

Draft Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020



Dublin Bay Biosphere Partnership

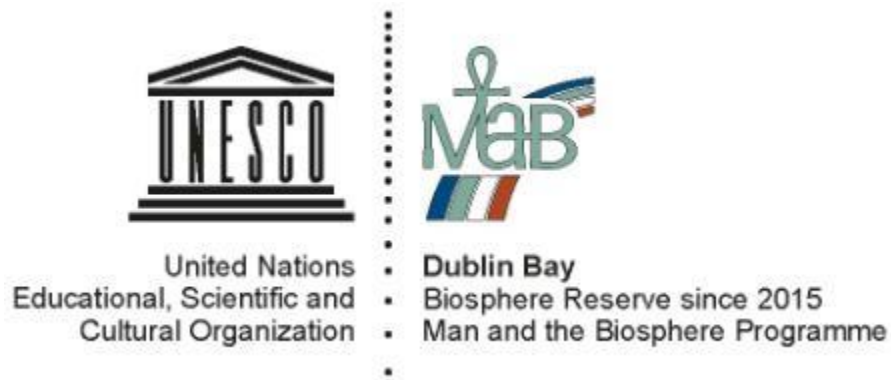
October 2016



BITHSFÉIR

Chuan Bhaile Átha Cliath

Dublin Bay
BIOSPHERE



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Front cover: Oblique aerial photograph of Dublin Bay by Peter Barrow

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1. Introduction

1.1 Scope

Dublin Bay Biosphere (DBB) received its designation from the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in June 2015, following a periodic review process of the pre-existing North Bull Island Biosphere. The designation will be in place for a 10 year period and will be re-evaluated through another periodic review process.

DBB is managed by the Dublin Bay Biosphere Partnership (DBBP), which includes Dublin City Council (DCC), Dublin Port Company (DPC), Dún Laoghaire-Rathdown County Council (DLRCC), Fáilte Ireland (FI), Fingal County Council (FCC) and the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA). DBBP works with community groups, NGOs, local businesses, third level institutions and schools.

This document sets out the planned biodiversity conservation and related research actions of DBBP from 2016-2020, building on the themes and objectives set out in the Periodic Review of North Bull Island UNESCO Biosphere (DCC, 2014).

1.2 Policy background

Biospheres contribute to the implementation of the Sustainable Development Goals of the United Nations Development Programme and Multilateral Environmental Agreements, including the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity and the Aichi Biodiversity Targets.

The policy framework to guide the UNESCO Man and the Biosphere (MAB) Programme and the World Network of Biosphere Reserves is provided by the MAB Strategy 2015-2025 and associated Lima Action Plan 2016-2025 (UNESCO 2016). The Strategic Objectives set out in the MAB Strategy 2015-2025 are to:

1. Conserve biodiversity, restore and enhance ecosystem services, and foster the sustainable use of natural resources
2. Contribute to building sustainable, healthy and equitable societies, economies and thriving human settlements in harmony with the Biosphere
3. Facilitate biodiversity and sustainability science, education for sustainable development and capacity building
4. Support mitigation and adaptation to climate change and other aspects of global environmental change

This Draft Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020, and the consultation process behind it, is aligned with the Lima Action Plan, and the following actions in particular:

- A1.4. Use Biospheres as priority sites/observatories for climate change research, monitoring, mitigation and adaptation, including in support of the UNFCCC COP21 Paris Agreement.
- A1.6. Undertake research and ensure the long-term conservation of the socio-ecological systems of Biospheres, including the restoration and appropriate management of degraded ecosystems.

- A4.1. Establish partnerships with universities/research institutions to undertake research, especially UNESCO Chairs and Centres.
- A4.4. Identify and disseminate good practices for sustainable development, and identify and eliminate unsustainable practices in Biospheres.
- A4.5. Encourage managers, local communities and Biosphere stakeholders to collaborate in designing and implementing projects that inform the management and sustainable development of their Biosphere.

Furthermore, the Convention on Biological Diversity, signed by Ireland in 1992, required the preparation of a National Biodiversity Plan. Ireland's National Biodiversity Plan 2011-2016 requires 'each local authority to publish a Local Biodiversity Action Plan, or review existing plans'. The objectives of this Draft Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020 are in line with those of the relevant Local Biodiversity Action Plans of DCC, DLRCC and FCC.

1.3 The planning and development context

The Biosphere designation itself brings no new regulations; its aims are achieved by people working together within the existing national and international legislative framework.

Development in DBB is subject to an existing comprehensive legislative and policy planning framework implemented by all levels of government. The Biosphere is an internationally recognised designation which does not alter these existing frameworks. Dublin Bay Biosphere Partnership is not a planning reference body involved in land use planning deliberations or discussions. While it remains neutral on individual developments, the Partnership may make information available to inform evidence-based discussion, where appropriate.

While the designation of DBB brings no new regulations, DBB has been integrated into local policy. Actions to support the objectives of DBB have been incorporated by DCC, DLRCC and FCC into their respective Draft Development Plans, the Draft Strategy Towards Climate Change Action Plans for the Dublin Local Authorities (Codema, 2016) and by DCC into its Biodiversity Action Plan (DCC, 2016).

