Ecological Assessment of the Habitats in the vicinity of Kinvara.

1 Introduction

1.1 Background

Kinvara Tidy Towns have received a grant from Galway County Council Community Support Scheme to explore the ecology in the vicinity of Kinvara. The main focus on the study was to gain an understanding of the most valuable habitats firstly within the remit of the Tidy Towns, secondly within the Kinvara Hinterland and finally immediately adjacent to the town. In this way it will be possible to build up a picture of the habitats and species using Kinvara and the ecological context in which the village of Kinvara is situated

Kinvara Tidy Towns have commissioned an Ecologist Jen Fisher (B.Sc) to undertake this work. It is hoped that the Ecological Assessment will provide advice on best practice management for Kinvara Tidy Towns going forward. Information gleaned will be utilised to develop display boards highlighting the wildlife in the village and surrounding area and in the development of a biodiversity trail for the village.

1.2 Surveys and Assessments

A desk study which includes a review of the literature relevant to the ecology of the site is provided in section 2 of this report. The following sources of information are included: NPWS Site Synopsis for protected sites including a review of the qualifying interests of those sites, the most recent Bird Atlas 2007-2011 (the breeding and wintering birds of Britain and Ireland) (Balmer *et al* 2013) and the New Atlas of British and Irish Flora (2000). Data from local ornithologist Paul Troake was also included as focused counts in the vicinity of Kinvara Castle and Pier were available. This data was more relevant for Kinvara as it did not include information from further away as would be expected from Atlas data. Finally Biodiversity Data Centre Records for Terrestrial Mammals was reviewed.

Field surveys of the site were conducted during May, June July August and September 2024 and the findings of those surveys are presented in section 3 of this report.

2 Desk Study

2.1 Designated Sites

There are two types of EU designated sites: Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated for the protection of habitats and the species of flora and fauna which they support. SPAs are designated for the protection of birds which are considered to be of conservation importance within Europe. Natural Heritage Areas (NHAs) are designated for the protection of flora and fauna within Ireland. Many of the SAC locations were selected from previous NHAs for this reason many of these areas overlap. The location of the designated areas in the vicinity of the site at Kinvara are shown in Figure 2.1.

Two designated sites are situated within and adjacent to the Kinvara hinterland, i.e. Galway Bay Complex SAC/pNHA (site code 000268) and Inner Galway Bay SPA (Site code 004031). The site synopsis summarises the Galway Bay Complex as follows.

"This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the E.U. Habitats Directive, four of which have priority status (lagoon, Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and saltmarshes found within this site are amongst the best in the country. The site supports an important Common Seal colony and a breeding Otter population (Annex II species), and six regular Annex I E.U. Birds Directive species. The site also has four Red Data Book plant species, plus a host of rare or scarce marine and lagoonal animal and plant species"

The qualifying interests (i.e. those important habitats and species for which the site was selected for designation) for the SAC are as follows.

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Turloughs [3180]
- Juniperus communis formations on heaths or calcareous grasslands [5130]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Alkaline fens [7230]
- Limestone pavements [8240]
- *Lutra lutra* (Otter) [1355]
- Phoca vitulina (Harbour Seal) [1365]

The Inner Galway Bay SPA is summarised as follows in the site synopsis.

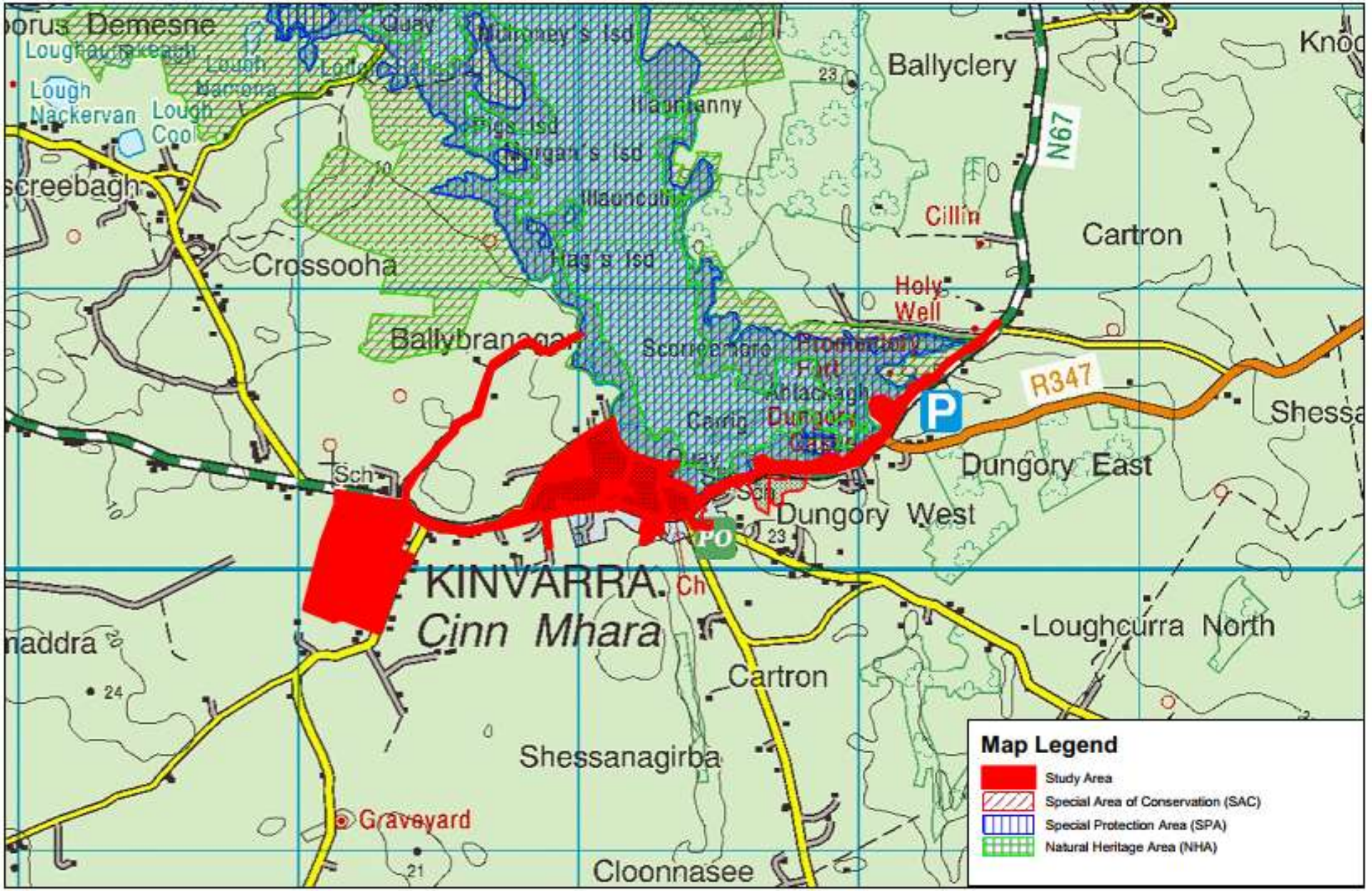

Figure 2.1, Location of the Designated Areas in the vicinity of Kinvara

"Inner Galway Bay SPA is of high ornithological importance with two wintering species having populations of international importance and a further sixteen wintering species having populations of national importance. The breeding colonies of Sandwich Tern, Common Tern and Cormorant are also of national importance. Also of note is that six of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Black-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit, Sandwich Tern and Common Tern. Inner Galway Bay is a Ramsar Convention site and part of the Inner Galway Bay SPA is a Wildfowl Sanctuary".

The qualifying interests for the SPA are as follows.

- Black-throated Diver (Gavia arctica) [A002]
- Great Northern Diver (Gavia immer) [A003]
- Cormorant (Phalacrocorax carbo) [A017]
- Grey Heron (Ardea cinerea) [A028]
- Light-bellied Brent Goose (Branta bernicla hrota) [A046]
- Wigeon (Anas penelope) [A050]
- Teal (Anas crecca) [A052]
- Red-breasted Merganser (Mergus serrator) [A069]
- Ringed Plover (Charadrius hiaticula) [A137]
- Golden Plover (Pluvialis apricaria) [A140]
- Lapwing (Vanellus vanellus) [A142]
- Dunlin (Calidris alpina) [A149]
- Bar-tailed Godwit (Limosa lapponica) [A157]
- Curlew (Numenius arquata) [A160]
- Redshank (Tringa totanus) [A162]
- Turnstone (Arenaria interpres) [A169]
- Black-headed Gull (Chroicocephalus ridibundus) [A179]
- Common Gull (Larus canus) [A182]
- Sandwich Tern (Sterna sandvicensis) [A191]
- Common Tern (Sterna hirundo) [A193]
- Wetland and Waterbirds [A999]

2.2 Flora

A search was made in the New Atlas of the British & Irish Flora (Preston et al 2002) to investigate whether any rare or unusual plant species listed under the Flora Protection Order 1999 had been recorded in M31 the 10 kilometre square in which Kinvara and its hinterland are situated. None of the species listed on the Flora Protection Order were recorded in the relevant square.

Neither of the two terrestrial plant species mentioned in the site synopsis for Galway Bay Complex, i.e. Henbane (*Hyoscyamus niger*) and Seakale (*Crambe maritima*) are recorded in the atlas in M31.

2.4 Birds

The Atlas of Breeding and Wintering Birds mentioned above was searched for bird records in the vicinity of the site at Kinvara. These atlases show data for breeding and wintering birds in individual 10 km by 10 km squares. Table 2.1 shows those species found in the relevant 10

km square, M31, that are recorded in the Breeding Bird Atlas and are also protected under the EU Birds Directive or mentioned on the Birds of Conservation Concern in Ireland (BoCCI) red list. Birds listed under Annex I are offered special protection by the EU Birds Directive. Those listed on the BoCCI red list are birds of high conservation status and meet one or more of the following criteria:

- Their breeding population or range has declined by more than 50% in the last 25 years
- Their breeding population has undergone significant decline since 1900
- They are of global conservation concern

Birds listed under the Amber list are of medium conservation status while Green listed species are considered to have favourable conservation status.

Table 2.1 Breeding Bird Atlas Data

Common Name	Scientific Name	Breeding Atlas	Annex I	BoCCI red list
Buzzard	*Buteo buteo*	Probable Breeding	Yes	No
Mediterranean Gull	*Larus melanocephalus*	Confirmed Breeding	Yes	No
Sandwich Tern	*Sterna sandvicensis*	Confirmed Breeding	Yes	No
Common Tern	*Sterna hirundo*	Confirmed Breeding	Yes	No
Arctic Tern	*Sterna paradisaea*	Confirmed Breeding	Yes	No
Black-headed Gull	*Larus ridibundus*	Confirmed Breeding	No	Yes
Meadow Pipit	*Anthus pratensis*	Probable Breeding	No	Yes
Lapwing	*Vanellus vanellus*	Possible Breeding	No	Yes

Five Annex I species have been recorded as breeding within the relevant 10km square, in the Atlas of Breeding Birds, they are – Buzzard, Mediterranean Gull, Sandwich Tern, Common Tern and Arctic Tern. Buzzard was recorded as probable breeding in the relevant 10km square. Buzzards nest in trees in forests or woodland with adjacent areas of farmland or marsh. The records of terns and gulls are probably from nesting colonies on islands within Galway Bay. Meadow Pipit was recorded as probable breeding in M31. On the coast it is known to breed on meadows and pastures. Lapwing was recorded as possible breeding during the altas survey. These birds nest on the ground in meadows or pastures. In addition several birds were recorded as present but non-breeding including Great Northern Diver, Little Egret, Herring Gull, Tufted Duck, Wigeon, Curlew, Golden Plover and Redshank. Great Northern Diver and Little Egret are listed on Annex I of the EU Bird Directive. All the others are listed on the Birds of Conservation Concern – Red List.

In terms of wintering birds, Table 2.2 shows those species found in the 10 km square M31 that are recorded in the Atlas of Breeding and Wintering Birds in Britain and Ireland (2007-11) and are also protected under the EU Birds Directive or mentioned on the Birds of Conservation Concern in Ireland (BoCCI) red list.

Table 2.2 Wintering Bird Atlas Data

Common Name	*Scientific Name*	Annex I	BOCCI red list	Common Name	*Scientific Name*	Annex I	BOCCI red list
Red-throated Diver	*Gavia stellata*	Yes	No	Meadow Pipit	*Anthus pratensis*	No	Yes
Black-throated Diver	*Gavia arctica*	Yes	No	Twite	*Carduelis flavirostris*	No	Yes
Great Northern Diver	*Gavia immer*	Yes	No	Woodcock	*Scolopax rusticola*	No	Yes
Slavonian Grebe	*Podiceps auritus*	Yes	No	Goldeneye	*Bucephala clangula*	No	Yes
Little Egret	*Egretta garzetta*	Yes	No	Long-tailed Duck	*Clangula hyemalis*	No	Yes
Whooper Swan	*Cygnus cygnus*	Yes	No	Pintail	*Anas acuta*	No	Yes
Merlin	*Falco columbarius*	Yes	No	Shoveler	*Anas clypeata*	No	Yes
Peregrine	*Falco peregrinus*	Yes	No	Tufted Duck	*Aythya fuligula*	No	Yes
Bar-tailed Godwit	*Limosa lapponica*	Yes	No	Velvet Scoter	*Melanitta fusca*	No	Yes
Mediterranean Gull	*Larus melanocephalus*	Yes	No	Wigeon	*Anas penelope*	No	Yes
Sandwich Tern	*Sterna sandvicensis*	Yes	No	Golden Plover	*Pluvialis apricaria*	Yes	Yes
Barn Owl	*Tyto alba*	No	Yes	Lapwing	*Vanellus vanellus*	No	Yes
Black-headed Gull	*Chroicocephalus ridibundus*	No	Yes	Curlew	*Numenius arquata*	No	Yes
Common Scoter	*Melanitt nigra*	No	Yes	Dunlin	*Calidris alpina*	No	Yes
Herring Gull	*Larus argentatus*	No	Yes	Redshank	*Tringa totanus*	No	Yes

Twelve birds recorded as wintering in the relevant 10 km square are protected under Annex I of the EU Birds Directive: Red-throated Diver, Black-throated Diver, Great Northern Diver, Slavonian Grebe, Little Egret, Whooper Swan, Merlin, Peregrine, Mediterranean Gull, Sandwich Tern, Golden Plover and Bar-tailed Godwit. A large list of birds are listed on the BoCCI red list, and are recorded as wintering in the relevant 10 km square, namely Barn Owl, Common Scoter, Meadow Pipit, Twite, Woodcock, Goldeneye, Long-tailed Duck, Pintail Shoveler, Tufted Duck, Velvet Scoter, Wigeon, Lapwing, Curlew, Dunlin, Redshank, Black-headed Gull, Herring Gull and Redshank. Some of these birds utilise the wide variety of coastal habitats in the vicinity of Kinvara and within the Inner Galway Bay SPA. A rich diversity of bird species of conservation importance has been recorded in M31.

As the Atlas data covers the area for the whole 10km square M31, some additional records were acquired from local Ornithologist Paul Troake (PT). Records of birds using the SPA in the vicinity of Kinvara are shown in table 2.3 below. Records were taken from either Kinvara Castle or Kinvara Pier. The table below shows PTs maximum count for each species. Although some species such as Black-headed Gull, Curlew, Dunlin are regularly encountered or seasonally encountered others are rare and have been noted only on occasion. Using this data we can build up a specific picture of the species using the habitats within the SPA in the immediate vicinity of Kinvara.

