

The Shannon (Sionna) Approaches IMMA

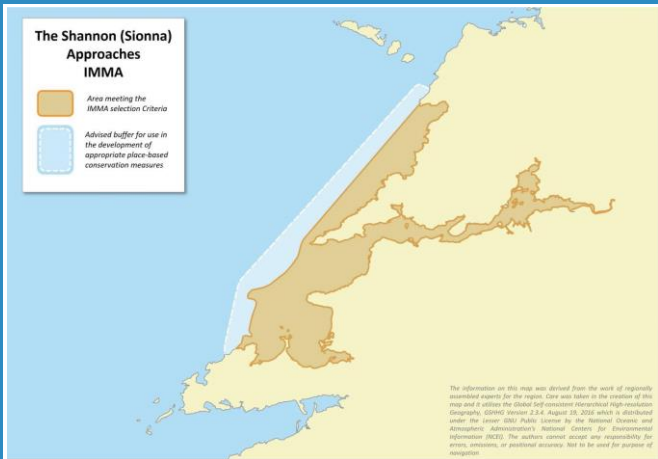
Summary, continued.

emigration of some individuals from the Shannon population and this IMMA encompasses all of the important habitat for these populations.

Description:

The Shannon river is Ireland's largest waterway whose catchment covers 18,000 km² and which enters the Atlantic Ocean at the Shannon Estuary. The Lower River Shannon Special Area of Conservation (SAC) incorporates the entire estuary and is 120 km (75 mi) in length, running from Killaloe to Loop Head and lists common bottlenose dolphins as a qualifying interest. The IMMA area encompasses the coastal waters to the north, west and south of the western sea boundary of the SAC which are also part of the Shannon dolphins range. The habitats include exposed rocky coasts and reefs including small islands and inlets and some large bays to the south. Common bottlenose dolphins are strongly associated with the coast, rarely recorded >2 km offshore and are typically found in around 20-50 m water depth. The boundaries encompass known regular sightings of the Shannon dolphin population.

The IMMA hosts a resident population of genetically distinct common bottlenose dolphins. Other cetacean species regularly recorded in the IMMA include minke whale (typically May to September), and common dolphin recorded all year round. Grey seals are regularly recorded in small numbers feeding in the area and a large breeding colony occurs just outside the western boundary of the IMMA at the Blasket Islands. This is the second



Area Size

1 521 km²

Qualifying Species and Criteria

Common bottlenose dolphin – *Tursiops truncatus*
Criterion B (1); D (1)

Summary

The Shannon Estuary hosts a small (c.145 individuals), genetically discrete population of common bottlenose dolphins (*Tursiops truncatus*), which until recently were considered to be largely restricted to the estuary. The inshore waters to the west of the Shannon Estuary also provide important habitats for this small, unique population which have been shown to use these habitats on a regular and consistent basis as determined by photo-id. Surveys since 2008 have shown a high proportion of the Shannon population in Brandon and Tralee Bays during summer months and static acoustic monitoring has shown that these bays provide important foraging areas. More recent surveys along the Clare coast have regularly recorded large groups (up to 40-50 individuals) of Shannon dolphins, mainly during summer months. A small number of Shannon dolphins have also recently been shown to take up "residency" in Galway Bay. There is strong evidence of a permanent



Figure 1: Common bottlenose dolphin (*Tursiops truncatus*) breaching in the Shannon Estuary. Photo credit: Simon Berrow / IWDG

largest breeding and moulting site in Ireland (Morris & Duck, 2019) and is designated as an SAC. Common seals are less abundant but are known to pup in small numbers (<10) at Mutton Island just outside the northern boundary the area (Morris & Duck, 2019).

Criterion B: Distribution and Abundance

Sub-criterion B1: Small and Resident Populations

The common bottlenose dolphins (*Tursiops truncatus*) in the Shannon Estuary comprise a small (c. 145 individuals; Baker et al., 2018), genetically discrete population (Mirimin et al., 2011; de Bonis, 2023), which is thought to be largely resident in the Shannon Estuary. The population is considered to have remained stable in size, since the first

abundance estimate using photo-identification and mark-recapture was carried out in 1997 (Blázquez et al., 2020). The most recent abundance estimate (Berrow et al., 2022), although in the range of previous estimates suggests the population may have declined by 17.1% during the last 16 years. However the methodology is not sensitive enough to conclusively detect this slow decline. The decline in dolphins in the estuary is attributed to range expansion or permanent emigration rather than a decline in overall numbers.