1.4 Key sites and themes

The Periodic Review of North Bull Island UNESCO Biosphere (DCC, 2014), which proposed the expansion of the Biosphere to Dublin Bay (Fig. 1), identified the following key sites and themes:

Key sites

- Baldoyle Bay
- Ireland's Eye
- Howth Head
- North Dublin Bay including North Bull Island
- Tolka Estuary
- South Dublin Bay
- Dalkey Islands

The designation status of the key sites is presented, for selected designation types, in Table 1. The key sites are designated as Special Protection Areas (SPAs) and/or Special Areas of Conservation (SACs) under the EU Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC) respectively. The Birds and Habitats Directives are transposed into Irish law by the European Communities (Birds

and Natural Habitats) Regulations 2011, the Wildlife Acts 1976 to 2012 and, in part, by the Planning and Development Act 2000, as amended.

Part of the Rockabill to Dalkey Island SAC is located within DBB. Its qualifying interests (i.e. the protected habitats and species for which the sites were designated) are Reefs and Harbour Porpoise (*Phocoena phocoena*). However, as a marine SAC which is predominantly offshore and uninhabited, it is not considered a key site in terms of the objectives of DBB.

Key themes

- Island and coastal biodiversity
- Urban resilience and urbanisation impacts on ecosystem services
- Climate change and conservation of species and habitats
- Conservation of rare species to preserve local landscape histories

Subsequent consultation with the DBB Conservation Working Group (see p. 11) highlighted the importance of the following themes in DBB:

- Wetland conservation
- Invasive species
- Recreational disturbance
- Coastal squeeze (habitat loss due to sea level rise, where the high water mark is fixed by coastal construction)

1.5 Management zonation

Biospheres contain three zones, with differing management objectives (Fig. 1):

1. The *core zone* consists of a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation. The key sites listed in Section 1.4 comprise the core zone of DBB, which covers 50 km².
2. The *buffer zone* surrounds or adjoins the core zone. It is managed to support the objectives of the core zone. Scientific research, monitoring, training, education and other environmentally sustainable activities are encouraged here. The buffer zone of DBB consists of 82 km² of public and private green spaces such as parks and greenbelts.
3. The *transition zone* is where the greatest level of economic and development activity takes place. Sustainable social and economic development is strongly promoted here. The transition zone of DBB comprises 173 km² and includes residential neighbourhoods, harbours, ports and industrial and commercial areas.