Table 2.3, PT Data recorded from two vantage points one at Kinvara Castle and One at Kinvara Pier. Each species is shown with conservation status in brakets.

Species	Highest Count	Date	Species	Highest count	Date
Black headed gull, (R)	84	29/03/2018	Little grebe A	13	10/10/2013
Brent goose, (A)	13	29/03/2018	Long tailed duck R	5	03/12/2016
Common gull (A)	26	20/04/2018	Mallard (G)	117	10/10/2018
Common Tern (AI, A)	3	20/08/2018	Med Gull (AI, A)	2	29/03/2013
Cormorant (A)	20	04/09/2016	Mute swan (A)	21	Jul-2012
Curlew (R)	40	27/01/2018	Oystercatcher (A)	5	07/08/2018
Dunlin (R)	400	29/01/2018	Peregrine Falcon (AI, G)	2	31/12/2014
Forster's Tern	1	2011-2018*	Redshank (R)	49	12/09/2018
Great black backed gull (A)	7	10/10/2018	Shelduck (A)	27	04/05/2017
Great crested grebe (A)	4	05/02/2018	Snipe (A)	11	11/01/2018
Great northern diver (AI,A)	6	12/03/2018	Teal (A)	125	01/11/2018
Greenshank (G)	5	10/10/2018	Tufted duck (R)	1	07/01/2017
Grey heron (G)	9	24/05/2018	Turnstone(A)	15	11/01/2018
Herring gull (G)	35	12/09/2018	Whimbrel	23	27/04/2018
Lapwing (R)	193	11/01/2018	Whooper Swan (AI,A)	3	01/11/2014
Lesser black backed gull (A)	10	13/09/2018	Wigeon (A)	200	01/11/2018
Little egret (AI, G)	8	07/08/2018			

***Forster's Tern was seen on 10 occasions between 2011 and 2018. (A) BoCCI Amber Listed, (R) BoCCI Red Listed, (G) Green Listed Species. (AI) – EU Bird Directive Annex I Species.**

2.5 Mammals

A search of Biodiversity Data Centre records for Terrestrial Mammals occurring in the two closest 1km gird squares in which Kinvara is situated i.e. M3710 and M3810.

Table 2.4, data from the Biodiversity Data Centre Terrestrial Mammals recorded in M3710 and M3810.

Species	Grid	No.	Date
Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	M3810	1	14/08/2022
Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	M3710	1	25/08/2018
Soprano Pipistrelle (Pipistrellus pygmaeus)	M3810	1	14/08/2022
Brown Long-eared Bat (Plecotus auritus)	M3810	1	14/08/2022
Lesser Noctule (Nyctalus leisleri)	M3810	1	14/08/2022
Natterer's Bat (Myotis nattereri)	M3810	1	14/08/2022
Eurasian Badger (Meles meles)	M3810	1	31/12/2006
Irish Stoat (Mustela erminea subsp. hibernica)	M3810	1	02/11/2023
Eurasian Pygmy Shrew (Sorex minutus)	M3710	1	31/12/2003
European Otter (Lutra lutra)	M3710	2	26/09/2017
West European Hedgehog (Erinaceus europaeus)	M3710	1	19/06/2023

Five species of Bat have been recorded within the relevant 1km squares M3710 and M3810. Five of these have been recorded in the vicinity of Kinvara town, i.e. Brown Long-eared Bat, Common Pipistrelle, Soprano Pipistrelle, Lesser Noctule and Nattterer's Bat. All bats are protected under Annex IV of the EU habitat directive with the exception of Lesser Horseshoe Bat which is afforded a higher level of protection under Annex II. Five other species of Mammal were also recorded in the area, these were Badger, Stoat, Pygmy Shrew, Otter, and Hedgehog. Of these species Otter has the highest protection under Annex II and all others are listed on Annex IV.

Several other species such as Red Deer, Rabbit, Hare, Brown Rat, Wood Mouse, House Mouse, and indeed the invasive Common Vole, White-toothed Shrew and Mink are all likely to be present within the Kinvara area at least on occasion.

3 Field Survey

3.1 Survey Methodology

Nine field visits were made to the site between May and September 2024 during which the site was surveyed by an ecologist and the habitats therein were determined. The weather conditions varied substantially between visits, sometimes being dry and bright while other times conditions were wet and windy. During the walkover survey the habitats were assessed, classified and sketched onto maps. All bird species observed or heard within the site were recorded, and the presence or signs of mammals and other fauna were noted during the visit. A full list of the plants recorded during the survey are presented as Appendix 1.

3.2 Limitations

A limitation of the survey was the time of year the fieldwork was completed. Summer is generally the most appropriate time for ecological surveys when faunal activity is at its peak and many plants are flowering. However even a summer field visit cannot record all species that potentially use the site (e.g. wintering wildfowl) or are present and ideally surveys should be carried out in all seasons especially given the sites proximity to the Inner Galway Bay SPA. However as this document is primarily intended as a guidance document/ or an information gathering exercise it was considered that a suitable assessment was achieved during the Summer months. Given the size of the study area it was not possible to survey every field in Kinvara Hinterland and some areas were surveyed with more detail than others.

3.3 Description of Habitats and Flora within the Ecological Survey Area

A dedicated habitat survey of the area within and in the vicinity of the Kinvara hinterland was undertaken during the survey. Special attention was given to the areas within the remit of the Tidy Towns. Areas that were of conservation importance adjacent to the village were also dually considered. A total of 10 habitats or habitat mosaics were recorded within and adjacent to the Village of Kinvara (Table 3.1). The habitat classifications and codes correspond to those described in 'A Guide to Habitats in Ireland' (Fossitt 2000). A habitat map is provided as Figure 3.1 Due to the size of the site and due to property considerations areas within gardens and estates were not considered, likewise commercial properties and other areas were access was problematic were not considered. Finally it was not possible to consider all habitats adjacent to the study area but an attempt was made to assess as many habitats of conservation import as possible.

Table 3.1 – Habitats recorded within and adjacent to the study area

Habitat	Code
Sheltered Rocky Shores/Mudshore Mosaic	LR3/LS4 Mosaic
Upper/Lower Saltmarsh mosaic	CM1/CM2
Exposed Calcareous Rock, Dry Calcareous Grassland, Scrub mosaic	ER2/GS1/WS1
Dry Calcareous Neutral Grassland	GS1
Dry Meadows and Grassy Verges	GS2
Amenity Grassland	GA2
Treeline	WL2
Scrub	WS1
Building & Artifical Surfaces	BL3
Stone Walls	BL1

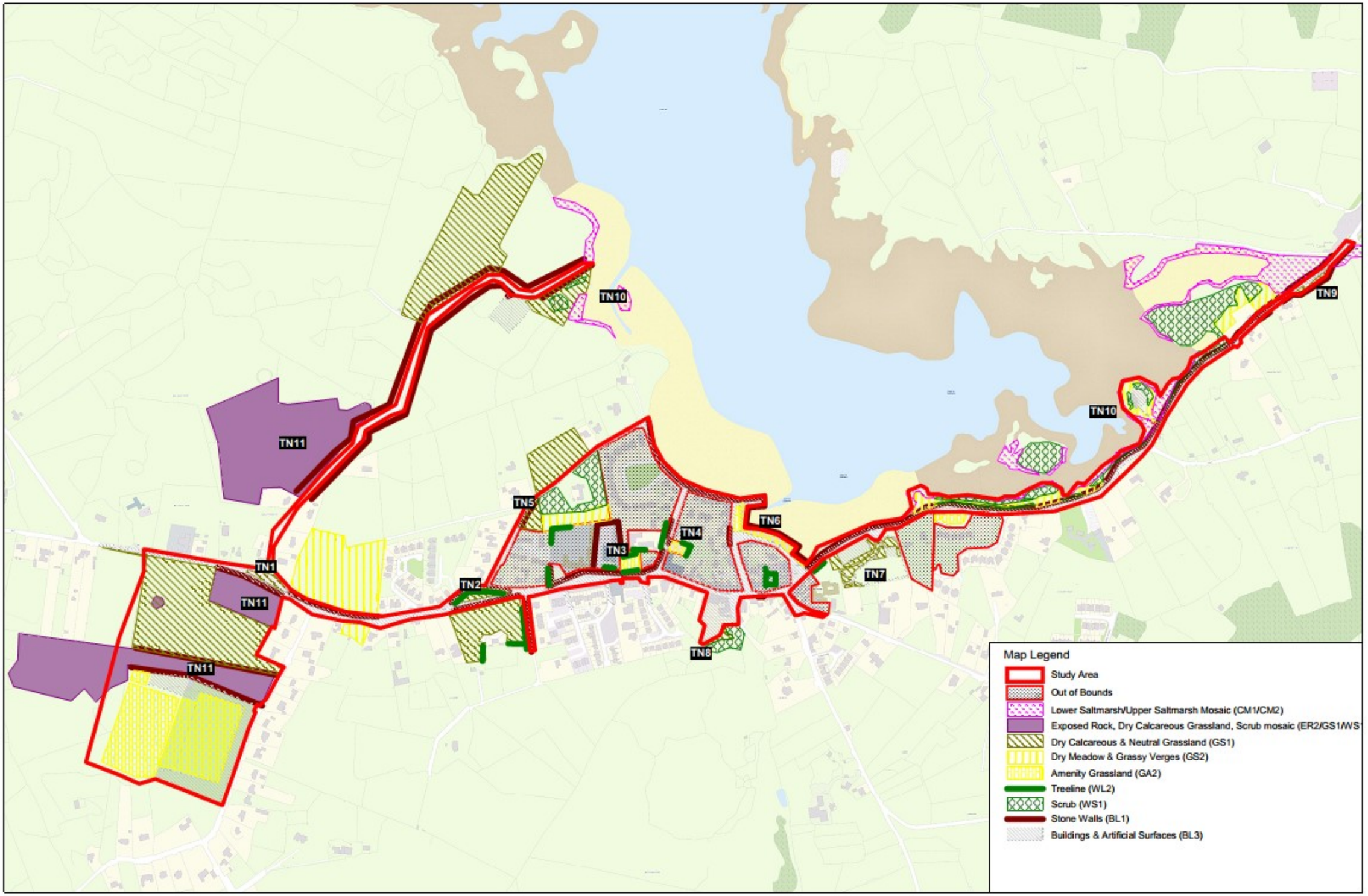

Figure 3.1, Map of the Habitats in the vicinity of Kinvara Town

Kinvara town is a coastal town and the northern edge of the study area butts up against Galway Bay to the north and the Burren lowlands to the west and southwest. Therefore the town is situated in an area of high potential for diverse range of habitats types.

3.3.1 Coastal Habitats and Saltmarsh

Several coastal habitats are present adjacent to kinvara including a mosaic of **mud shores and sheltered rocky shores** (LS4/LR3)(Plate 3.1). The Mud Shore (LS4) habitat was characterised by large areas of silt which was clearly visible at low tide. These mud shore areas were interspersed with a habitat which is best classified as Sheltered Rocky Shores (LR3). The habitat consisted of large accumulations of boulders. A dense growth of seaweed was present on these boulders namely Serrated Wrack (*Fucus serratus*) and Bladder Wrack (*Fucus vesiculosus*) and Egg Wrack (*Ascophyllum nodosum*). Sea Lettuce (Ulva lactuca) and a Grass-like Seaweed (Enteromorpha sp.).

Plate 3.1 view of the coastline with a mosaic of mud shores (LS4) and sheltered rocky shore (LR3). Extensive areas rock seaweed and mud are visible at low tide.

Inland of these marine habitats are the habitats that occupy the intertidal zone. In Kinvara bay much of this zone is Salt Marsh. Salt marsh habitats are comprised of a collection of species that are tolerant of the salty conditions that come with tidal inundation and tidal splash. A narrow strip of saltmarsh was present above the high water line along the Southern margin of Kinvara Bay. In addition more extensive sections of saltmarsh were present on the landward side of Dunguire Castle and in the most south-easterly section of the bay at the point where a culvert allows the passage of tidal water under the N67 during Spring tides or storm surges (Plate 3.2). (Although this habitat does get submerged irregularly depending on the state of the tide). Following the Bay around to the west, several sections of Saltmarsh vegetation were evident in the coastal areas in the vicinity of the Kinvara Wastewater Treatment Plant (Plate 3.3).

Plate 3.2 Showing extensive area of Saltmarsh near the tidal culvert that passes under the N67 to the east of kinvara

Plate 3.3 Area of saltmarsh habitat in the vicinity of the Wastewater Treatement Plant in Ballybranigan.

These habitats were best classified as **upper salt marsh/lower salt Marsh mosaic** (CM1/CM2). The community of plants varied substantially across the area with areas of dominant Common Couch, Red Fescue, Creeping Bent, silverweed, creeping cinqfoil and curly-leaved dock near the castle. These grass species were also present near the tidal culvert along with Sea Arrowgrass, celery-leaved buttercup, Halbert-leaved Orache, jointed Rush, saltmarsh rush and very occasionally Saltmarsh Grass. Elsewhere closer to intertidal area broadleaf herbs were the dominant feature. Areas dominated by Thrift, Red Fescue, Greater Plantain and Sea Plantain, were interspersed with areas of Sea Beat, Haliberd-leaved Orache, Sea Arrowgrass, Scurvy-grass and Scentless Mayweed. The salt marsh Rush (j. gerardii) was also locally abundant in the sward. Similarly Distant Sedge (C. Distans) was locally abundant where it formed dense mats within the vegetation. To the west along the shore similar communities of plants were encountered however, two additional saltmarsh species were noted occasionally in the sward namely Annual sea Blite and Sea Purslane.

Further information on coastal and saltmarsh habitats is available in Appendix 2

3.3.2 Limestone Pavement, Scrub and Calcareous Grassland mosaic

Large areas of unspoilt habitats were recorded on the road leading down to the Wastewater treatment plant beginning at Ballybranigan garden and terminating at the sea. Although some of these areas fall within lands designated as part of the Galway Bay Complex SAC, others do not despite the fact that these habitats are of very high quality. Large areas of excellent habitat were recorded along this stretch of road (Plate 3.4) interspersed with areas that have been improved and extensively modified for agricultural purposes. Similar Habitat types were identified in the field between the GAA grounds (Plate 3.5) and the proposed Hockey pitch site, and on the area of land between the Hockey Pitch land and the N67 National Route and in the vicinity of the stone circle which is at the western end of the Hockey Pitch. The habitats and species on the proposed hockey pitch are described further by O'Riordan (2023) in the 'Kinvara Hockey Pitch Biodiversity Trial Survey'.

These habitats were best classified as a mosaic of exposed calcareous rock (ED2), Dry Calcareous and Neutral Grassland (GS1) and Scrub (WS1). Several areas mapped under this classification were classic examples of Limestone Pavement. **Limestone Pavement is a priority habitat which is listed under Annex I of the EU habitat directives**. Species such as Juniper, holly, Blackthorn and bramble were common features of this rocky habitat.

Plate 3.4 Area of limestone pavement in a field along the Ballybranigan Road

Ferns such as Wall Rue, Rusty-backed Fern, hart's-tongue and Bracken were present along with plants such as Wild Madder and Mountain Avens. In adjacent areas where more soil is present the habitat grades into areas of Dry Calcareous Grassland (Plate 3.6). These habitats were very species rich and were considered to be of very high quality. Many species consistent with strongly calcareous conditions were recorded such as Blue moor Grass, Quaking Grass, Yellow Oat Grass and Heath Grass, Yellow-wort, Kidney Vetch, Mountain Everlasting, Carline Thistle and Salad Burnet.