Since 2008 the Irish Whale and Dolphin Group have been collecting bottlenose dolphin photo-id data from Brandon and Tralee Bays which is just to the south and west of the Shannon Estuary. Levesque et al. (2016) showed 67 of the 70 individual dolphins

photographed in these bays between 2008 and 2016 belonged to the Shannon dolphin population. McGuire (2022) updated this work using data obtained during 12 surveys carried out between 2017 and 2020 and Shannon dolphins accounted for 62-100% of all bottlenose dolphins identified. A discovery curve did not reach a definitive plateau indicating that not all the dolphins which occur in Tralee Bay and Brandon Bay were captured during this period.

Ludwig et al. (2021) explored mortality and survival rates of the Shannon dolphin population using a 26-year dataset collected between 1993 and 2019. Survival rate using data only from the Shannon Estuary was 80%, which is very low, but when data from Brandon and Tralee Bays were included it rose to around 95%, which is consistent with similar populations elsewhere and suggesting this is a continuous population. Some of the dolphins, once recorded regularly in the estuary are now only recorded in Brandon, suggesting a permanent emigration out of the Shannon estuary into the Bay. This demonstrates the importance of this habitat to the Shannon dolphins. Charish et al. (2021) showed using static acoustic monitoring between May and November 2013 that Brandon Bay was an important foraging habitat for dolphins with detections on 92% of days monitored and foraging recorded during 20% of all monitored hours.



Figure 2: Common bottlenose dolphins (*Tursiops truncatus*) mother and calf with fetal folds seen in Shannon Estuary. Photo credit: Simon Berrow / IWDC

Boat-based surveys along the west coast of County Clare have increasingly recorded Shannon dolphins outside the Lower River Shannon SAC. Large groups of Shannon Dolphins are regularly recorded off Kilkee and Doonbeg to the north of the SAC, and more occasionally further north off Doolin and now as far north as Galway Bay, de Bonis (2023) provided new insights on potential limitations of current SAC boundaries as he showed individual dolphins biopsied in Brandon Bay (Co. Kerry) and stranded in Doolin and Lahinch (70 km from the mouth of the Shannon) belonged to the Shannon dolphin population, supporting the recent evidence of range expansion.

The evidence suggests these areas in which Shannon dolphins were not previously regularly recorded represent a recent range expansion. Dolphins are now regularly recorded suggesting this is not a rare event, but are consistently present in these habitats. The IMMA therefore includes all of these newly occupied habitats to highlight the importance of these habitats for a small, genetically discrete and vulnerable (see population viability analysis presented in Blázquez et al., 2020) population of bottlenose dolphins to support conservation action and management.



Figure 3: Common bottlenose dolphins (*Tursiops truncatus*) leaping out of the Shannon Estuary waters. Photo credit: Simon Berrow / IWDC

Criterion D: Special Attributes

Sub-criterion D1: Distinctiveness

The common bottlenose dolphins in the Shannon Estuary are considered genetically discrete compared to bottlenose dolphins elsewhere in Irish waters. Mirimin et al. (2011) used both biopsy samples and samples from stranded individuals to explore genetic structuring and showed that there are three discrete populations of bottlenose dolphins in Ireland; a population residing in the Shannon Estuary, a coastal population with its core habitat off NW Ireland and a putative offshore population which dominated the stranding records. Interestingly samples from a “semi-resident” group which were regularly recorded in the mouth of Cork Harbour from 2005 to 2013 were genetically assigned to the Shannon Estuary. Cork Harbour lies on the south coast of Ireland, at least 170 km from the mouth of the Shannon Estuary. Louis et al. (2014) confirmed the existence of a large, highly mobile offshore population which was also stranded in Ireland. This study was recently updated by de Bonis (2023), using more data primarily from stranded individuals (n=67) and confirmed strong population structuring in the Irish bottlenose dolphin community.