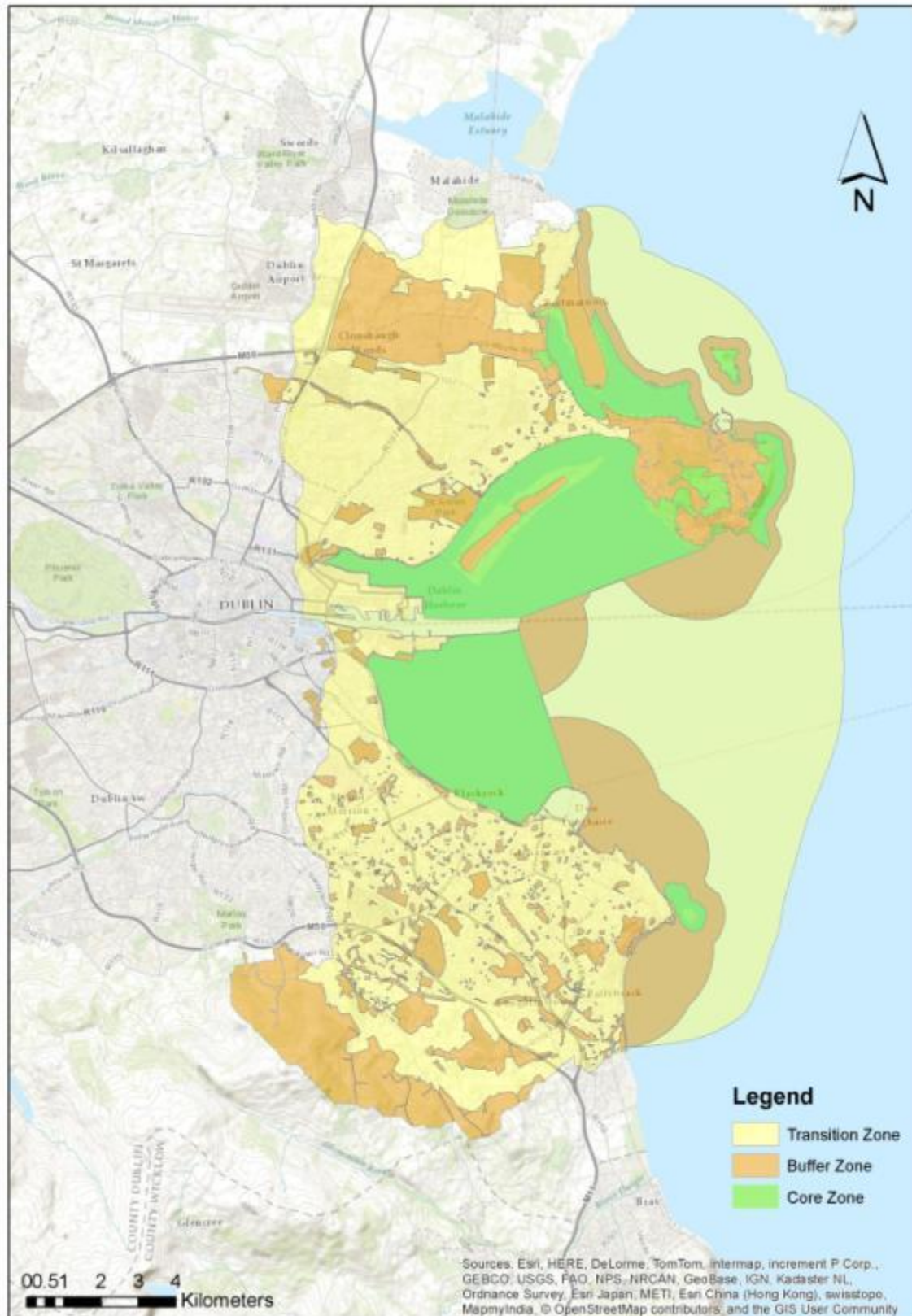


Figure 1.1. Map of Dublin Bay Biosphere, showing its management zonation.

Table 1.1: Status of conservation objectives and management planning for key sites

Site	Designation					Conservation Objectives		Management Planning
	SAC	SPA	pNHA	NNR	NSAA	Site-specific	Generic (2015)	
Ireland's Eye	✓	✓	✓				SAC SPA	-
Howth Head	✓	✓	✓		✓		SAC SPA	Howth NSAA Draft Operational Plan 2015-20
North Dublin Bay & North Bull Island	✓	✓	✓	✓	✓	SAC (2013) SPA (2015)		DCC North Bull Island Management Plan 2009-14
Dalkey Islands	✓	✓	✓			SAC (2013)	SPA	Dalkey Islands Conservation Plan 2013-23
Baldoyle Bay	✓	✓	✓	✓		SAC (2012) SPA (2013)		-
Tolka Estuary & South Dublin Bay	✓	✓	✓			SAC (2013) SPA (2015)		-

1.6 Management planning

Ireland's National Biodiversity Plan, 'Actions for Biodiversity 2011-2016', requires each local authority to publish a local Biodiversity Action Plan, or review existing plans. The existing plans are as follows:

- Dublin City Biodiversity Action Plan 2015-2020
- Dun Laoghaire-Rathdown Biodiversity Plan 2009-2013
- Fingal Biodiversity Action Plan 2010-2015

The status of site-specific management planning, including the setting of conservation objectives, for key sites is summarised in Table 1. Site-specific conservation objectives have been developed by DAHRRGA for most SACs and SPAs within DBB. Generic conservation objectives are available for the remainder, namely Ireland's Eye SAC and SPA, Howth Head SAC, Howth Head Coast SPA and Dalkey Island SPA. Site-specific management or conservation plans have been developed by the relevant local authorities for Howth Head National Special Amenity Area, North Bull Island and the Dalkey Islands.

1.7 Qualifying interests of SACs and SPAs

The qualifying interests of SACs and SPAs (i.e. the protected habitats and species for which the sites were designated) within DBB are presented in Tables 2 and 3 respectively. Conservation objectives have been or are due to be developed for these qualifying interests. Qualifying interests applicable to two or more SACs or SPAs have been highlighted to assist in identifying shared conservation priorities.

Table 1.2: Qualifying interests of SACs within Dublin Bay Biosphere

Qualifying Interests	Ireland's Eye	Howth Head	Baldoyle Bay	North Dublin Bay	South Dublin Bay & River Tolka Estuary	Rockabill - Dalkey Island
Habitats						
1140 Mudflats and sandflats			✓	✓	✓	
1170 Reefs						✓
1210 Annual vegetation of drift lines				✓		
1220 Perennial vegetation of stony banks	✓					
1230 Vegetated sea cliffs	✓	✓				
1310 <i>Salicornia</i> and other annuals colonising mud and sand			✓	✓		
1330 Atlantic salt meadows			✓	✓		
1410 Mediterranean salt meadows			✓	✓		
2110 Embryonic shifting dunes				✓		
2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)				✓		
*2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)				✓		
2190 Humid dune slacks				✓		
4030 European dry heaths		✓				
Species						
1351 <i>Phocoena phocoena</i> (Harbour Porpoise)						✓
1395 <i>Petalophyllum ralfsii</i> (Petalwort)				✓		

* Denotes a priority habitat

While qualifying interests are important in establishing priorities for conservation management in the core zones, it must be remembered that there are numerous other habitats and species present within DBB which are of conservation value. For example, nationally or locally rare species may not be listed under the Annexes of the Habitats and Birds Directives but may be very important in the context of DBB. The knowledge of local authority staff, NGOs, volunteer recorders and professional ecologists will be invaluable in identifying conservation priorities that are outside the focus of the SAC and SPA network.