Large areas of scrub were also present within the habitat, scrub can develop over time on areas of Limestone pavement. Species such as Blackthorn, Hawthorn, Elder, Bramble, Spindle, Dog Rose, Juniper and Ivy were very common. The section of the habitat closest to the Moy road was predominantly scrub. While in the habitat surveyed In Ballybranigan the scrub was more diffuse within the area. Due to time constraints not all habitats along the Ballybranigan road were surveyed, however it is considered that a good understanding of the range of habitat types present was achieved.

Plate 3.5, Area of limestone pavement between the GAA grounds and the Proposed Hockey Pitch grounds.

Plate 3.6 Area of species rich grassland in the field between the GAA Pitch and Proposed Hockey Pitch

Further information on this habitat type is available in Appendix 3

3.3.3 Grasslands

Three types of grassland were recorded within and adjacent to study area namely **dry Calcarous Neutral Grassland, Dry meadow and grassy verges** and **Amenity Grassland**. The most common classification was Dry Calcareous and Neutral Grassland (Plates 3.6-3.10). This is unsurprising given that Kinvara is situated within the Burren Lowlands. Both Holly Tree Garden and Ballybranigan plot were placed within this classification and are in the direct remit of Kinvara Tidy Towns who actively manage these sites to improve them for Biodiversity and species richness. Another excellent example of this habitat type was recorded in Seamount Secondary School. The school had participated in no-mow May and as a result a rich and diverse habitat emerged, which was characterised by several species of Orchid as well as some calcareous loving species. Finally several other fields on the perimeter of the town, i.e. the Hockey field, Nun's orchard Field, the field to the north of the convent road, the field opposite Holly Tree Garden and the rocky area to the back of the Eurospar car park also fell into this classification. Some of the habitats were more species rich and diverse than others and a number of these habitats could be improved by management. The Convent road field was being grazed by horses during the survey, this is an important feature of the habitat classification and can be a valuable management practice. Meadow management and mowing regimes are also important for these habitat types.

Plates 3.7 & 3.8 , Left Pyramidal Orchids (foreground) and Common Spotted Orchid (Background) Right Broad Leaved Helleborine from Ballybranigan garden,


Plates 3.9 &3.10 , Left large area of species rich Calcareous Grassland in the grounds of Seamount Secondary School. Right Common Spotted Orchids and Bee Orchid (foreground) and Pyramidal Spotted Orchid (Background).

Several other fields in the perimeter of the town were best classified as Dry Meadow and Grassy Verges. These are fields that are less managed or unmanaged, a higher amount of tussocky or rank grasses are generally present along with tall herbs or climbing plants. Some of the habitats along the north east shore of the Galway Bay Complex SAC fall into this classification as the area had not been managed by grazing or cutting in many years.

The final type of grassland that has been recorded in Kinvara has been classified as amenity grassland. The grass on the Pier, the Memorial Garden and the Millennium garden were all classified as Amenity Grasslands. These are generally improved (Note Improved in this instance is an agricultural reference, its counter intuitive but it generally is used for habitats modified to maximise grazing potential rather that for wildlife) species poor habitats that are actively managed to maintain a short sward.

Further information on each of these Grassland Habitats is available in the target notes in Appendix 4

3.3.4 Treelines and Scrub

Several mature treelines were present within the study area within Hollytree Garden, around Convent Park, surrounding the Memorial Garden, within Millennium Garden, surrounding St Colman's Church and in the grounds of Seamount. Individual trees were also situated here and there within the village as well as trees growing in private gardens. Some of these features were not mapped but are important supplementary features which enhance the existing habitat and connect up important habitats to each other. The most commonly encountered species within this habitat type were Sycamore, Horse-chestnut, Beech and Ash.

Several habitats within and adjacent to the study site were best classified as **Scrub** (WS1). Scrub is essentially transitional woodland in an early stage of succession from grassland to woodland. Scrub is generally less than 5m tall and can comprise of a mixture of different species, such as bramble, gorse, hawthorn, blackthorn, willow and hazel. Scrub is a common component of habitats that have not been managed in some time. Large areas of scrub were identified east of Kinvara Castle (Plate 3.12), between the N67 and the coast, on the coastal island/rocky outcrop within Kinvara bay, at the back of the Eurospar car park, the field to the north of Nun's Orchard along the convent road (Plate 3.11).

Plate 3.11, Unmanaged field which has become colonised by bramble scrub on the Convent road, this is a very valuable habitat for birds and insects.

Plate 3.12 , Area of mature scrub and transitional woodland along Kinvara North Shore on the eastern end of the study site. Area of Dry Meadow and Grassy Verges in the foreground.

3.3.5 Stone Walls

There are many Stone walls (BL1) and other stone structures within the bounds of the village of Kinvara. These walls comprise sea walls, jettys and piers, the walls of Dunguire Castle, some old walls within the town, dry stone walls and modern solid mortar walls. Some walls at the periphery of the village are important for livestock management or for property boundaries. Some of these structures play an important role in sea defence and are over 4m tall. Classic Wall vegetation was present on many of these walls.

Ferns are one of the most encountered plants on this vertical habitat (Plate 3.13). Five species of fern were recorded on the walls of Kinvara namely Rusty-backed Fern, Wall Rue, Maidenhair Spleenwort, Hart's Tongue and Polypody. In addition broadleaf herbs such as Herb Robert, Navelwort, Wall Lettuce, Shiny Cranes-bill, Rue-leaved Saxifrage, Wall Pennywort, Pellitory-of-the-wall and Pearlwort were common components of the habitat. Further information on stone walls is available in Appendix 5.

Plate 3.13 Stone walls with Rusty Backed Fern and Maidenhair Spleenwort.

3.3.6 other habitats

Finally areas mapped as **Buildings and Artificial surfaces** (BL3) is a broad category of low value and highly modified terrains. These include roads, buildings and ruins, paths and paved areas, Astroturf etc. In addition several areas have been marked as out of bounds as they were privately owned and outside the scope of the survey.

Although many of the habitats described are not managed or in the direct remit of the Kinvara Tidy Towns, the group can play an important role in highlighting the value and importance of the habitats and species in the local area.

3.4 Significance of Habitats

There are several habitats which are linked to Annex I habitats listed under the EU Habitats Directive present within or directly adjacent to the site. Many of the coastal habitats within the SAC are important including the habitat classified as Mud Shore which is linked with the **Annex I Habitat 'mudflats and sandflats not covered by sea water at low tide' (1140) and is a qualifying interest of the Galway Bay Complex SAC**. The Upper salt marsh habitat is linked to **Annex I Habitat 'Atlantic salt meadows' (Glauco-puccinellieralia maritimae)(1330) and Mediterranean salt meadows (Juncetalia maritime)(1410)**. While lower saltmarsh is also linked to **four habitat types under Annex I (Codes 1310,1320, 1330 and 1420) however the Fossitt (2000)** states that '*the links between Irish habitats and EU habitats is tenuous or inexact*'.

Several habitats mapped as a mosaic of exposed calcareous rock (ED2), Dry Calcareous and Neutral Grassland (GS1) and Scrub (WS1) were classic examples of Limestone Pavement. **Limestone Pavement is a priority habitat which is listed under Annex I of the EU habitat directives**.

In Terms of Grassland habitats Dry Calcareous and Neutral Grassland with high numbers or diversity of orchids correspond to the priority habitat ***'semi natural dry grassland and scrubland facies on calcareous substrates (Festuco-brometea)(*Important orchid sites)(6210)'***. The grasslands at seamount would fall under this classification due to the diversity of Calcareous loving species and a diversity of orchids. Similarly the grasslands within Ballybrannigan Garden and Holly Tree Garden have a diversity of orchids present but plants associated with strongly calcareous conditions were limited or absent.

A small pocket of the proposed Hockey club development site was also quite species rich especially in the vicinity of the stone circle. This area as well as the areas mapped as ED2/GS1/WS1 Mosaic had large areas of species rich calcareous grassland in excellent condition, these areas could be classic examples of this **Annex I Habitat (6210)** habitat mentioned above. Some of the habitats along Ballybranigan road within this classification had pockets of Juniper and correspond well to **the Annex I Category *'Juniperus communis formations on Heaths or calcareous grasslands'*** (5130).

No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded during the survey.

3.5 Invasive species- Flora

According to the Biodiversity Data Centre Ireland has 1280 non-native species, although most of them are described as harmless, 13% are spreading and becoming harmful. Table 3.2 below describes the invasive or potentially invasive species that have been recorded within or in the vicinity of Kinvara. It can be seen from the table below that there is no data on several of the species that are potentially invasive. All of the species on the table were introduced as garden species and have escaped into the wild. This is a massive problem as the knowledge and understanding of invasive species is often decades behind the introduction of these species. We are essentially only finding out how problematic some non-native species are when they are already established and are an enormous problem.

Table 3.2, Showing the invasive or potentially invasive species recorded in the vicinity of Kinvara.

Common Name trees/shrubs	Scientific Name	Status BDC
Butterfly Bush	*Buddleia*	Medium impact
Travellers joy/Hairy Man's Beard	*Clematis vitalba*	Medium impact
Cotoneaster	*Cotoneaster*	Medium Impact
Sumac sp.	*Rhus sp.*	No data
Flowering Current	*Ribes sanguineum*	No data
Snowberry	*Symphoricarpos albus*	No data
Common Name broadleaf herbs	Scientific Name	Status
Red Valerian	*Centranthus ruber*	No data
Montbretia	*Crocosmia sp.*	No data
Spanish Bluebell	*Hyacinthoides hispanica*	Invasive(Impact unknown)

Common Name trees/shrubs	Scientific Name	Status BDC
White Stonecrop	*Sedum album*	No data

3.5.1 Buddleia

Butterfly Bush or Buddleia is a non-native shrub that has escaped from gardens and is now well established in Ireland Buddleia is described as a medium impact invasive species on the Biodiversity Data Centre Website. Buddleia was recorded on an area of limestone pavement down the Ballybranigan road (Plate 3.15) and in the field between the GAA pitch and the proposed Hockey Pitch field. In addition Buddleia was recorded on convent park road. The open rocky habitats of the Burren are not dissimilar to Buddleia's preferred habitat of abandoned rocky areas or disturbed ground. Thus this species has the potential to negatively impact the delicate ecosystems that are unique to the Burren. Buddleia has been promoted as a species that is valuable for wildlife as it is known to attract butterflies and other pollinators; however given the proximity of the Burren the negatives of this species are likely to outweigh the positives.

Plate 3.14 showing Buddleia which has become established on limetone pavement on Balllybranigan road.

3.5.2 Traveller's Joy or Old Man's Beard

Traveller's Joy is described as a 'Rampant deciduous Climber' (Stace 2001) which can grow up to 30m. This species is very common in the wider area and is becoming established on the outskirts of Kinvara. The vines can spread out over other vegetation and form dense canopies smothering the species beneath (Plate 3.16). Several small individuals were noted on Convent Park Road (Plate 3.17), it may be possible to eradicate this species here as it is in a very early stage of colonisation.

Plate 3.15 Example of unmanaged Traveller's Joy (outside the village of Kinvara) which is choking mature trees, taken in winter.

Plate3.16 showing Traveller's Joy on Convent Road at an early stage of colonisation, photo taken in May.

3.5.3 Cotoneaster

'There are up to 100 species of cotoneaster cultivated in Ireland; however there are a much smaller number which are considered to be invasive. These include Hollyberry cotoneaster (Cotoneaster bullatus), entire-leaved cotoneaster (Cotoneaster integrifolius), small-leaved cotoneaster (Cotoneaster microphyllus), Himalayan cotoneaster (Cotoneaster simonsii) and cotoneaster (Cotoneaster horizontalis). "The seeds are spread by birds, therefore, the plants can easily spread to a wide area" Invasive non-native species (UK) - Cotoneaster - Inside Ecology . A species of Cotoneaster was noted in the corner of Holly-Tree Garden. This individual seems to have spread across the road from a garden where it is growing on a wall. The plant resembles the Small leaved Cotoneaster although it was not positively identified. Cotoneaster has been recorded in a number of places and is spreading into the habitats around the village. in addition to the plants in Holly Tree, it was noted on the limestone pavement areas between the Hockey Pitch and the GAA pitch (possibly spread from a garden on the Moy Road directly opposite to the GAA grounds)(Plate 3.18) and on the Limestone Pavement along Ballybranigan road. A large bed entirely dominated by Cotoneaster was also present in a long rectangular bed at the entrance to the Eurospar car park (plate 3.17).

Plate 3.17 left Cotoneaster growing in rectangular bed at entrance to Eurospar Car park, Plate 3.18 Right Cotoneaster getting established on Limestone Pavement.

3.5.4 Snowberry

Snowberry is a shrub from Western America which is established and widespread in Ireland. It spreads extensively by means of suckers, where it can form a dense thicket displacing native species. This species was recorded growing next to the wall in Memorial Garden (Plate 3.20) and on the road to Ballybranigan where it has spread along a large section of hedgerow on the eastern side of the

road (plate 3.19). In addition a dense growth of Snowberry was noted within the grounds of Seamount.


Plate 3.19 & 3.20 Snowberry

3.5.5 Sumac Species

A species of Sumac was also noted at the western end of the study site just west of Ballybranigan (Plate 3.21). Although no data is available for this deciduous shrub on the biodiversity data centre website, the species is considered to be invasive in the UK.

Plate 3.21 spreading out from a garden west of Ballybranigan garden along the N67

3.5.6 Montbretia

Montbretia is a very commonly planted in gardens etc. Although no data is available for this species on the Biodiversity Data Centre, this species is considered to be invasive in Northern Ireland, where it is well established in the wild. Montbretia spreads via corms and can completely dominate habitat to the exclusion of the native flora. This species was recorded along the woodland path adjacent to the Kinvara Playground (Plate 3.22), in a flower bed opposite this woodland area and in a flower bed where the Quay meets the Green road.

Plate 3.22 Montbretia in woodland path adjacent to the Kinvara Playground

3.5.7 Red Current, Red Valerian and White Stonecrop.

Three non-native and possibly invasive species were particularly prominent on the eastern side of the village along the stone walls above the areas of tidal influence. These were Redcurrant, Red Valerian and White Stonecrop. Redcurrant has been described as Naturalised (Webb 2012), however the National Biodiversity Data centre has described it as established but not-assessed in terms of its invasiveness. Red Valerian has been described as a low risk in terms of its impact, however the proximity of the Burren habitat is concerning as this species is becoming established there and could dominate large section of habitat displacing other Burren specialists (Plate 3.23). For similar reasons the non-native White Stonecrop could become problematic in the Burren. This species was frequently seen along walls and rocky areas within the study area.

Plate 3.23 Red Valerian along the Kinvara Sea Walls

3.5.8 Spanish Bluebell

This species was recorded along the southern section of N67 road occasionally between Ballybranigan garden and Holly Tree Garden (Plate 3.24). Although this species was encountered occasionally it may be more abundant than the survey suggests as it flowers between April and June. Thus the survey took place towards the end of its flowering period. This species is thought to be a risk to Native Bluebells which are more delicate looking with drooping flowers. This species mostly spreads by planting and is difficult to eradicate once it becomes established due to the corms remaining in the soil and re-sprouting. Spanish Bluebell can hybridise with Native Bluebells.