Figure 4: Common bottlenose dolphin (*Tursiops truncatus*) breaching near vessel. Photo credit: Simon Berrow / IWDG



Figure 5: Common bottlenose dolphin (*Tursiops truncatus*) breaching near tourist boat. Photo credit: Simon Berrow / IWDG



Figure 6: Common bottlenose dolphins (*Tursiops truncatus*) breaching in the Shannon Estuary. Photo credit: Simon Berrow / IWDG

Supporting Information

Baker, I., O'Brien, J., McHugh, K., and Berrow, S. 2018. Female reproductive parameters and population demographics of bottlenose dolphins (*Tursiops truncatus*) in the Shannon Estuary, Ireland. *Marine Biology* 165:15 <https://doi.org/10.1007/s00227-017-3265-z>.

Blázquez, M., Baker, I., O'Brien, J.M., and Berrow, S.D. 2020. Population Viability Analysis and Comparison of Two Monitoring Strategies for Bottlenose Dolphins (*Tursiops truncatus*) in the Shannon Estuary (Ireland) to Inform Management. *Aquatic Mammals* 46(3), 307-325, DOI 10.1578/AM.46.3.2020.307.

Berrow, S., Daly, M., Dudley, R., Levesque, S., Regan, S., and O'Brien, J. 2022. Bottlenose dolphins in the Lower River Shannon SAC, 2022. National Parks and Wildlife Service, Department of Housing, Heritage and Local Government, Ireland, 41pp.

de Bonis, L. 2022. Interpreting genetic data to guide conservation and management of a highly mobile species: a better understanding of bottlenose dolphins (*Tursiops truncatus*) population structure in Irish waters. Master thesis submitted to Ghent University for the partial fulfilment of the Master of Science in Marine Biological Resources (IMBRSea).

Charish, R., Berrow, S. and O'Brien, J. 2021. Acoustic Monitoring of a Bottlenose Dolphin (*Tursiops truncatus*) Population: Trends in Presence and Foraging beyond the Limits of the Lower River Shannon SAC. J. Mar. Sci. Eng. 9, 650. <https://doi.org/10.3390/jmse9060650>.

Levesque, S., Reusch, K., Baker, I., O'Brien, J., and Berrow, S. 2016. Photo-Identification of Bottlenose Dolphins (*Tursiops truncatus*) in Tralee Bay and Brandon Bay, Co. Kerry: A Case for SAC Boundary Extension. Biology and Environment: Proceedings of the Royal Irish Academy 2016. DOI: <http://dx.doi.org/10.3318/BIOE.2016.11>.

Louis, M., Viricel, A., Lucas, T., Peltier, H., Alfonsi, E., Berrow, S., Brownlow, A., Covelo, P., Dabin, W., Deaville, R., de Stephanis, R., Gally, F., Gauffier, P., Penrose, R., Silva, M.A., Guinet, C., and Benoit S-B. 2014. Habitat-driven population structure of bottlenose dolphins, *Tursiops truncatus*, in the North-East Atlantic. Molecular Ecology 23, 857-874.

McGuire, S. 2022. An investigation into Bottlenose dolphins (*Tursiops truncatus*) in Tralee Bay and Brandon Bay Co. Kerry to support the extension of the Lower River Shannon SAC boundary. Submitted

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Mirimin, L., Miller, R., Dillane, E., Berrow, S.D., Ingram, S., Cross, T.F., and Rogan, E. 2011. Fine-scale population genetic structuring of bottlenose dolphins using Irish coastal waters. Animal Conservation. 14(4), 342-353.

Morris, C.D. and Duck, C.D. 2019. Aerial thermal-imaging survey of seals in Ireland, 2017 to 2018. Irish Wildlife Manuals, No. 111 National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

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MARINE MAMMAL PROTECTED AREAS TASK FORCE



WHALE AND
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CONSERVATION



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PDF made available for download at
<https://www.marinemammalhabitat.org/factsheets/shannon-sionna-approaches-imma/>