Table 1.3: Qualifying interests of SPAs within Dublin Bay Biosphere

Features of Interest	Ireland's Eye	Howth Head	Baldoyle Bay	North Dublin Bay	S. Dublin Bay & R. Tolka Estuary	Dalkey Island
A017 Cormorant (<i>Phalacrocorax carbo</i>)	✓					
A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)			✓	✓	✓	
A048 Shelduck (<i>Tadorna tadorna</i>)			✓	✓		
A052 Teal (<i>Anas crecca</i>)				✓		
A054 Pintail (<i>Anas acuta</i>)				✓		
A056 Shoveler (<i>Anas clypeata</i>)				✓		
A130 Oystercatcher (<i>Haematopus ostralegus</i>)				✓	✓	
A137 Ringed Plover (<i>Charadrius hiaticula</i>)			✓		✓	
A140 Golden Plover (<i>Pluvialis apricaria</i>)			✓	✓		
A141 Grey Plover (<i>Pluvialis squatarola</i>)			✓	✓	✓	
A143 Knot (<i>Calidris canutus</i>)				✓	✓	
A144 Sanderling (<i>Calidris alba</i>)				✓	✓	
A149 Dunlin (<i>Calidris alpina</i>)				✓	✓	
A156 Black-tailed Godwit (<i>Limosa limosa</i>)				✓		
A157 Bar-tailed Godwit (<i>Limosa lapponica</i>)			✓	✓	✓	
A160 Curlew (<i>Numenius arquata</i>)				✓		
A162 Redshank (<i>Tringa totanus</i>)				✓	✓	
A169 Turnstone (<i>Arenaria interpres</i>)				✓		
A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>)				✓	✓	
A184 Herring Gull (<i>Larus argentatus</i>)	✓					
A188 Kittiwake (<i>Rissa tridactyla</i>)	✓	✓				
A192 Roseate Tern (<i>Sterna dougallii</i>)					✓	✓
A193 Common Tern (<i>Sterna hirundo</i>)					✓	✓
A194 Arctic Tern (<i>Sterna paradisaea</i>)					✓	✓
A199 Guillemot (<i>Uria aalge</i>)	✓					
A200 Razorbill (<i>Alca torda</i>)	✓					
A999 Wetland and Waterbirds			✓	✓	✓	

**Figure 1.2. Light-bellied Brent Geese in the South Dublin Bay SAC/SPA, photo by Richard Nairn**

2. Preparation of DBB Biodiversity Conservation and Research Strategy 2016-2020

2.1 Consultation Process

A Dublin Bay Biosphere Conservation Working Group was established in September 2015 to actively participate in developing a Biodiversity Conservation and Research Strategy for DBB. This working group brings together representatives of the member organisations of Dublin Bay Biosphere Partnership with individuals and NGOs actively working on ecological research and conservation management in Dublin Bay. It includes:

- Birdwatch Ireland,
- Booterstown Nature Reserve Management Committee,
- Coastwatch Ireland,
- Dublin Naturalists' Field Club,
- The Herpetological Society of Ireland,
- The Irish Seal Sanctuary,
- The Irish Wildlife Trust

as well as consultant ecologists, biological recorders and local volunteers in an individual capacity. The group has met four times to date. Group members proposed, discussed and prioritised the actions of the Draft Dublin Bay Biosphere Biodiversity Conservation and Research Strategy.

The draft document was presented at the "Dublin Bay UNESCO Biosphere Conference: Connecting people and nature" and associated Research Networking workshop on October 26th 2016 and has been made available online for public consultation through www.dublinbaybiosphere.ie. Feedback should be sent to biosphere@dublincity.ie by Monday November 21st 2016. The finalised document is to be made available online in December 2016.

2.2 Actions and implementation

Biodiversity conservation and research actions, at site-specific and DBB-wide scales, have been proposed and are presented in Tables 2.1 to 2.8. These cover the key sites, as well as additional actions identified for Dublin Port and Dun Laoghaire-Rathdown County. Specific objectives, target habitats/species/taxonomic groups and responsible agencies have been identified. Timelines have been set out and actions have been costed where possible, though costs are not presented here due to commercial sensitivities. Priority actions are highlighted in green.

The DBB Conservation Working Group will meet annually to review DBBP's progress in implementing the finalised Dublin Bay Biosphere Biodiversity Conservation and Research Strategy.

2.3 Funding and research partnerships

DBBP and/or its member organisations have committed to funding the majority of the actions set out. However, not all of the large number of actions to be undertaken can be financed in this way, particularly the larger-scale actions. DBBP seeks to partner with other organisations to co-fund these actions or develop funding applications for suitable research projects. In line with Action A4.1 of the Lima Action Plan 2016-2025, there is significant potential to establish partnerships with universities

and research institutions, either through student projects or by jointly developing funding proposals for new projects.

To promote the establishment of research partnerships, DBBP can provide the following supports (subject to budgetary and staff time constraints):

- Cross-disciplinary networking for researchers and policymakers
- Funding/co-funding for research that meets the objectives of DBBP
- Non-financial support e.g. staff time, hosting events, promotional support, research communication opportunities
- Letters of support for relevant funding applications/awards
- Links with the UNESCO World Network of Biosphere Reserves and associated research consortia
- Potential to incorporate research into local policy
- Access to datasets held by DBBP and/or or its member organisations

3. Tables of biodiversity conservation and research actions

Table 2.1. Site-specific biodiversity conservation and research actions for Ireland's Eye