Plate 3.24 Spanish Bluebell left, Plate 3.25 Harlequin Ladybird right

3.6 Invasive Species- Fauna

The invasive Harlequin Ladybird was recorded on the entrance gate to the Memorial Garden (Plate 3.25). The Irish Naturalists describes it as a '*A voracious predator which feeds on aphids, soft fruit, pollen, small insects and other ladybird larvae*'.

3.7 Fauna

3.7.1 Birds

A total of 30 bird species were recorded within or adjacent to the site during the two survey days (Table 4.2). One of the bird species recorded on the site is protected under Annex I of the EU Bird Directive, i.e. Little Egret. Little Egret was observed offshore during low tide. A maximum count of 13 individuals was also noted in the bay in the vicinity of Kinvara (PT data) this species has favourable conservation status in Ireland and is Green Listed.

Six species listed on the Birds of Conservation Concern Red List were identified on and adjacent to the site, namely Black-headed Gull, Curlew, Herring Gull, Kestrel, Lapwing and Redshank. All of these birds, were recorded utilising the marine habitats offshore in Kinvara Bay. The kestrel and gulls were also recorded over the built up areas of the town and adjacent terrestrial habitats. Criteria for red listed species are described in the desk study in section 2.4 of this report.

Several species listed on the BOCCI Amber List (i.e. birds of medium conservation concern) were recorded on site: Great Black-backed Gull, House Sparrow, Mallard, Mute Swan, Robin, Starling, Swallow and Willow Warbler.

The following species recorded on the site are very common and have favourable conservation status Blackbird, Blue Tit, Collared Dove, Dunnock, Goldfinch, Grey Heron, Hooded Crow, Jackdaw, Magpie, Mistle Thrush, Pied Wagtail, Rock Pipit, Rook, Woodpigeon and Wren.

Some of the bird species recorded are well known and formally very common species. Two thirds of Irelands regularly occurring species are now on either the BoCCI Red or Amber lists (Gilbert et al 2020) due to large declines in populations especially over the last few decades.

Table 4.2 Bird species observed during the field visits, and current conservation status.

Common Name	Scientific Name	BoCCI / Annex I Status
Blackbird	*Turdus merula*	Green
Black-headed Gull	*Larus ridibundus*	Red
Blue Tit	*Parus caerulrus*	Green
Collared Dove	*Streptopelia decaocto*	Green
Curlew	*Numenius arquata*	Red
Dunnock	*Prunella modularis*	Green
Goldfinch	*Carduelis carduelis*	Green
Great Black-backed Gull	*Larus argentatus*	Amber
Grey Heron	*Ardea cinerea*	Green
Herring Gull	*Larus argentatus*	Red
Hooded Crow	*Corvus cornix*	Green
House Sparrow	*Passer domesticus*	Amber
Jackdaw	*Corvus monedula*	Green
Kestril	*Falco tinnunculus*	Red
Lapwing	*Vanellus vanellus*	Red
Little Egret	*Egretta garzetta*	Green/Annex I
Mallard	*Anus platyrhynchos*	Amber
Magpie	*Pica pica*	Green
Mistle Thrush	*Turdus viscivorus*	Green
Mute Swan	*Cygnus olor*	Amber
Pied Wagtail	*Motacilla alba yarrellii*	Green
Redshank	*Tringa totanus*	Red
Robin	*Erithacus rubecula*	Amber
Rock Pipit	*Anthus petrosus*	Green
Rook	*Corvus frugilegus*	Green
Starling	*Sturnus vulgaris*	Amber
Swallow	*Hirundo rustica*	Amber
Willow Warbler	*Phylloscopus trochilus*	Amber
Woodpigeon	*Columba palumbus*	Green
Wren	*Troglodytes troglodytes*	Green

3.7.2 Bats

A dedicated bat survey of the village was not possible given the scope of the study and the size of the area. A huge number of houses and structures are present in the village which could provide potential roosting habitats, but these were not assessed. Similarly a nocturnal bat detector survey was not undertaken. This on its own would be a massive undertaking. The mature treelines and scrub areas on site are likely to provide foraging and commuting habitats for bats. In addition some of the mature trees on site may have developed cavities suitable for roosting bats.

At least 5 species of bat have been recorded in the two relevant 1km squared sections M3710 and M3810, these are Common Pipistrelle, Soprano Pipistrelle, Brown long-eared, Lesser Noctule and Nattterer's Bat. These records are available on the biodiversity data centre.

Given the large area around Kinvara and the habitats therein it is highly likely that many species of bats are present and using the site. Overall the site does provide large areas of suitable habitat for feeding and commuting bat species especially on the surrounds of the town where light pollution is low and natural habitats are abundant.

3.7.3 Badger

The site was searched for signs of badger (*Meles meles*) during the walkover survey. The following signs are common in badger territories; tracks, scuffle marks, feeding signs, scat and the presence of setts (Sargent 2003). A single Badger scat was identified along the shore between the castle and the town. A badger scat was located near the coast by the wastewater treatment facility. Also Badger scat was found in the field between the GAA grounds and the proposed Hockey Pitch site. No other signs or setts were identified during the survey.

3.4.4 Other Fauna

Otter are likely to be using the islands and habitats to the north of the site at least on occasion. A single very old spraint was noted on the largest island to the west of the castle. No holts or active runs leading into the scrub were identified during the survey. Otters had been seen on the coastal areas adjacent to the village by several locals. Indeed two Otter were observed in March 2023 swimming near the island to the west of the castle, by the author.

According to the site synopsis for Galway Bay Complex SAC, Kinvara Bay is one of a number of haul–out sites for Common Seal within Inner Galway Bay. This species is protected under Annex II of the EU Habitat Directive. No seals were observed during the survey, nor are they typically seen in close proximity to the village.

Although no evidence of Shrew, Hedgehog and Stoat have been recorded during the walkover survey, there are records of these species in the relevant 1km map squares (where Kinvara is situated) on the Biodiversity Data Centre. In Addition camera trapping as part of the Hockey Pitch Biodiversity Trail Survey recorded the presence of Fox and Mice (O'Riordan 2023). Fox Scat was also seen in the field between the Hockey Pitch and the GAA grounds. An abundance of Fox scat was also recorded along Ballybranigan Road down to the Wastewater Treatment facility.

3.5 Significance of Fauna

It is clear from the desk study and the field study that many species of high ecological import are present in the local environment. Technically all wetland and waterbirds are mentioned as qualifying interests of Inner Galway Bay SPA. The following species are however specifically mentioned as QIs and have been recorded in good numbers within Kinvara bay (PT data); Dunlin (Max Count PT 400), Lapwing (193), Wigeon (200), Teal (125), Black-headed Gull (84), Redshank (49),Curlew (40),Cormorant (20), Brent Goose (13),Turnstone (15),Grey Heron (9), Great Northern Diver (6) and Common Tern (3).

Overall the coastal habitats have high suitability to support breeding and wintering populations of birds. The adjacent coastal habitats provided ample feeding and roosting habitat for waders, gulls and ducks. From the data (PT Castle and Pier counts) six species listed on Annex I of the EU Bird Directive were found to be utilising the site namely Common Tern, Great Northern Diver, Little Egret, Mediterranean Gull, Peregrine Falcon and Whooper Swan. In addition several species mentioned on the Birds of Conservation Concern Red and Amber lists were recorded utilising the site and surrounding environment during the survey. Overall the coastal areas surrounding Kinvara were highly significant for supporting important populations of Annex I and BoCCI Red and Amber listed species.

Otter are protected under Annex II of the EU Habitat Directive and are a qualifying interest for the SAC. Otter are likely to be using the coastal habitats, especially those to the west of the castle.

Badgers are thought to be using the areas on the outskirts of town at least on occasion Badger scats, were identified in different parts of the site on the periphery of the town. This species is protected under the Wildlife Act 1976 and Wildlife (Amendment) Act 2017.

The mature treelines and scrub areas on site are likely to provide foraging and commuting habitats for bats. In addition some of the mature trees on site may have developed cavities suitable for roosting bats. Similarly some of the buildings in Kinvara are likely to be used as roosting locations. Although no formal bat survey was undertaken there are records for bats on the Biodiversity data centre for the area. . Brown Long-eared Bat, Common Pipistrelle, Soprano Pipistrelle, Lesser Noctule and Nattterer's Bat were all recorded near Kinvara. All bats are protected under Annex IV of the EU habitat directive with the exception of Lesser Horseshoe Bat which is afforded a higher level of protection under Annex II.

4 Biodiversity Trail

It is the intentions of Kinvara Tidy Towns to develop a biodiversity Trail for the village. Figure 4.1 is intended to outline potential hot spots of biodiversity which can be highlighted when the trail is finalised. A rough trail outline is provided on the map. The numbers below correspond to the numbers on Figure 4.1.

1 Hockey Pitch and stone circle habitat
2 Excellent mosaic of limestone pavement, scrub & species rich calcareous grassland. Badger scat
3 Excellent mosaic of limestone pavement, scrub & species rich calcareous grassland.
4 Ballybrannigan Garden
5 Excellent mosaic of limestone pavement, scrub & species rich calcareous grassland
6 Badger scat
7 Ballybranigan walk, short walk to the coast with large areas of high value coastal and terrestrial habitats, some within the SAC
8 Holly Tree Garden
9 Nun's Orchard
10 Scrub, valuable habitat for birds and insects, along Convent Road
11 Kinvara Pier, excellent vantage point for watching birds of the SPA
12 Wall habitats of Glebe Road and on the outside of Millennium Garden
13 Memorial Garden
14 Coastal walls and low walls along the N67
15 Seamount grasslands
16 Island to the west of the Castle, including saltmarsh, scrub and Otter hot spot
17 Patchwork of terrestrial habitats within the SAC,
18 Kinvara Castle, bird watching VP and
19 Patchwork of terrestrial habitats within the SAC,
20 saltmarsh,

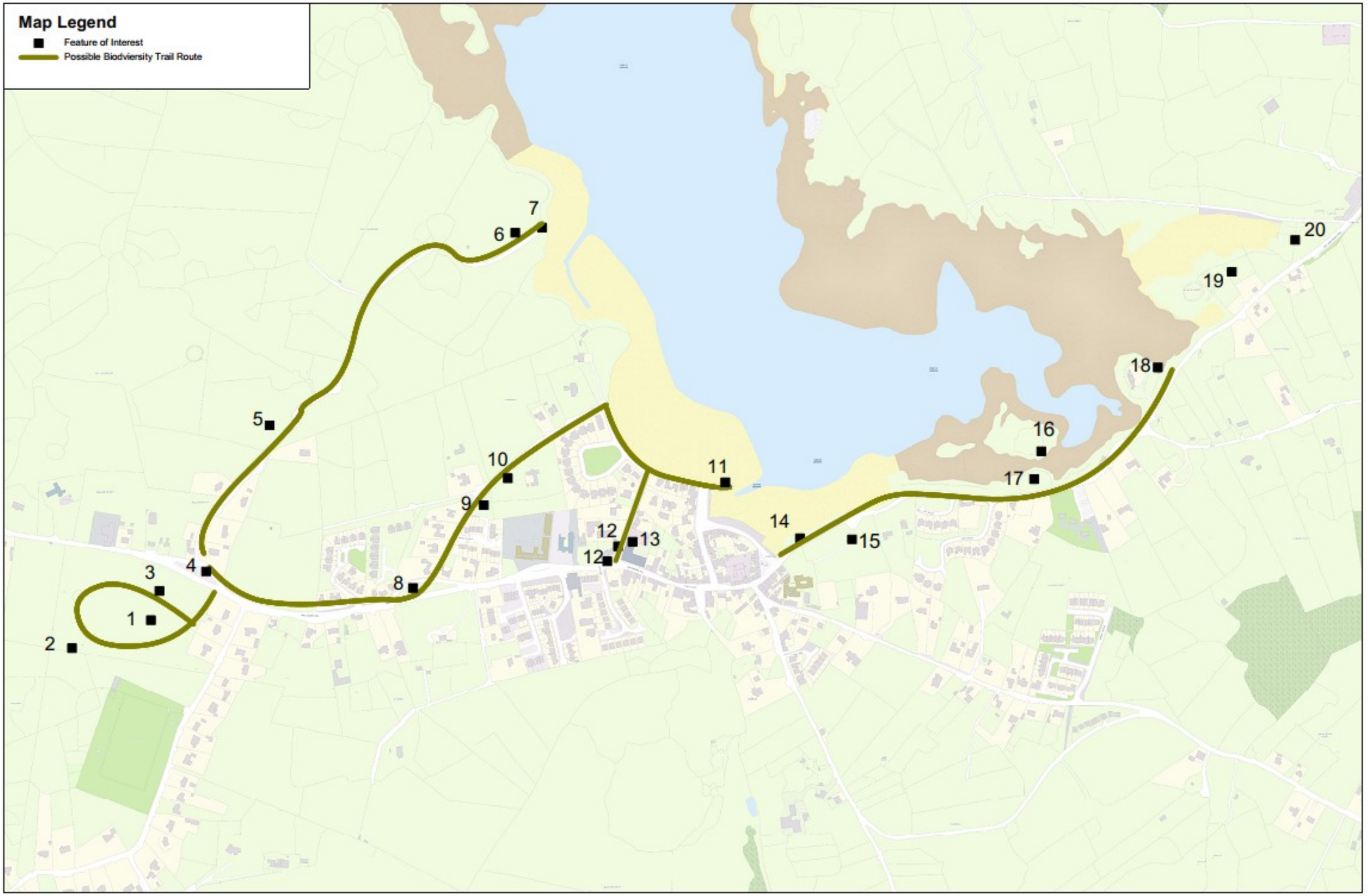

Figure 4.1, Potential Location of the Biodiversity Trail, showing the areas of Biodiversity Interest

5 Mitigation/suggestions/notes

The following measures should be taken as suggestions or potential actions rather than specific and agreed mitigation. The agreements with other community members may not be in place to carry out all these measures.

5.1 Notifiable Actions

Notifiable actions or Activities Requiring Consent (ARCs) are activities that have the potential to damage designated sites. Some of the actions which may be relevant to areas of habitat that fall within Natura 2000 Notifible actions include: reclamation and infilling, cutting, uprooting or removing plants, construction/alteration of tracks/paths, fertiliser application, significant changes in livestock density or type, or season of grazing. The website shown below provides a full list of such activities and application forms to request consent for any such actions.

Activities Requiring Consent | National Parks & Wildlife Service (npws.ie)

5.2 Management Ideas to improve the site for Wildlife

5.2.1 Mowing Regimes

Many of the grassland habitats on the site were clearly calcareous in nature and were being managed to improve species richness. The mowing regime could be further amended to get better results. For example the vegetation on northern section of Ballybranigan plot where the site banks toward the main road has become more rank and is less diverse that some other sections of the site. Rank grasslands are dominated by tall course grasses and have less broadleaf herbs associated with them. The dominance of grasses such as false oat could indicate that the habitat would benefit from additional mowing. This section could be strimmed in late August/September and again in March/April and the strimmings removed. Thus increased management might increase the diversity of this section. The goal is to remove the fertility of the habitat, thus increasing the diversity of species. The grass in the plot should be cut twice a year in April and September. Similarly some sections of Hollytree garden could be marked out for increased mowing. A joint partnership with Seamount school could be undertaken; Seamount could continue no-mow may until September, by simply delaying cutting the grass until September to give the plants the opportunity to sow seeds.

