prominent headlands and tidal narrows is commonly reported. This is also the case in the West Connacht Coast SAC where co-operative foraging behaviour and prey capture have been documented across several studies.

Section 2: Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e. sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. General guidance on the completion of such assessments has been prepared and is available at www.npws.ie.

Annex II species

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex II species to facilitate the appropriate assessment process:

Objective **To maintain the favourable conservation condition of bottlenose dolphin in West Connacht Coast, which is defined by the following list of attributes and targets**

Target 1	Species range within the site should not be restricted by artificial barriers to site use.

- This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of bottlenose dolphin from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.
- It does not refer to short-term or temporary restriction of access or range.
- Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.

Target 2	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site.

- Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of bottlenose dolphin within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle.
- This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc.) upon which bottlenose dolphins depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.
- Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the bottlenose dolphin population at the site.

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Figure 1. *Tursiops truncatus* - Habitat within the West Connacht Coast SAC.