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Prepare and implement management plan for Ireland's Eye SAC/SPA	To give an overview of the site's birds, flora, mammals and archaeology and provide management recommendations	Birds, flora, mammals	FCC, BWI, DNFC, NPWS, ISS, Fáilte Ireland, landowner, ferry operators, Howth Harbourmaster	2017
2	Map invasive alien species, set up and monitor removal trials, undertake removal	To remove invasive alien species	White Stonecrop (<i>Sedum album</i>), Japanese Rose (<i>Rosa rugosa</i>), Sycamore (<i>Acer pseudoplatanus</i>)	FCC, CVI, DNFC, NPWS	Start in 2016
	Research				
3	Conduct a seal survey	To identify haul-out and breeding sites	Seals	FCC, ISS	2016
4	Conduct study of impact of recreational use on breeding bird colonies	To assess the impact of recreational usage on seabird colonies and identify potential visitor routes to avoid disturbing seabird colonies	Seabirds, particularly gulls	FCC, BWI	2016
5	Conduct flora and vegetation study	To provide a detailed GIS map of vegetation types	Flora	FCC, Declan Doogue	2016
6	Conduct study of impact of fires on bird populations and vegetation, set up long-term monitoring framework	To assess the impact of fire on breeding bird populations and vegetation and to establish how bird populations and vegetation respond after fires	Breeding birds, flora	FCC, BWI, Declan Doogue	2016
7	Prepare and publish a	To describe the island's flora and disseminate	Flora	FCC, Declan Doogue	2018

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	flora of Ireland's Eye	the findings			
8	Conduct bryophyte study	To describe the Island's bryophyte flora and determine if species of conservation importance are present	Bryophytes	FCC, NPWS, Consultant bryologist	2017
9	Conduct archaeological study	To inform the management plan of archaeology on-site and how to address that in terms of conservation and visitor management	Archaeological features	FCC Conservation Officer, Consultant archaeologist	2016

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Table 2.2. Site-specific biodiversity conservation and research actions for Baldoyle Bay

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Prepare and implement masterplan for Baldoyle Estuary SAC/SPA	To protect and enhance the nature conservation and recreational value of the area	Migratory birds including Terns, Meadow Barley (<i>Hordeum secalinum</i>), Borrer's Salmarsh-grass (<i>Puccinellia fasciculata</i>)	FCC, BWI, CWI, NPWS, DNFC, local community groups	2018-2019
2	Prepare masterplan for the Mayne River and its immediate surroundings	To protect and enhance the nature conservation and recreational value of the Mayne River corridor	Flora and fauna of river habitats	FCC, DCC, Inland Fisheries Ireland, IWT, NPWS, BWI, local community groups	2017
3	Remove Sea-buckthorn (<i>Hippophae rhamnoides</i>) from dunes at Portmarnock	To prevent the spread of this invasive non-native species and restore native dune vegetation	Sand dune vegetation	FCC, CVI, golfcourse owner	Ongoing
4	Assess feasibility of otter crossing and fish passage at Mayne River Bridge on Coast Road	To prevent otter fatalities and facilitate fish migration	Otter (<i>Lutra lutra</i>), Brown trout (<i>Salmo trutta</i>)	FCC, NPWS, Inland Fisheries Ireland	2017
	Research				
5	Conduct an ecological study of the Mayne River	To determine which species of flora and fauna can be found along the river, the conservation status of the river and what works are required to restore the river to good ecological status	Flora and fauna of river habitats	FCC, DCC, Inland Fisheries Ireland, IWT, NPWS, BWI, local community groups	2017
6	Conduct repeat study of winter bird use of lands adjacent to the estuary every 2-3 years	To identify and protect roosting and feeding sites	Wintering wildfowl and waders	FCC, BWI	2016

7	Conduct impact study of shooting in the Baldoyle Estuary	To assess the impact of disturbance from shooting on birdlife	Estuarine birds	FCC	2016
8	Conduct feasibility study for bird conservation projects at the tip of Portmarnock dunes	To assess the potential for re-instatement of a Little Tern and Ringed Plover colony	Little Tern (<i>Sterna albifrons</i>), Ringed Plover (<i>Charadrius hiaticula</i>)	FCC, BWI, golf clubs	2018
9	Conduct detailed bat survey	To determine which bat species occur there	Bats	FCC, Bat Conservation Ireland	2018
10	Conduct botanical survey and monitor cattle grazing impacts at Racecourse Park	To determine the response of the flora to grazing and select the most appropriate form of grazing management	Flora	FCC	2016
11	Conduct study on current and historical stands of Borrer's Salmarsh-grass at Racecourse Park	To determine the species' potential for recovery on this site	Borrer's Salmarsh-grass (<i>Puccinellia fasciculata</i>)	FCC	2016
12	Monitor breeding birds annually and monitor cattle grazing impacts at Racecourse Park	To determine the response of birdlife to grazing and select the most appropriate form of grazing management	Breeding birds	FCC, BWI	2016
13	Prepare a masterplan for the Mayne River and its immediate surroundings	To protect and enhance the nature conservation and recreational value of the Mayne River corridor	Flora and fauna of river habitats	FCC, DCC, Inland Fisheries Ireland, IWT, NPWS, BWI, local community groups	2017
14	Conduct a repeat botanical study of the Sluice River Marsh	To monitor the flora of the site, which was previously surveyed in 2008	Flora	FCC	2018