Possible Mowing Regimes

1. Mow/strim the entire plot, in late August/September once most of the flowers have seeded and remove all the cuttings, or Mow periodically until March and remove cuttings. This process should open up the sward and allow more flowering plants to develop and reduce the dominance of the grasses. So at a minimum give it a low cut in Aug/Sept and if possible try to keep the sward low through to the spring.
2. Where time allows if you have time to manage little plots at a time and have a mosaic of different habitat pockets. This will enhance the overall diversity of the site. You might also like to keep a looped path around the site mown regularly which might enhance visitor enjoyment of the site by drawing people into the habitat. The trample effect can serve to improve the habitat the following year.

3. The pollinator plan recommends having a diversity of management types, for example you can mow /manage certain areas on a 6 week rotation, which increase the flowers and thus the pollen resource for pollinators. Other areas long grasses can be left over winter, allowing spaces for invertebrates to overwinter, and other areas can be cut twice annually.

Species-rich grasslands management - Farming for Nature

Management of meadows and grassland | Aftercare | Sowing & Aftercare | Emorsgate Seeds – (01553) 829 028 (wildseed.co.uk)

5.2.2 Ponds

Ponds are important sources of freshwater that are known to support a wide variety of species. The best ponds have a variety of different depths, natural shallow margins and aquatic vegetation. Smaller bucket ponds like the one shown below are still valuable habitats for invertebrates, amphibians, birds and even mammals.

Plate 5.1 bucket pond

Due to safety concerns within a town environment micro-ponds or bucket ponds (Plate 5.1) might be a better choice for inclusion within the Kinvara Tidy Town Gardens. Alternatively a fence could enclose the pond to make it safe for young children etc. In this way water features can be incorporated, adding to the diversity of habitats, while maintaining safe places for children and other users. It is important to include rocks within the ponds to allow access for wildlife when water levels fluctuate and to enhance safety by minimising access to water.

5.2.3 Creating an Orchard

It is the intention of Kinvara Tidy Towns to create an Orchard in Nun's Orchard Field (Subject to owner approval and engagement). Orchards can be very valuable habitats for wildlife and choosing heritage apple varieties (Plate 5.2 & 5.3) has big advantages. Heritage apple trees are particularly adapted to our Irish Climate. A huge variety of Irish Apple trees are found in Ireland. Seedsavers in county Scarriff, host Ireland's apple tree collection which includes approximately 180 varieties.


Plates 5.2 & 5.3 Heritage Orchard Left, Heritage Apples Right

These varieties have a huge diversity of flavours, colours and textures (Plate 5.3). Commercial varieties focus only on a very few varieties and often appearance and uniformity are the most prized traits, sacrificing flavour. Creating and managing an Orchard involves many traditional skills such as grafting and pruning techniques. It is important to make use of and share this knowledge to keep it alive. Creating a heritage orchard within the grounds of Nun's Orchard would benefit people and wildlife. The orchard could be used to raise awareness of food security and our over reliance on industrial food systems. Maintaining seed sovereignty and traditional practices such as those mentioned can make communities more resilient to change. Something to consider when creating an Orchard is Fireblight and other diseases that affect orchards, growing a diversity of species can help protect the orchard as a whole as you are improving your chances of having varieties with resistance to pests and diseases.

One method of creating an orchard that we used in Ballinderreen national school was to mulch several months in advance of planting. The spots for the trees were selected and mounds of organic material were put down. We used partially rotten grass cuttings, seaweed, horse manure and straw. Several months later when we came to plant the soil conditions were excellent and the apple trees are now thriving. It is very important to continue to prune your apple trees every year, there is an art to pruning and it should not be carried out by inexperienced people.

Kinvara Tidy Towns have already begun to create a fruit orchard within the grounds of the Memorial garden and intend to add more apple trees to this site. As there are already some raspberry canes in one of the established beds, perhaps the other bed could be used for blackcurrant bushes. Similarly a fruit orchard could be added to the playground at St. Josephs National School, if the soil around the perimeter were built up to support apple trees, raspberries and blackcurrants. Finally a fruit bed along the back entrance to the Eurospar Carpark could be considered, in the current the Cottoneaster bed.

5.2.4 Growing your materials

Kinvara Tidy Towns have been making there own compost for many years this not only saves money but turns garden waste into a valuable material for the garden. Similarly the group have been saving seeds and planting perennial species which is a very resilient practice. Another way to save on

materials would be to plant up areas of Hazel and Basket Willow within Kinvara perhaps at Nun's Orchard or Memorial garden. The willow or hazel would be used for cropping. Living willow structures, are a branch of the basket-making craft. Willow structures can be used to make hedges, frames for climbing plants, or fun huts for kids. They add structure and texture to a garden and can be very attractive features. This would also be a great project for Seamount school.


Plates 5.4 & 5.5, Left Willow Structure, Right Willow fence made from materials grown in Ballinderreen National school garden

The willow is cut back to a stump every Autumn or Winter and the crop can then be used in the garden. Willow grows readily from cuttings placed in the ground. Living fences can be made in this way. Use Hazel as the uprights if you do not want a living fence.

5.2.5 Retention of existing habitat and provision of new habitat

1. Retention of field boundaries/hedgerows/treelines and scrub if possible. These areas provide good commuting corridors for bats moving between areas of adjacent woodland. Tree planting on the Quay would improve the space for Wildlife, and provide shade during hot weather and provide cover for animals moving around. The inundation of saltwater on the green during storm surges could be a problem for a lot of different species; thus it is difficult to identify the best species to plant. Hawthorn and Sycamore are two species that are growing close to the tidal splash area to the east of the green, these trees may have some resilience to salt inundation. Mounding up soil around the tree may also help to protect trees planted. Kinvara Tidy Towns have received a Hares Corner Grant from Burrenbeo. 45 native trees, 2 burren pine and 5 apple trees will be planted possibly in Nun's Orchard or elsewhere in the village.
2. Bird and bat boxes could be mounted on trees and buildings. It would be very interesting to see if Swifts could be attracted to the village by the provision of Swift boxes. These birds are social animals and often nest close together on tall buildings. If a lot of boxes were mounted together a new Swift Colony could be established. Swifts are on the Birds of Conservation Concern Red List. A project such as this could be a massive win for biodiversity in Kinvara. The back of the Merriman Hotel that faces into the Memorial garden could be a good spot for swift boxes given that it is relatively sheltered and north facing. The tall buildings at Seamount could also be a good choice if the school were amenable. For other bird species and for bats, boxes could be placed in Millennium Garden if permission could be granted or in Hollytree along the mature treeline. Create a high home for Swifts (rspb.org.uk)

3. Any cutting or management of hedgerows, including the ivy growing on walled garden areas, should be managed outside the bird nesting period which is the 1st of March to the 31st of August each year. It is an offence to destroy hedgerow vegetation within the nesting period (Wildlife (Amendment) Act 2000.

5.3 Invasive Species Management

There are 10 invasive or potentially invasive species either within or adjacent to the village of Kinvara. Thus it is not possible within the scope of this study to draw up detailed plans for their management and eradication. Several species such as Red Valerian, White Stonecrop and Redcurrant are very well established and would be difficult to manage. Species such as Old Man's Beard/Travellers' Joy could be managed as they are in the early stages of colonisation. Travellers Joy could be targeted in particular as it has the potential to dominate even in habitats such as mature woodland. Several links to further reading on some of these invasive species is provided below.

Information on Buddleia, Old Man's Beard and Montebritia.
https://www.tii.ie/media/rtmi2ebi/management-of-noxious-weeds-and-non-native-invasive-plant-species-on-national-road-schemes.pdf

Information on Spanish Bluebells
https://invasivespeciesireland.com/wp-content/uploads/2017/08/Hyacinthoides-hispanica-Spanish-Bluebell-and-Hybrid.pdf

Information on Cotoneaster
Invasive non-native species (UK) - Cotoneaster - Inside Ecology

5.4 Pesticides

Kinvara Tidy Towns have a pesticide free policy and manage all footpaths and other surfaces manually. This management practice reduces toxins in the local environment which if of benefit to both human health and the health of the natural environment. In addition the group are not heavy handed when it comes to weeding as there is a level of understanding of the value of weeds/wildflowers for pollinators and other plant/insect interactions (for example plants as food for caterpillars, leaf litter as hibernation habitats for invertebrates). The group also endeavours to lead by example to promote environmental best practice methods such as 'no Spray' management to the wider community.

5.5 Education

Education is a big priority for Kinvara Tidy Towns. The group have ties to many environment, social and sporting groups as well as to the local schools. The group are using their network both in person and on social media to spread awareness about the ecology and biodiversity of Kinvara. This is critically important in these times of environmental and climate crisis.

Kinvara Tidy Towns are in the process of updating their Biodiversity Action Plan. It is hoped that this report can be used as a guidance document, feeding into the development of the Plan.

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Appendix 1- Plant Species List

Common Name	Scientific Name
Sycamore	*Acer pseudoplatanus*
Horse Chestnut	*Aesculus hippocastanum*
Downy Birch	*Betula pubesens*
Butterfly Bush	*Buddleja davidii*
Box	*Buxus sp.*
Hairy Man's Beard	*Clematis vitalba*
Hazel	*Corylus avellana*
Cotoneaster	*Cotoneastersp.*
Hawthorn	*Crataegus monogyna*
Escallonia	*Escallonia sp,*
Spindle	*Euonymus europaeus*
Beech	*Fagus sylvatica*
Ash	*Fraxinus excelsior*
New Zealand Broadleaf	*Griselinia sp.*
Ivy	*Hedera helix*
Holly	*Ilex aquifolium*
Juniper	*Juniperus communis*
Golden Rain	*Laburnum sp.*
Privet	*Ligustrum sp.*
Apple tree	*Malus sp.*
Scots Pine (Burren Pine)	*Pinus sylvestris*
Cherry Blossom	*Prunus sp.*
Blackthorn	*Prunus spinosa*
Sumac sp.	*Rhus sp.*
Flowering Current	*Ribes sanguineum*
Dogrose	*Rosa Canina agg*
Burnet Rose	*Rosa pimpinellifolia*
Bramble	*Rubus fruticosus agg*
Goat Willow	*Salix caprea*
Willow	*Salix sp.*
Elder	*Sambucus nigra*
Whitebeam	*Sorbus aria*
Rowan	*Sorbus aucuparia*
Snowberry	*Symphoricarpos albus*
Lyme	*Tilia x europaea*
Gorse	*Ulex europaeus*
Guelder Rose	*Viburnum opulus*
Common Name Grass/Sedge/rushes/ferns/moss	Scientific Name

Common Name	Scientific Name
Creeping Bent	*Agrostis stolonifera*
Sweet Vernal Grass	*Anthoxanthum odoratum*
False Oat Grass	*Arrhenatherum elatius*
Wall Rue	*Asplenium ruta-muraria*
Maidenhair Spleenwort	*Asplenium trichomanes*
False Brome	*Brachipodium sylvaticum*
Quaking Grass	*Briza media*
Soft Brome	*Bromus hordeaceus*
Distant Sedge	*Carex distans*
Glaucous Sedge	*Carex flacca*
Black Sedge	*Carex nigra*
Sedge	*Carex sp.*
Fern Grass	*Catapodium rigidum*
Rusty-backed Fern	*Ceterach officinarum*
Crested-dog's Tail	*Cynosurus cristatus*
Cock's Foot	*Dactylis glomerata*
Heath Grass	*Danthonia decumbens*
Common Couch Grass/Twitch	*Elymus repens*
Tall Fescue	*Festuca arundinacea*
Red Fescue	*Festuca rubra*
Yorkshire Fog	*Holcus lanatus*
Saltmarsh Rush	*Juncus gerardii*
Perennial Rye Grass	*Lolium perenne*
Field Wood-rush	*Luzula campestris*
Hart's Tongue	*Phyllitis scolopendrium*
Annual Meadow Grass	*Poa annua*
Meadow Grass	*Poa sp.*
Rough Meadow Grass	*Poa trivialis*
Polypody	*Polypodium sp.*
Bracken	*Pteridium aquilinum*
Salt-march grass	*Puccinellia maritima*
Blue Moor Grass	*Sesleria albicans*
Sea Arrowgrass	*Triglochin maritima*
Yellow Oat-grass	*Trisetum flavescens*
Common Name Herbs	Scientific Name
Yarrow	*Achillea millefolium*
Agrimony	*Agrimonia eupatoria*
Pyramidal Orchid	*Anacamptis pyramidalis*
Scarlet Pimpernel	*Anagallis arvensis*

Common Name	Scientific Name
Mountain Everlasting	*Antennaria dioica*
Cow Parsley	*Anthriscus sylvestris*
Kidney Vetch	*Anthyllis vulneraria*
Thrift	*Armeria maritima*
Lords-and-Ladies	*Arum maculatum*
Sea Aster	*Aster tripolium*
Halberd-leaved Orache	*Atriplex hastata*
Daisy	*Bellis perennis*
Sea Beet	*Beta vulgaris*
Yellow-wort	*Blackstonia perfoliata*
Ling Heather	*Calluna vulgaris*
Hedge Bindweed	*Calystegia depium*
Harebell	*Campanula rotundifolia*
Hairy Bitter-cress	*Cardamine hirsuta*
Carline Thistle	*Carlina vulgaris*
Knapweed	*Centaurea nigra*
Greater Knapweed	*Centaurea scabiosa*
Sticky Mouse Ear	*Cerastium glomerata*
Ox-eye Daisy	*Chrysanthemum leucanthemum*
Creeping Thistle	*Cirsium arvense*
Spear Thistle	*Cirsium vulgare*
Scurveygrass	*Cochlearia sp.*
Pignut	*Conopodium majus*
Montbretia	*Crocosmia sp.*
Montbretia	*Crocosmia sp.*
Common-spotted Orchid	*Dactylorhiza fuchsia*
Wild Carrot	*Daucus carota*
Greater Willowherb	*Epilobium hirsutum*
Willowherb sp.	*Epilobium sp.*
Fairy Foxglove	*Erinus alpinus*
Petty Spurge	Euphorbia peplus
Eyebright	*Euphrasia sp.*
Meadowsweet	*Filipendula ulmaria*
Wild Strawberry	*Fragaria vesca*
Clevers	*Galium aparine*
Lady's Bedstraw	*Galium verum*
Shining Crane's-bill	*Geranium lucidum*
Dove's-foot Crane's-bill	*Geranium molle*
Herb Robert	*Geranium robertanum*

Common Name	Scientific Name
Geranium sp.	*Geranium Sp.*
Sea Milkweed	*Glaux maritima*
Sea-Purslane	*Halimione portulacoides*
Hogweed	*Heracleum sphondylium*
Spanish Bluebell	*Hyacinthoides hispanica*
St John's-wort Sp	*Hypericum sp.*
Common Cat's-ear	*Hypochoeris radicata*
Nipplewort	*Lapsana communis*
Meadow Vetchling	*Lathyrus pratensis*
Hawkbit	*Leontodon sp.*
Fairy Flax	*Linum catharticum*
Bird's-foot Trefoil	*Lotus corniculatus*
Black Medick	*Medicago lupulina*
Spring Beauty	*Montia perfoliata*
Wall Lettuce	*Mycelis muralis*
Red Bartsia	*Odontites vernus*
Bee orchid	*Ophrys apifera*
Marjoram	*Origanum vulgare*
Mouse-ear Hawkweed	*Pilosella officinarum*
Ribwort Plantain	*Plantago lanceolata*
Greater Plantain	*Plantago major*
Sea Plantain	*Plantago maritima*
Redshank	*Polygonium persicaria*
Silverweed	*Potentilla anserina*
Tormentil	*Potentilla erecta*
Creeping Cinquefoil	*Potentilla reptans*
Creeping cinquefoil	*Potentilla reptans*
Salad Burnet	*Poterium sanguisorba*
Cowslip	*Primula veris*
Selfheal	*Prunella vulgaris*
Meadow Buttercup	*Ranunculus acris*
Creeping Buttercup	*Ranunculus repens*
Cellery Leaved Buttercup	*Ranunculus sceleratus*
Yellow Rattle	*Rhinanthus minor*
Wild Madder	*Rubia peregrina*
Curley Leafed Dock	*Rumex crispus*
Broad leafed Dock	*Rumex obtusifolius*
Pearlwort	*Sagina sp.*
Rue-leaved Saxifrage	*Saxifraga tridactylites*

Common Name	Scientific Name
Common Figwort	*Scrophularia nodosa*
White Stonecrop	*Sedum album*
Ragwort	*Senecio jacobaea*
Groundsel	*Senecio vulgaris*
Red Campion	*Silene dioica*
Hedge Mustard	*Sisymbrium officinale*
Goldenrod	*Solidago virgaurea*
Perennial Sow-thistle	*Sonchus arvensis*
Smooth Sow-thistle	*Sonchus oleraceus*
Hedge Woundwort	*Stachys sylvatica*
Chickweed	*Stellaria media*
Annual Sea-blite	*Suaeda maritima*
Devil's-bit Scabious	*Succisa pratensis*
Dandelion	*Taraxacum officinale agg.*
Wood Sage	*Teucrium scorodonia*
Thyme	*Thymus polytrichus*
Red Clover	*Trifolium pratense*
White Clover	*Trifolium repens*
Sea Arrowgrass	*Triglochin maritima*
Scentless Mayweed	*Tripleurospermum maritmum*
Wall Pennywort	*Umbilicus rupestris*
Common Nettle	*Urtica dioica*
Valerian	*Valeriana officinalis*
Germander Speedwell	*Veronica chamaedrys*
Tufted Vetch	*Vicia cracca*
Common Vetch	*Vicia sativa*
Bush Vetch	*Vicia sepium*
Violet	*Viola Sp*
Sea Weeds	
Egg Wrack	*Ascophyllum nodosum*
Grass like Seaweed	*Enteromorpha sp. (Ulva)*
Serrated Wrack	*Fucuc serratus*
Bladder Wrack	*Fucus vesiculosus*
Sea Lettuce	*Ulva lactuca*

TN10 –Coastal Habitats and Habitats within the Natura 2000 sites. North Shore –

The south eastern edge of the Galway Bay Complex SAC stretches for approximately 1km adjacent to the N67 road on the final approach to Kinvara Town. The lands to the north and west of the N67 are home to a diverse collection of terrestrial habitats which collectively make up approximately 10 acres of natural habitat and which is included within the SAC designation. This is a valuable habitat for a diverse array of species of Animals and Plants and provides screening and protection for birds using the SPA. The landscape is an undulating patchwork of different habitats, with higher habitats above the level of the road juxtaposing with lower habitats at sea level and within the intertidal zone during spring tides.

Much of this habitat is not being managed for human purposes and has been left to the devises of nature. Large areas of rank grassland dominate the upper level areas where grasses such as Red Fescue, Cocks-foot, False Oat grass, Yorkshire Fog and Creeping Bent were dominant in the sward. Some patches of Tall Fescue, Bracken and common Couch grass were locally abundant. Creeping Thistle, hogweed, clevers, red clover, Meadow Buttercup, Smooth Sow-thistle and Tufted Vetch were also very common components of the habitat. Patches of habitat had become dominated by brambles and other species of emergent woodland such as Hawthorn, Blackthorn, Willow, young sycamore and Ash. While several mature trees were noted predominantly of Ash but also occasionally Sycamore and Wych Elm. Closer to the shore where the land rises steeply providing some shade areas of broadleaf herbs such as cow parsley, wild carrot, Curley-leafed Dock, Ribwort Plantain, Perennial Sow-thistle and nettles were abundant.

Pockets of Calcareous Grassland were present in areas where the soil was thin on high rocky outcrops near the walls adjacent to the N67 road. Species such as Quaking grass, Birds-foot Trefoil, Yellow Oat, Yarrow, Thyme and fern grass were recorded. Larger fields present to the east of Dunguire Castle where active management was still evident were more consistent with a Neutral Grassland Classification.

Several non-native and possibly invasive species were also recorded in this area species such as Redcurrant has been described as Naturalised (Webb 2012), however the National Biodiversity Data centre has described it as established but not-assessed in terms of its invasiveness. (Ireland 1280 non-native species the Biodiversity Data centre webpage describe most as harmless but 13% spread and become harmful) Red Valerian has been described as a low risk on impact, however the proximity of the Burren habitat is concerning as this species is becoming established there and could dominate large section displacing other Burren specialists.

West Shore – A large stretch of the western shore has been built up for both high and low density housing in close proximity to the village. Many of the coastal habitats are butting up against piers, jetties and stone walls along this stretch of shore. The habitats in the vicinity of the Wastewater Treatment Facility are however much more natural and areas of species rich meadow and scrub are evident, just inland of the coast.

Intertidal habitats

The intertidal area is best classified as a sheltered marine bay. The bay is of mixed substratum with bedrock, boulder, gravel and a fine muddy sediment being evident. Seaweeds such as Egg Wrack, Bladder Wrack, Serrated Wrack and Sea lettuce were recorded on the substratum of the intertidal area.

Salt Marsh

A salt marsh habitat is a special habitat comprised of a collection of species that are tolerant of the salty conditions that come with tidal inundation and tidal splash. A narrow strip of Saltmarsh was present above the high water line along the Southern margin of Kinvara Bay. In addition more extensive sections of saltmarsh were present on the landward side of Dunguire Castle and in the most north-easterly section of the bay at the point where a culvert allows the passage of tidal water under the N67 during Spring tides or storm surges (Although this habitat does get submerged irregularly depending on the state of the tide.). Following the Bay around to the west, several sections of Saltmarsh vegetation were evident in the coastal areas in the vicinity of the Kinvara Wastewater Treatment Plant.

These habitats were best classified as upper salt marsh (CM2)/lower salt Marsh mosaic. The community of plants varied substantially across the area with areas of dominant Common Couch, Red Fescue, Creeping Bent, Silverweed, Creeping Cinqfoil and Curly-leaved Dock near the castle. These grass species were also present near the tidal culvert along with Sea Arrowgrass, Celery-leaved Buttercup, Halbert-leaved Orache, Jointed Rush, Saltmarsh rush and very occasionally Saltmarsh Grass. Elsewhere closer to intertidal area broadleaf herbs were the dominant feature. Areas dominated by Thrift, Red Fescue, Greater Plantain and Sea Plantain, were interspersed with areas of Sea Beat, Haliberd-leaved Orache, Sea Arrowgrass, Scurvy-grass and Scentless Mayweed. The salt marsh Rush (j. gerardii) was also locally abundant in the sward. Similarly Distant Sedge (C. Distans) was locally abundant were it formed dense mats within the vegetation. An additional two species were recorded in the saltmarsh to west i.e. Sea Purslane and Annual Sea Blite

Saltmarsh habitats are under threat due to climate change as sea levels rise and higher intensity storms become more prevalent. In some cases the habitat can retreat up the shore as the sea levels rise and the environmental conditions change. Unfortunately in areas like Kinvara where habitats are butting up against the Sea Walls Salt marshes have nowhere to retreat too.

Photo 1, narrow strip of salt marsh on the northern shore of Kinvara Bay.

Photo 2. Area of habitat composed of Sea Beat, Mayweed, Halbert-leaved Orache, Sea Plantain and Sea Aster.

Photo 3, Large stretch of Saltmarsh near the N67 Culvert on the eastern edge of town

Photo 4, Saltmarsh Habitats on the coast near the Kinvara Wastewater Treatment Plant.

Table 1, Appendix 2, species recorded on Saltmarsh

Common Name Grass/Sedge/rushes/ferns/moss	Scientific Name
Distant Sedge	*Carex distans*
Creeping Bent	*Agrostis stolonifera*
False-Oat Grass	*Arrhenatherum elatius*
Common Couch Grass/Twitch	*Elymus repens*
Tall Fescue	*Festuca arundinacea*
Red Fescue	*Festuca rubra*
Sharp Flowered/Jointed Rush	*Juncus acutiflorus/articulatus*
Saltmarsh Rush	*Juncus gerardii*
Saltmarsh Grass	*Puccinellia maritima*
Sea Arrowgrass	*Triglochin maritima*
Common Name Herbs	Scientific Name
Thrift	*Armeria maritima*
Sea Aster	*Aster tripolium*
Halberd-leaved Orache	*Atriplex hastata*
Sea Beet	*Beta vulgaris*
Common Scurvy Grass	*Cochlearia officinalis*
Great Willowherb	*Epilobium hirsutum*
Sea Milkweed	*Glaux maritima*
Sea Purslane	*Halimione portulacoides*
Greater Plantain	*Plantago major*
Sea Plantain	*Plantago maritima*
Silverweed	*Potentilla anserina*
Creeping Cinquefoil	*Potentilla reptans*
Creeping Buttercup	*Ranunculus repens*
Celery-leaved Buttercup	*Ranunculus sceleratus*
Curly-leaved Dock	*Rumex Crispus*
Annual Sea Blite	*Suaeda maritima*
Sea Arrowgrass	*Triglochin maritima*
Scentless Mayweed	*Tripleurospermum maritmum*
Sea Weeds	
Egg Wrack	*Ascophyllum nodosum*
Grass like Seaweed	*Enteromorpha sp. (Ulva)*
Serrated Wrack	*Fucuc serratus*
Bladder Wrack	*Fucus vesiculosus*
Sea Lettuce	*Ulva lactuca*

TN11–Limetone Pavements

Large areas of unspoilt habitats were recorded on the road leading down to the Wastewater treatment plant beginning at Ballybranigan garden and terminating at the sea. Although some of these areas fall within lands designated as part of the Galway Bay Complex SAC, others do not despite the fact that these habitats are of very high quality. Large areas of excellent habitat were recorded along this stretch of road interspersed with areas that have been improved and extensively modified for agricultural purposes. Similar Habitat types were identified in the field between the GAA grounds and the proposed Hockey pitch site, and on the area of land between the Hockey Picth land and the N67 National Route.

These habitats were best classified as a mosaic of exposed calcareous rock (ED2), Dry Calcareous and Neutral Grassland (GS1) and Scrub (WS1). Several areas mapped under this classification were classic examples of Limestone Pavement. **Limestone Pavement is a priority habitat which is listed under Annex I of the EU habitat directives**. Species such as Juniper, holly, Blackthorn and bramble were common features of this rocky habitat.

Photo 1, Area of Limestone Pavement in the field between the GAA Pitch and the Proposed Hockey Pitch Site. A large area of Scrub is visible in the background closest to the Moy Road.

Photo 2, showing area of limestone Pavement with areas of Juniper and Holly scrub in the foreground in one of the fields to the west of Ballybranigan Road.

Non native and apparently invasive species such as Buddleja and Cotoneaster were also present and are considered a potential threat to the habitat type.

Photo 3, limestone pavement habitat with two invasive species Buddleja in the foreground and Cotoneaster in the back left.

Ferns such as Wall Rue, Rusty-backed Fern, hart's-tongue and Bracken were present along with plants such as Wild Madder and Mountain Avens. In adjacent areas where more soil is present the habitat grades into areas of Dry Calcareous Grassland. These habitats were very species rich and were considered to be of very high quality. Many species consistent with strongly calcareous conditions were recorded such as Blue moor Grass, Quaking Grass, Yellow Oat Grass and Heath Grass Yellow Wort, Kidney Vetch, Mountain Everlasting, Carline Thistle and Salad Burnet.

Grasslands with high numbers and diversity of Orchids correspond to the priority habitat Semi natural dry grasslands and scrubland facies on calcareous substrates (Important Orchid Sites (6210). No orchids were recorded in these habitats but the survey of this habitat took place quite late in September and Orchids may be present but were unrecorded due to the survey timing.

As the Grasslands had pockets of Juniper the habitat corresponds well to the Annex I Category '*Juniperus communis formations on Heaths or calcareous grasslands*' (5130)

Large areas of scrub were also present within the habitat, scrub can develop over time on areas of Limestone pavement. Species such as Blackthorn, Hawthorn, Elder, Bramble, Spindle, Dog Rose and Ivy were very common. The section of the habitat closest to the Moy road was predominantly scrub. While in the habitat surveyed in Ballybranigan the scrub was more diffuse within the area.

Photo 4, Species rich Calcareous grassland to the west of Ballybranigan Road.

Photo 5, Species Rich Calcareous Grassland between the GAA Pitch and the Proposed Hockey Pitch.

Table 1, Appendix 3 Showing the species recorded within these habitats

Common Name	Scientific Name
Butterfly Bush	*Buddleja davidii*
Hazel	*Corylus avellana*
Cotoneaster	*Cotoneaster sp.*
Hawthorn	*Crataegus monogyna*
Spindle	*Euonymus europaeus*
Ivy	*Hedera helix*
Holly	*Ilex aquifolium*
Juniper	*Juniperus communis*
Blackthorn	*Prunus spinosa*
Dogrose	*Rosa Canina agg*
Burnet Rose	*Rosa pimpinellifolia*
Bramble	*Rubus fruticosus agg*
Goat Willow	*Salix caprea*
Elder	*Sambucus nigra*
Whitebeam	*Sorbus aria*
Gorse	*Ulex europaeus*
Common Name Grass/Sedge/rushes/ferns/moss	Scientific Name
Creeping Bent	*Agrostis stolonifera*
Sweet Vernal Grass	*Anthoxanthum odoratum*
False Oat Grass	*Arrhenatherum elatius*
Wall Rue	*Asplenium ruta-muraria*
Maidenhair Spleenwort	*Asplenium trichomanes*
False Brome	*Brachipodium sylvaticum*
Quaking Grass	*Briza media*
Soft Brome	*Bromus hordeaceus*
Sedge	*Carex sp.*
Rusty-backed Fern	*Ceterach officinarum*
Crested-dog's Tail	*Cynosurus cristatus*
Cock's Foot	*Dactylis glomerata*
Heath Grass	*Danthonia decumbens*
Common Couch Grass/Twitch	*Elymus repens*
Red Fescue	*Festuca rubra*
Perennial Rye Grass	*Lolium perenne*
Hart's Tongue	*Phyllitis scolopendrium*
Rough Meadow Grass	*Poa trivialis*
Bracken	*Pteridium aquilinum*
Blue Moor Grass	*Sesleria albicans*
Yellow Oat-grass	*Trisetum flavescens*
Common Name Herbs	Scientific Name
Yarrow	*Achillea millefolium*
Agrimony	*Agrimonia eupatoria*
Scarlet Pimpernel	*Anagallis arvensis*
Mountain Everlasting	*Antennaria dioica*
Kidney Vetch	*Anthyllis vulneraria*
Yellow-wort	*Blackstonia perfoliata*
Ling Heather	*Calluna vulgaris*

Common Name	Scientific Name
Harebell	*Campanula rotundifolia*
Carline Thistle	*Carlina vulgaris*
Knapweed	*Centaurea nigra*
Sticky Mouse Ear	*Cerastium glomerata*
Ox-eye Daisy	*Chrysanthemum leucanthemum*
Creeping Thistle	*Cirsium arvense*
Pignut	*Conopodium majus*
Wild Carrot	*Daucus carota*
Fairy Foxglove	*Erinus alpinus*
Wild Strawberry	*Fragaria vesca*
Lady's Bedstraw	*Galium verum*
Herb Robert	*Geranium robertanum*
St John's-wort Sp	*Hypericum sp.*
Common Cat's-ear	*Hypochoeris radicata*
Meadow Vetchling	*Lathyrus pratensis*
Hawkbit	*Leontodon sp.*
Fairy Flax	*Linum catharticum*
Bird's-foot Trefoil	*Lotus corniculatus*
Black Medick	*Medicago lupulina*
Wall Lettuce	*Mycelis muralis*
Red Bartsia	*Odontites vernus*
Marjoram	*Origanum vulgare*
Mouse-ear Hawkweed	*Pilosella officinarum*
Ribwort Plantain	*Plantago lanceolata*
Greater Plantain	*Plantago major*
Sea Plantain	*Plantago maritima*
Redshank	*Polygonium persicaria*
Silverweed	*Potentilla anserina*
Tormentil	*Potentilla erecta*
Creeping cinquefoil	*Potentilla reptans*
Salad Burnet	*Poterium sanguisorba*
Selfheal	*Prunella vulgaris*
Meadow Buttercup	*Ranunculus acris*
Creeping Buttercup	*Ranunculus repens*
Yellow Rattle	*Rhinanthus minor*
Wild Madder	*Rubia peregrina*
Goldenrod	*Solidago virgaurea*
Perennial Sow-thistle	*Sonchus arvensis*
Hedge Woundwort	*Stachys sylvatica*
Dandelion	*Taraxacum officinale agg.*
Wood Sage	*Teucrium scorodonia*
Thyme	*Thymus polytrichus*
Red Clover	*Trifolium pratense*
White Clover	*Trifolium repens*
Tufted Vetch	*Vicia cracca*
Violet	*Viola Sp*

TN1- Ballybranigan Garden

Small triangular plot of grass which is approximately 0.25 acres, the plot is situated near the western margin of the village. A few scattered mature trees are present on the plot along with several signposts and 2 boat features. The plot is surrounded by roads with the N67 to the south and a local road to the north, where the plot is steeply banked as the level of the road is low. Mature willow and Whitebeam are interspersed with newly planted Rowan and Scot's Pine.