Table 2.3. Site-specific biodiversity conservation actions for Howth Head

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Conduct a management appraisal of sites of highest botanical conservation value including FCC-owned sites at Red Rock, field adjacent to Sutton Woods and road verges near the Summit and St Fintan's Cemetery	To conduct habitat enhancement works and monitoring of flora to assess impact of works	Flora	FCC, Declan Doogue, landowner	2017
2	Control invasive alien species	To prevent the spread of invasive alien species and protect native biodiversity	Rhododendron (<i>Rhododendron ponticum</i>), Giant Hogweed (<i>Heracleum mantegazzianum</i>) Japanese Knotweed (<i>Reynoutria japonica</i>) Hottentot fig (<i>Carpobrotus edulis</i>)	FCC, CVI, DNFC, NPWS	Ongoing
3	Assess grazing options for heathland and grassland management	To establish if heathland and grassland on Howth can be sustainably managed by grazing with livestock	Dry heath, grassland	FCC, Mary Tubridy	2017
4	Manage Red Squirrel population	To protect the remaining Red Squirrel population on Howth	Red Squirrel (<i>Sciurus vulgaris</i>)	FCC, NPWS, contractor	Ongoing
5	Develop a fire management plan	To manage the fires on Howth Head and reduce their impact on land holdings and wildlife	Dry heath	FCC, Fire Brigade, Howth SAO Committee,	2018

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				landowners, NPWS	
6	Develop a Biodiversity Management Plan for Cook's Quarry including issues relating to planning and dumping	To manage the impact of quarrying activity on Howth Head SAC	Dry heath	FCC, NPWS, quarry owner	2019

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Table 2.4. Site-specific biodiversity conservation and research actions for Dublin Port*

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Install and maintain nesting rafts for breeding terns	To provide additional nesting opportunities and improve the conservation status of the tern population	Common Tern (<i>Sterna hirunda</i>), Arctic Tern (<i>Sterna paradisaea</i>)	DPC, BWI	2016-2020
2	Use pollinator-friendly planting at Dublin Port Centre	To provide food for pollinators throughout the season, promoting pollinator conservation in line with the All-Ireland Pollinator Plan	Insect pollinators	DPC	2016-2017
	Research				
3	Facilitate EcoEngineering research on sea walls in Dublin Port	To enhance native biodiversity on artificial structures	Marine biodiversity	DPC, UCD	2016-2017
4	Continue breeding tern colony monitoring including colour-ringing and re-sighting	To evaluate the success of conservation management actions and investigate movement of birds between areas	Common Tern (<i>Sterna hirunda</i>), Arctic Tern (<i>Sterna paradisaea</i>)	DPC, BWI, DBBP	2017-2019

*These actions are in addition to the research and monitoring programme undertaken by Dublin Port Company as part of the planning conditions for development projects.

Table 2.5. Site-specific biodiversity conservation and research actions for the Dalkey Islands

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Continue tern nesting project and produce annual reports	To maintain a sustainable tern population on the islands	Roseate tern (<i>Sterna dougallii</i>)	BWI, DLRCC, NPWS	Ongoing
2	Investigate alternative tern nesting sites and take appropriate action	To provide additional nesting opportunities and improve the conservation status of the tern population	Roseate tern (<i>Sterna dougallii</i>)	BWI, DLRCC, NPWS	Ongoing
3	Support EU LIFE-funded Roseate Tern project	To improve the conservation status of the tern population	Roseate tern (<i>Sterna dougallii</i>)	BWI, DLRCC	2016-2021
4	Minimalist intervention in vegetation management	To maintain the island's vegetation	Semi-natural grassland, dense bracken, granite outcrops, rocky shores, seacliffs	DLRCC	Ongoing
5	Eradicate the brown rat (<i>Rattus norvegicus</i>) on the Dalkey Islands	To reduce predation on birds	Breeding birds, particularly terns	DLRCC	Ongoing
6	Erect signage at appropriate locations	To communicate responsible recreational practices to visitors and provide interpretation	Birds, seals	DLRCC	2017
	Research				
7	Conduct botanical survey and vegetation mapping. Survey to be repeated every 5 years	To provide baseline data and identify trends over time	Semi-natural grassland, dense bracken, granite outcrops, rocky shores, seacliffs	DLRCC	2015-2016
8	Conduct marine mammal survey every 3 years, monitor use of haul-out and breeding sites by seals	To provide baseline data and identify trends over time	Seals, cetaceans	DLRCC	2018
9	Conduct repeat	To inform site management	-	DLRCC	2017,

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	monitoring of visitor numbers and behaviour				2019
10	Conduct annual monitoring of bird species	To identify trends over time and inform site management	Birds	DLRCC, BWI	2016
11	Conduct annual monitoring of notable flora identified by Action 7 above	To identify trends over time and inform site management	Bird's-foot Clover (<i>Trifolium ornithopodioides</i>), Western Clover (<i>T. occidentale</i>), Rough Clover (<i>T. scabrum</i>)	DLRCC	2015-2016

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Table 2.6. Biodiversity conservation and research actions for Dun Laoghaire-Rathdown County

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
Conservation Management					
1	Identify the locations of invasive species posing a threat to biodiversity on DLRCC-owned land, remove or control	To prevent the spread of invasive alien species and protect native biodiversity	Giant Hogweed (<i>Heracleum mantegazzianum</i>) Japanese Knotweed (<i>Reynoutria japonica</i>), Giant Rhubarb (<i>Gunnera tinctoria</i>)	DLRCC	Ongoing
Research					
2	Update 2009 DLRCC report on available biodiversity data on the coastal zone, identify areas for further study	To determine the current state of knowledge and identify research needs	Coastal habitats and species	DLRCC, DBB Conservation Working Group	2017
5	Establish the current status and distribution of EU Habitats Directive Annex 2 species	To inform conservation management	Lamprey, Otter, Atlantic Salmon, Grey Seal, Harbour Porpoise, Bottlenose Dolphin	DLRCC, NPWS, IWDG, ISS	Start 2017
6	Collate all available data on the status and distribution of target bird species	To inform conservation management	Birds species of conservation concern (red and amber-listed), EU Birds Directive Annex I and migratory species, other regionally important species	DLRCC, NPWS, BWI	2017
3	Monitor Killiney Hill Red Squirrel population as part of ongoing conservation project (commenced 2011)	To identify trends over time and inform management	Red Squirrel (<i>Sciurus vulgaris</i>)	DLRCC, UCD	Ongoing
4	Establish baseline information regarding other Red Squirrel populations within DLR area of DBB	To provide baseline data on abundance and distribution and inform management	Red Squirrel (<i>Sciurus vulgaris</i>)	DLRCC, UCD	2018

Table 2.7. Site-specific biodiversity conservation and research actions for North Bull Island

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation Management				
1	Review Management Plan for Bull Island, revise as necessary and implement	To protect and enhance the nature conservation and recreational value of the area	-	DCC, NPWS, BWI, ISS, DNFC	2017
2	Remove and control Sea-buckthorn on Bull Island, with regard to the Wildlife Act and sensitive habitats	Eradication of this invasive alien species	Dunes, dune grassland, dune slacks	DCC, FCC, NPWS	2017-2020
3	Prepare and implement a dog control management programme	To manage the impacts of dogs on biodiversity	Short-term: Seals, birds, long-term: Irish Hare (<i>Lepus timidus hibernicus</i>) and potentially Little Tern (<i>Sterna albifrons</i>)	DCC, Dogs Trust, ISS, BWI, NPWS	2016-2017
4	Develop and implement a volunteer programme for North Bull Island	To develop a team of volunteers to help in the management of responsible outdoor recreation, and promoting the ecological, cultural, and educational values of the Island to fellow site users	-	DCC, volunteers	2016-2020
5	Remove and control other invasive alien species	Eradication of invasive alien species	Sycamore (<i>Acer pseudoplatanus</i>), garden escapes	DCC, volunteers	2017-2020
6	Establish alternative grazing opportunities, monitor grazing levels and impacts on vegetation	Manage the vegetation and promote botanical diversity	Dunes, dune grassland, dune slack, orchids	DCC, FCC, NPWS	2018
	Research				
7	Conduct repeat population survey of hares and rabbits	To identify current status of hares and rabbits, with a view to restocking hares in the longer term, if appropriate	Irish Hare (<i>Lepus timidus hibernicus</i>), Rabbit (<i>Oryctolagus cuniculus</i>)	DCC, UCD	2016
8	Engage a hydrologist to	To establish appropriate hydrological	Dune slacks, Marsh Fritillary	DCC, NPWS,	2017

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	review hydrological monitoring to date	monitoring actions	(<i>Euphydryas aurinia</i>), Petalwort (<i>Petalophyllum ralfsii</i>)	third level institutions	
9	Conduct long-term annual monitoring of Marsh Fritillary	To develop detailed, evidence-based, site-specific management recommendations	Marsh Fritillary (<i>Euphydryas aurinia</i>)	DCC, NPWS, NBDC	2016-2020
10	Prepare and publish a flora of Bull Island	To map, classify and describe the island's flora and disseminate the findings	Flora including FPO species Lesser Centaury (<i>Centaureum pulchellum</i>)	DCC, DNFC	2019

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Table 2.8. Biodiversity conservation and research actions at the Dublin Bay Biosphere scale

No.	Action	Objective	Target groups, species and habitats	Agencies involved	Timeline
	Conservation management				
1	Assist in developing and implementing Climate Change Action Plans of the Dublin Local Authorities	To mitigate and adapt to the impacts of climate change, using a coordinated approach throughout the Dublin region	See Ecosystems & Biodiversity actions of Plans (due 2018)	DCC, DLRCC, FCC, DBBP, Codema	2016-2020
2	Support volunteer litter clean-ups	To protect the nature conservation and recreational value of the area by removing litter, particularly marine litter, which is hazardous to wildlife	Coastal habitats	DCC, DLRCC, FCC, DPC, community groups, corporate volunteers	Ongoing
3	Remove or control invasive alien species	To prevent the spread of invasive alien species and protect native biodiversity	See site specific actions	DCC, DLRCC, FCC, CVI, landowners	Ongoing
	Research				
4	Conduct research on recreational impacts on birds in DBB	To assess recreational impacts and inform recreation management	Wintering birds	DBBP, DCC, DLRCC, DPC, FCC, NPWS, UCD, BWI	2017-2021
5	Conduct a seal survey	To identify haul-out and breeding sites, feeding and foraging behaviour, and temporal and spatial distribution	Seals	DCC, DLR, DPC, FCC, NPWS, ISS	TBC
6	Continue basic waterbird monitoring programme, including surveys at high and low tide	To generate detailed data on the abundance and distribution of waterbird species and identify trends over time	Waterbirds	BWI, DBBP, DCC, DPC, FCC, NPWS	2017-2019
7	Conduct Common Cord-grass	To determine appropriate management objectives and practices for this invasive alien species	Common Cord-grass (<i>Spartina</i>	FCC, DCC, NPWS	