The Habitat has been best classified as Dry Calcareous Neutral Grassland (GS1). The soil on site is shallow and of a rocky calcareous substrate, this is unsurprising given its presence in the Burren lowlands. The grassland was quite species rich with many grasses and broadleaf herbs having been recorded. Grasses such as Red Fescue, Creeping Bent, Crested Dogs-tail, Yorkshire Fog and Cock's foot were abundant in the sward. Similarly over 30 species of broadleaf herbs were recorded during the field visits. Species such as Bird's Foot-trefoil, Black Medick, Ladies Bedstraw, Meadow Vetchling, Halkbit, Buttercups, Yellow Rattle, Ribwort plantain and silverweed were all recorded during the survey. Glaucous sedge a species common to calcareous grassland was prevalent in the habitat. Species indicative of more calcareous habitats such as in the Burren proper were notably absent; Nevertheless the habitat, was of good quality and is likely to be of benefit to a wide variety of pollinators and other invertebrates.

Photo A4.1 general photo of plot

Three species of orchid were recorded within Ballybranigan plot namely Pyramidal Orchid, Common Spotted Orchid and Broad-leaved Helleborine. Pyramidal and Common-spotted Orchid were occasionally present with 10s of individuals encountered. Three individuals of the Broad-leaved Helleborine were recorded their habitat being restricted to the shady habitat beneath the mature willow at the eastern end of the plot. The habitat was best classified as Dry Calcareous and Neutral Grassland (GS1) under the Fossitt classification scheme.

Grazing is a typical feature of this habitat type, however grazing is impossible at this location. The grassland is mown annually however a carefully planned mowing regime would benefit the habitat.

Photo A4.2, Broad-leaved Helleborine (left), A4.3 Right - Pyramidal orchids foreground, Common Spotted (Background)

A Mistle thrush was recorded singing from a tree the Ballybranigan plot during the survey, utilising the trees as singing perches to mark the edge of its territory. Several species of invertebrates were noted during the field visit including Click Beetles (in the Elateridae family) and a Micromoth Scoparia pyralella (in the Pyralid family)('food plant dead leaves at base of Ribwort plantain, possibly other plants too'), honeybee, large white butterfly along with several hoverflies. The site in undoubtedly supporting a wide array of invertebrates. Ringlet Butterfly was recorded on a separate occasion along with several Grasshopper's which were heard stridulating within the sward on the 26/07/24.


Photo A4.4 &A4.5, a Micromoth Scoparia pyralella and Click Beetles (in the Elateridae family) photographed on site

Table A4.1 Ballybranigan Garden Species List

Common Name	Scientific Name
Scots Pine (Burren Pine)	*Pinus sylvestris*
Willow	*Salix sp.*
Whitebeam	*Sorbus aria*
Rowan	*Sorbus aucuparia*
Common Name Grass/Sedge/rushes/ferns/moss	Scientific Name
Creeping Bent	*Agrostis stolonifera*
Quaking Grass	*Briza media*
Soft Brome	*Bromus hordeaceus*
Glaucous Sedge	*Carex flacca*
Crested-dog's Tail	*Cynosurus cristatus*
Cock's foot	*Dactylis glomerata*
Red Fescue	*Festuca rubra*
Yorkshire Fog	*Holcus lanatus*
Perennial Rye-grass	*Lolium perenne*
Field Wood-rush	*Luzula campestris*
Meadow Grass	*Poa Sp.*
Rough Meadow Grass	*Poa trivialis*
Common Name Herbs	Scientific Name
Yarrow	*Achillea millefolium*
Pyramidal Orchid	*Anacamptis anthropophorum*
Scarlet Pimpernel	*Anagallis arvensis*
Daisy	*Bellis perennis*
Hedge Bindweed	*Calystegia depium*
Sticky Mouse Ear	*Cerastium glomerata*

Common Name	Scientific Name
Ox-eye Daisy	*Chrysanthemum leucanthemum*
Creeping Thistle	*Cirsium arvense*
Common-spotted Orchid	*Dactylorhiza fuchsia*
Broad-leaved Helleborine	*Epipactis helleborine*
Lady's Bedstraw	*Galium verum*
Geranium sp.	*Geranium*
Spanish Bluebell	*Hyacinthoides hispanica*
Hogweed	*Heracleum sphondylium*
Field Scabious	*Knautia arvensis*
Meadow Vetchling	*Lathyrus pratensis*
Hawkbit	*Leontodon sp.*
Bird's-foot Trefoil	*Lotus corniculatus*
Black Medick	*Medicago lupulina*
Marjoram	*Origanum vulgare*
Ribwort Plantain	*Plantago lanceolata*
Silverweed	*Potentilla anserine*
Cowslip	*Primula veris*
Creeping cinquefoil	*Potentilla reptans*
Selfheal	*Prunella vulgaris*
Meadow Buttercup	*Ranunculus acris*
Creeping Buttercup	*Ranunculus repens*
Yellow Rattle	*Rhinanthus minor*
Curley Leafed Dock	*Rumex crispus*
Broad leafed Dock	*Rumex obtusifolius*
Ragwort	*Senecio jacobaea*
Red Campion	*Silene dioica*
Dandelion	*Taraxacum officinale agg.*
White Clover	*Trifolium repens*
Germander Speedwell	*Veronica chamaedrys*
Tufted Vetch	*Vicia cracca*

TN2- Holly Tree Garden

Holly Tree Garden has been studied extensively in the past, thus limited time was spent in this site. Holly Tree Garden is roughly triangular is shape and is approximately 0.4 acres. The site is bound on the northern side by a low stone wall and by then N67 national route to the south. The northern half of the plot is dominated by several Mature Trees (Popular, Sycamore etc) and shrubs (Spindle, St. John's-wort, Guelder Rose, Sea Buckthorn, Holly, Ivy. The grassland areas have been managed to increase diversity and to be of benefit to pollinators. The Grassland has been best classified as Dry Calcareous and Neutral Grassland (GS1). Grass species such as Yorkshire Fog, Red Fescue, Crested Dog's-tail, Meadow-Grass, Cock's-foot, Creeping Bent and Quaking Grass were abundant in the sward. Broadleaf herbs such as Knapweed, Red and White Clover, Ox-eyed Daisy, Red Bartsia, Black Medick, Bird's-Foot Trefoil, Germander Speedwell and Yarrow were also abundant.

Some sections of the garden have been planted up with Yellow-Rattle. Yellow Rattle is known at the meadow-maker, as it is parasitic on grasses and thus reduces grass abundance in favour of broadleaf herbs. The grasses seem to be less dominant in the areas where this plant has become established. Conversely some areas within the garden have become dominated by False Oat Grass, this grass is often abundant or dominant in habitats that are not actively managed or grazed. Three species of Orchid have been recorded in the garden namely Pyramidal Orchid, Common Spotted-Orchid and Broad-leaved Helleborine (of which 12 were counted under the trees).

A wide variety of pollinators such as bees and butterflies are likely to be using the site. Several species were recorded during the survey namely, Red –tailed Bumblebee, Bumblebee sp., Mining Bee, Honey Bee and Meadow Brown Butterfly. Cinnebar Moth Caterpillar was also recorded feeding on the Ragwort on site. A Frog hopper was also noted during the survey.

Photo A4.6 Hollytree Garden


PhotoA4.7 and A4.8 Broad-leaved Helleborine right and Cinnebar Moth caterpillar on Ragworth left, Rosebay-Willowherb in the background


Photo A4.9 and A4.10 Honeybee (left)and Red-tailed Bumblebee on Knapweed(right)


Photo A4.12 and A4.13, two other species of bee photographed in Hollytree

TN3- Memorial Garden

The Memorial garden which is situated opposite the Community Centre is a lovely quite space to pass time, read a book or drop in with the Kids. The garden is surrounded by attractive vegetated stone walls. There are some eye-catching old gravestones inside the gate to the right and a long rectangular boules pitch along the back wall. Several raised beds are present on the left hand side just inside the gate. One of the beds have been planted up with Raspberries which are thriving, the other bed appears to be neglected at the moment and was overgrown with arable weeds. (perhaps Blackcurrants could be planted here) several Apple trees have been planted along the perimeter near the back wall along with Hawthorn and Guelder-rose. The non-native and invasive snowberry was recorded at the front growing along the front wall. The roots appear to be spreading and extending through the wall. The invasive Harlequin Ladybird was also recorded on the entrance gate.

The grassland sward was best classified as amenity grassland and was of low species diversity. Species such as Perennial Rye Grass, Creeping Bent, Meadow Grass, daisy and white clover dominated. Memorial garden was very sheltered by the Merriman hotel to the south and by a mature treeline to the east and North.

Photo A4.14, Memorial Garden

Photo A4.15, Harlequin Ladybird

TN4- Millenium Garden

This area was best classified as Amenity Grassland (GA2). The area was highly managed with pesticides and large areas of the space had been extensively sprayed. The garden is dominated by non-native species. Some tall non-native broadleaf trees were present i.e. Horse Chestnut, Beech, Sycamore and Lime, which would be of benefit to some wildlife such as birds for nesting or bats for commuting between adjacent habitats. There is a lot of potential to improve this garden for nature. Overall it is a disappointing area which could be much improved and better managed both for wildlife and as a human space. This is especially true given its prominent position on the main thoroughfare through town.

Photo A4.16 Millennium Garden

TN5-Nun's Orchard Field

Down Convent Road, to the north of Nun's Orchard Housing estate there is a triangular shaped field. An electricity pylon is present in the field. The field is open to the south and is bound by a stone wall to the west which banks onto Convent Road. Some well established sycamore and Ash (unfortunately exhibiting extensive die-back) were present along this boundary wall. Several immature trees were present and had evidently been planted in the recent past including a Dwarf Weeping Birch, several Copper Beech and some semi-mature Rowan. In addition several non-native shrubs were present along the western boundary. The Habitat has been best classified as Neutral Grassland (GS1). Although the field had been recently cut at the time of the survey, grass species such as Red Fescue, Creeping Bent, Yorkshire Fog, Sweet Vernal-grass, and Perennial Rye Grass were recorded in the sward. The broadleaf herb component included White Clover, Sticky Mouse-ear, Ragwort, Ribwort Plantain, Meadow and Creeping Buttercup, Speedwell, Silverweed, Marjoram, Yarrow, Selfheal, Daisy and Hawkbit. Pyramidal Orchid was noted on one of the field margins where the grass had not been cut and may have been present elsewhere in the field before the grass was cut. The western and northern margins of the field had not been cut in some time and were dominated with species such as False Oat Grass and Twitch, Cock's-foot was also present within the sward. Species such as Clevers, Curly-leaved Dock, nettle, creeping Thistle and Upright Hedge-parsley characterised the habitat type. The non-native Pencilled Crane's-bill was also present.

Several species of invertebrates were recorded in this field including Ringlet Butterfly, Micromoths, hoverflies and Honeybees. The field to the north east of Nun's Orchard Field had not been managed in some time and a dense thicket of scrub (predominantly brambles) has become established. This is

a valuable field for nesting birds and a adult Chiffchaf was recorded here feeding young. Several other birds were also utilising this habitat to forage for flies and other invertebrates. The flowers of the brambles provide a brilliant nectar supply for pollinators and the fruit is utilised by a wide variety of species including birds and mammals.

Across the road to the north a large field approximately 4 acres was being grazed by horses. This is another example of a Dry Calcareous Neutral grassland/meadow in the Kinvara hinterland. The meadow was very species rich and an abundance of Butterflies, predominantly Meadow Brown, but also some Speckled Wood were present in the field.

Photo A4.17 Nun's Orchard Field

Photo A4.18 Sward in Nun's Orchard field

Photo A4.19, Area of scrub North east of Nun's Orchard Field, Convent Road

TN-6 Grass on Pier

This area was best classified as Amenity Grassland and was heavily managed and regularly cut. A lot of footfall was evident and patches of bare earth were noted. A low diversity of species were present within the habitat as would be typically expected in amenity areas. The sward was dominated by Perennial Rye Grass, Creeping Bent and White clover. This area has been inundated by tidal waters in the past during storm surges when they coincide with Spring tides.

Photo A4.20 Grassland on Pier

Trees such as Hawthorn and Sycamore were present in the splash zone to the east of the village and may have some salt tolerance. These trees could be considered for planting on the green. Trees are known to have a cooling effect streetscapes and can be very beneficial during heat waves (of which we may have more in the future) they are also of benefit to provide shelter and cover for wildlife.

TN-7 Seamount Grasslands

As Seamount secondary school was participating in no-mow May the grasslands in the school grounds were allowed to grow and were not Mown for that month. As a result a wonderful habitat began to emerge. The habitat was best classified as a Dry Calcareous and neutral grassland. The steep sides of the (leading off the N67 coastal) access road were particularly species rich this was probably in part due to the free draining shallow rocky calcareous soil. Grasses such as Red Fescue, Crested Dog's Tail, Yorkshire Fog, and Meadow Grass were common in the sward along with an abundance of the Calcium-loving Quaking Grass. A very rich diversity of Broad-leafed herbs such as Yarrow, Knapweed, Ox-eye Daisy, Mouse-Ear Chickweed, Eyebright, Mouse-Ear Hawkweed, Bird's-foot Trefoil, Ladies Bedstraw and many other species were recorded in the sward. Salad Burnet another Calcium loving species was also present periodically. Several species of Orchid were also recorded namely Pyramidal Orchid and Common Spotted Orchid which were common on the sloping banks and Bee Orchid of which a single individual was noted. Unfortunately the habitat was mown on the 22nd of June before a search was made for further individuals.