	management study and monitoring, focusing on Baldoyle Bay and Bull Island		<i>anglica</i>)		
8	Support and, if successful, co-fund LIFE Gull Project bid	To generate an estimate for urban nesting gull populations and inform management at SPAs designated for gulls, using Ireland's Eye as a demonstration site	Herring Gull (<i>Larus argentatus</i>), Lesser Black-backed Gull (<i>L. fuscus</i>)	BWI, DCC, FCC, NPWS	2016-2018
9	To prepare a GIS-based ecological sensitivity map of DBB, incorporating research above	To provide a decision-making tool to ensure that key ecological sites are protected from disturbance and inappropriate development	Breeding and wintering birds, rare and protected flora, seals, otters, Harbour Porpoise	DCC, DLR, DPC, FCC, NPWS, BWI, Declan Doogue, ISS, IWT, Consultants	TBC
10	Conduct otter surveys and identify holt locations	To establish the distribution of otters in DBB and their usage patterns	Otter (<i>Lutra lutra</i>)	DCC, DLR, FCC, NPWS, IWT, Consultants	2017-2018
11	Highlight need for research on impacts of shellfish harvesting, razorshell fishing and bait digging to relevant agencies	To assess the impact of these practices in DBB	Marine benthic and littoral communities, wintering birds in estuaries	DBBP, IWT, CWI	2017-2020
12	Conduct Brent Goose roost survey in DB with mid-winter dawn count, establish Citizen Science platform to gather data on location and number using inland grasslands	To elucidate numbers in Dublin Bay and identify and protect roosting and feeding sites	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)	BWI, DCC, DLR, FCC, DPC, NPWS, Brent Research Group	2017-2019

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13	Prepare a bibliography of available published and grey literature on Dublin Bay Biosphere	To provide a comprehensive overview of existing information available	-	DCC, DLR, DPC, FCC, NPWS	2018
14	Develop an online repository for reports on Dublin Bay Biosphere	To make data and reports on Dublin Bay Biosphere publicly available	-	DCC, DLR, DPC, FCC, NPWS	2017

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4. Abbreviations

BWI	Birdwatch Ireland
COP21	Conference of Parties 21 (also known as the 2015 Paris Climate Conference)
CVI	Conservation Volunteers Ireland
CWI	Coastwatch Ireland
DAHRRGA	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
DBB	Dublin Bay Biosphere
DBBP	Dublin Bay Biosphere Partnership
DCC	Dublin City Council
DLRCC	Dún Laoghaire-Rathdown County Council
DNFC	Dublin Naturalists' Field Club
DPC	Dublin Port Company
FCC	Fingal County Council
FI	Fáilte Ireland
ISS	The Irish Seal Sanctuary
IWDG	Irish Whale and Dolphin Group
IWT	The Irish Wildlife Trust
MAB	Man and the Biosphere Programme (of UNESCO)
NGOs	Non-Governmental Organisations
NNR	National Nature Reserve
NPWS	National Parks and Wildlife Service (of the DAHRRGA)
NSAA	National Special Amenity Area
pNHA	Proposed Natural Heritage Area
SAAO	Special Amenity Area Order
SACs	Special Areas of Conservation
SPAs	Special Protection Areas
UCD	University College Dublin
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change

5. References

DCC (2014) North Bull Island UNESCO Biosphere Reserve Periodic Review. Dublin City Council, Dublin.

DCC (2015) Dublin City Biodiversity Action Plan 2015-2020. Dublin City Council, Dublin.

Department of Arts Heritage and the Gaeltacht (2011) Actions for Biodiversity 2011-2016. Ireland's National Biodiversity Plan. Department of Arts Heritage and the Gaeltacht, Dublin.

DLRCC (2009) Dun Laoghaire-Rathdown Biodiversity Plan 2009-2013. Dún Laoghaire-Rathdown County Council, Dún Laoghaire.

DLRCC (2014) Dalkey Islands Conservation Plan 2014-2024. Dún Laoghaire-Rathdown County Council, Dún Laoghaire.

FCC (2010) Fingal Biodiversity Action Plan 2010-2015. Fingal County Council, Swords.

McCorry, M. & Ryle, T. (2009) A management plan for North Bull Island. Dublin City Council, Dublin.

National Biodiversity Data Centre (2015) All-Ireland Pollinator Plan National Biodiversity Data Centre, Waterford.

UNESCO (2015) MAB Strategy 2015-2025. United Nations Educational, Scientific and Cultural Organisation, Paris.

UNESCO (2016) Lima Action Plan for UNESCO's Man and Biosphere Programme and its World Network of Biosphere Reserves 2015-2025. United Nations Educational, Scientific and Cultural Organisation, Paris.

Site synopses and conservation objectives for SACs and SPAs in DBB are available from:

<https://www.npws.ie/protected-sites>