This habitat is linked with the Annex I habitat ***'Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometea) (*Important orchid sites)(6210)***.

This grassland is a high quality example of a calcareous grassland in the village periphery. If it was managed and mown correctly it could be further improved. If Tidy towns could work with Seamount and their contractors to allow the grasslands to grow until September/October thus allowing plants to seed this habitat could improve.

Photo A4.21 area of species rich grassland on the slopes surrounding the coastal entrance to Seamount.

Photo A4.22, Seamount Grasslands

Table A4.2 Seamount Grassland Species List

Common Name Grass/ Sedge	Scientific Name
Quaking Grass	Briza media
Glaucous Sedge	Carex flacca
Sedge	Carex sp.
Fern Grass	Catapodium rigidum
Crested-dog's Tail	Cynosurus cristatus
Red Fescue	Festuca rubra
Yorkshire Fog	Holcus lanatus
Field Wood-rush	Luzula campestris
Annual Meadow Grass	Poa annua
Meadow Grasss	Poa Sp.
Common Name Broadleaf Herbs	**Scientific Name**
Yarrow	Achillea millefolium
Pyramidal	Anacamptis pyramidalis
Daisy	Bellis perennis
Knapweed	Centaurea nigra
Sticky Mouse Ear	Cerastium glomerata
Ox-eye Daisy	Chrysanthemum leucanthemum
Pignut	Conopodium majus
Common-spotted Orchid	Dactylorhiza fuchsia

Common Name Grass/ Sedge	Scientific Name
Wild Carrot	Daucus carota
Eyebright	Euphrasia sp.
Lady's Bedstraw	Galium verum
Dove's-foot Crane's-bill	Geranium molle
Herb Robert	Geranium robertanum
Crane's-bill	Geranium sp.
Hogweed	Heracleum sphondulium
Common Cat's-ear	Hypochoeris radicata
Meadow Vetchling	Lathyrus pratensis
Hawkbit	Leontodon sp.
Bird's-foot Trefoil	Lotus corniculatus
Black Medick	Medicago lupulina
Forget-me-not	Myosotis
Bee Orchid	Ophrys apifera
Mouse-ear Hawkweed	Pilosella officinarum
Burnet-saxifrage	Pimpinella saxifraga
Ribwort Plantain	Plantago lanceolata
Greater Plantain	Plantago major
Salad Burnet	Poterium sanguisorba
Cowslip	Primula veris
Selfheal	Prunella vulgaris
Meadow Buttercup	Ranunculus acris
Creeping Buttercup	Ranunculus repens
Curley Leafed Dock	Rumex crispus
Pearlwort	Sagina sp.
White Clover	Trifolium repens

Photo A4.23, Red-tailed Bumblebee feeding on White Clover.

TN8- exposed rock behind eurospar carpark.

The Car Park at the back of the Eurospar in Kinvara is surrounded by tall gabion baskets. Above and behind these baskets to the south is a small pocket of habitat which appears to be very species rich. Access to this area was not possible during the survey due to the high fences, however it was possible to observe some of the species present from the car park. The soil within the habitat was very shallow, the habitat was probably created during the construction of the car park when the soil was scraped back. A rich diversity of broad leaved herbs were present including species such as Yarrow, Knapweed, Greater Knapweed, Lady's Bedstraw, Marjoram, Bird's-foot Trefoil and Wood Sage. Interestingly Harebell, a delicate perennial herb was only recorded in this location. It would be interesting to gain access to the field to see if other species were present. The habitat was surrounded by encroaching scrub mainly Bramble and Blackthorn with the occasional Sycamore sapling becoming established. Pollinators such as Bumblebees and several Hoverflies were utilising the habitat at the time of survey.

Photo A4.24, habitat behind Eurospar Carpark

Table A4.3 Species list from habitat behind Eurospar Carpark

Common Name Grass/ Sedge	Scientific Name
False Oat	*Arrhenatherum elatius*
Quaking Grass	Briza media
Sedge	Carex sp.
Red Fescue	Festuca rubra
Common Name Broadleaf Herbs	Scientific Name
Yarrow	Achillea millefolium

Harebell	Campanula rotundifolia
Knapweed	Centaurea nigra
Greater Knapweed	Centaurea scabiosa
Sticky Mouse Ear	Cerastium glomerata
Rose-bay Willow-herb	Chamaenerion angustifolium
Ox-eye Daisy	Chrysanthemum leucanthemum
Lady's Bedstraw	Galium verum
Herb Robert	Geranium robertanum
St. John's-wort	Hypericum sp.
Bird's-foot Trefoil	Lotus corniculatus
Forget-me-not	Myosotis
Marjoram	Origanum vulgare
Mouse-ear Hawkweed	Pilosella officinarum
Ribwort Plantain	Plantago lanceolata
Ragwort	Senecio jacobaea
Perennial Sow Thistle	Sonchus arvensis
Wood Sage	Trucrium scorodonia

TN9- Rainer Boat Garden

This micro-habitat is Best classified as Neutral Grassland (GS1) and had a good diversity of species although lacking the strongly calcareous species of the Burren. It is a linear habitat approximately 3m wide. The habitat is managed for amenity and is very attractive with a prominent boat feature and some formal planting at the western end. A row of hawthorn was present along the wall boundary and the final stretch of the N67 cycle track bounds the grassland on the other side. A couple of non-native trees have also been planted here. Some species noted include grasses such as Yorkshire Fog, Perennial Rye Grass, Cock's Foot, Creeping Bent and false Oat grass. Broadleaf herbs such as Red and White Clover, Birs's-foot Trefoil, Curly Leaved Dock, Creeping Thistle, Wild Carrot, Yarrow, Knapweed and Meadow Vetchling. The section of the grassland butting onto the cycle-track had been cut in the recent past and a good deal of red and white clover was flowering at the time of the survey which would be of benefit for local pollinators.

Photo A4.25 Rainer Boat Garden

Appendix 5 - TN11 - Vegetated Walls of Kinvara

There are many Stone walls and other stone structures within the bounds of the village of Kinvara. These walls comprise sea walls, jettys and piers, the walls of Dunguire Castle, some old walls within the town, dry stone walls and modern solid mortar walls. Some walls at the periphery of the village are important for livestock management or for property boundaries. Some of these structures play an important role in sea defence (photo 2) and are over 4m tall.

Many of the older walls in Kinvara were built using old dry stone walling techniques (photos 2, 4, 5 & 7). This is an ancient and highly skilled technique whereby walls are constructed in the absence of mortar. Dry stone walls can provide valuable habitats for many species of plant and animal. These walls have many cracks and crevices which create niches for species such as insects, spiders, woodlice, bees, moths, butterflies, wasps, mammals and reptiles. In addition the holes in its structure allow smaller animals such as mice, shrews, rabbits and hares to pass through and into adjacent habitats on the other side. On the contrary Solid walls often create barriers for mammals moving between habitats and accessing resources within their territories.

Wall habitats can support a diverse array of species such as ferns broadleaf herbs, grasses and lichens. In Kinvara different management regimes have been applied on different walls throughout the village and in some cases vegetation has been removed or cut back. In a similar way environmental conditions can dictate the flora of a wall. For example a clear marine influence zone is delineated by the development of a wall flora community of vascular plants above the salt spray zone on some sea walls (photo 2). Structures such as the castle and the pier are also interesting structures that have old wall flora associated with them.

Seamount Walls

The high walls around Seamount College are very overgrown with Ivy, Brambles, nettles and the non-native Red Valerian (Photo 1). In addition several non native and invasive species were present growing within or on top of the tall Seamount walls especially Snowberry and Griselinia which were abundant, Privet was also recorded occasionally. The vegetation on this wall is so dense that the wall is barely visible. This vegetation is cut and managed regularly to maintain sight lines as it is immediately adjacent to the N67 route as it approaches Kinvara.

Community Centre and Millennium Garden Walls

Some of the best examples of wall vegetation can be found on the walls approaching the community centre on the Glebe Road and on the walls surrounding the Millennium Garden on the Main N67(Photo 6 &14). A wide diversity of species was recorded on these walls including Polypody, Rue-leaved Saxifrage, Wall Lettuce, Rusty-backed Fern, Ivy ,Herb Robert, Maidenhair Spleenwort, Navelwort and Petty Spurge.

St. Joseph's National School

The walls in front of St. Josephs National School are also very attractive with an abundance of Maidenhair Spleenwort. Cornsalad and Rue-leaved Saxifrage were also featured on these walls. Two

species of Geranium were growing along the base of the wall, namely Shiny Crane's-bill and Herb Robert and added to the charm of the habitat (Photo 8).

Main Street Kinvara

There is a beautiful wall on Main Street which is over 3m tall, it appears that the vegetation on this wall has been cleared in the past as it is quite bare (Photo 3). Some wall Lettuce, Red Valerian and Purple Toadflax were however visible on the very top. This area could be targeted to allow native wall flora to get established again.


Photo 1, Left Seamount Walls along the approach to the village. Photo 2, Right coastal walls within the marine areas.


Photo 3, Left Main Street Kinvara, Old wall, with Wall flora conspicuously absent. Photo 4, Right Low vegetated walls along footpath between the village and the castle


Photo 5, Left Section of wall opposite Castle Car park, where Calcareous Grassland had become established. Photo 6, Right wall vegetation as you approach the community centre.


Photo 7, left un-vegetated dry stone wall east of the village. Photo 8, Right vegetated walls near St. Josephs School.

Table 1, Appendix 5 Species recorded on Walls

Common Name	Scientific Name
Sycamore	*Acer pseudoplatanus*
Box	*Buxus sp.*
Hawthorn	*Crataegus monogyna*
Ash	*Fraxinus excelsior*
New Zealand Broadleaf	*Griselinia sp.*
Ivy	*Hedera helix*
Golden Rain	*Laburnum sp.*
Privet	*Ligustrum sp.*
Cherry Blossom	*Prunus sp.*
Flowering Current	*Ribes sanguineum*
Bramble	*Rubus fruticosus agg*
Goat Willow	*Salix caprea*
Elder	*Sambucus nigra*
Snowberry	*Symphoricarpos albus*
Common Name	Scientific Name
Creeping Bent	*Agrostis stolonifera*
False Oat Grass	*Arrhenatherum elatius*
Wall Rue	*Asplenium ruta-muraria*
Maidenhair Spleenwort	*Asplenium trichomanes*
Quaking Grass	*Briza media*
Soft Brome	*Bromus hordeaceus*
Fern Grass	*Catapodium rigidum*
Rusty-backed Fern	*Ceterach officinarum*
Cock's Foot	*Dactylis glomerata*
Red Fescue	*Festuca rubra*
Yorkshire Fog	*Holcus lanatus*
Perennial Rye Grass	*Lolium perenne*
Hart's Tongue	*Phyllitis scolopendrium*
Polypody	*Polypodium sp.*
Common Name Herbs	Scientific Name
Red Valerian	*Centranthus ruber*
Willowherb sp.	*Epilobium sp.*
Fairy Foxglove	*Erinus alpinus*

Common Name	Scientific Name
Petty Spurge	*Euphorbia peplus*
Clevers	*Galium aparine*
Shining Crane's-bill	*Geranium lucidum*
Herb Robert	*Geranium robertanum*
Black Medick	*Medicago lupulina*
Wall Lettuce	*Mycelis muralis*
Pellitory-of-the-wall	*Parietaria*
Pearlwort	*Sagina sp.*
Rue-leaved Saxifrage	*Saxifraga tridactylites*
White Stonecrop	*Sedum album*
Wall Pennywort	*Umbilicus rupestris*
Common Nettle	*Urtica dioica*
Corn Salad	*Valerianella locusta*

Classic Wall vegetation – Vertical Habitats

Many species of plants are particularly well suited and adapted to growing on walls and in rocky places. These are coloniser species that are mostly adapted to drought, stress and poor soil conditions.

Plants that live on walls are powerful symbols of the adaptability of Nature which can eke out an existence in even the most rocky of terrains. Ferns are one of the most encountered plants on this vertical habitat. Five species of fern were recorded on the walls of Kinvara namely Rusty-backed Fern, Wall Rue, Maidenhair Spleenwort, Hart's Tongue and Polypody. These ferns are very tolerant of human civilisation and disturbance and are found in the middle of towns such as in Kinvara, where they are uniquely adapted to the local wall habitats. The Rusty-backed Fern is named for the rear fronts which are covered in rusty scales. While Maidenhair Spleenwort does well on mortared walls getting established on those cement surfaces between the stones. Wall Rue is a delicate fern with tiny fan like leaves. Polypody is well adapted to dry habitats and is equally content to grow on walls as it is to grow on the shady branches of trees; Polypody is a woodland epiphyte (a plant that grows on another plant).

Ferns differ from other flowering plants in that they do not produce flowers and seeds, instead they will produce spores that are dispersed by wind. Ferns also reproduce vegetatively in that they spread by rhizomes.

Broadleaf herbs that make up the typical component of wall flora were also recorded regularly on the walls of Kinvara; species such as Wall Lettuce, Shiny Cranes-bill, Rue-leaved Saxifrage, Wall Pennywort, Pellitory-of-the-wall and Pearlwort. In addition many non native species such as White Stonecrop, Red Valerian and Fairy Foxglove were recorded during the survey. Red Valerian and white Stonecrop are considered to be garden escapes. Garden escapes that are not native to Ireland are not associated with natural pests and predators. Plant animal interactions such as the plant/herbivore relationship act to naturally keep these species in check in their native countries. In Ireland however in the absence of these associated herbivores/insectivores some non-native plants can become invasive, with nothing but environment/climate factors to restrain them. Although

many species that are naturalised are not problematic, some species such as Japanese knotweed, Rhododenron and Giant Rhubarb are extremely invasive. Invasive species left unchecked can devastate local ecosystems leaving us playing catch-up to try and deal with the problem which can have big economic costs.


Photo 10, Left Maidenhair Spleenwort surrounded by moss and Lichen. Photo 11, Right Rusty-backed Fern, and Polypody.


Photo 12, Shining Cranes-bill, Left. Photo 13, White Stonecrop, right.


Photo 14, Wall Pennywort left. Photo 15 Pellitory-of-the-Wall, right


Photo 16, Rue-leaved Saxifrage. Photo 17, Common Lizard right

Fauna of the Walls

Common Lizard

Common Lizard, the only species of Lizard in Ireland often sunbathes on stone walls. Lizards cannot regulate their body temperature in the same way that mammals and birds can, they rely on the external environment and climate to do so. The microclimates within old stone walls may be important for thermoregulation for this cold blooded species (Lyne 2023). Wall habitats provide opportunities for sunbathing which allows the animal to warm up and offer shade when the animal needs to cool down. In addition the cracks and hollows within walls may offer hiding places during the night or if an animal needs to retreat quickly to avoid predators such as Sparrowhalk, Kestrel or Crows. Common Lizards will Brumate during the winter (similar to hibernation where the body systems slow down) in order to conserve energy during the cold months and due to the scarcity of food at that time. Common Lizards have a varied diet including worms, spiders, slugs and snails.

Birds

Some birds such as Thrushes and wrens utilise walls as song perches. Birds will commonly feed on wall dwelling invertebrates such as Woodlice and Brushtails.. Butterflies use walls to bask in sunshine.

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