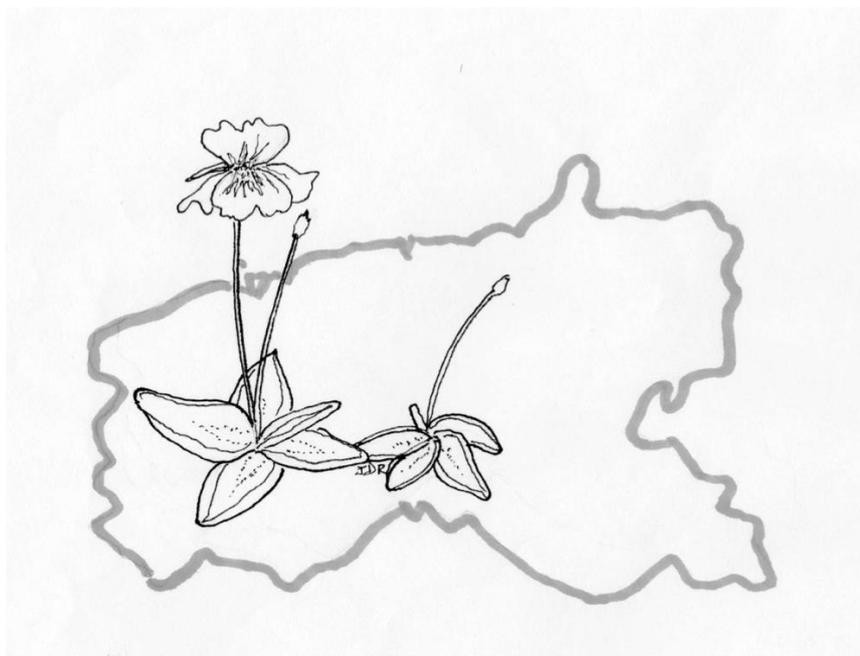


INVENTORY OF COUNTY LIMERICK SITES OF BOTANICAL AND HABITAT INTEREST

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Pro bono publico

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INVENTORY OF CO. LIMERICK SITES OF BOTANICAL AND HABITAT INTEREST,
COMPILED BY SYLVIA REYNOLDS 2020

This Inventory has been prepared in a voluntary capacity by **Sylvia Reynolds** (115 Weirview Drive, Stillorgan, Co. Dublin): Botanist; BA (Mod.) Trinity College Dublin and MSc Simon Fraser University, Vancouver; member of the Botanical Society of Britain and Ireland, and BSBI vice-county plant recorder for Limerick since 1983; recorder for and co-editor of the *Flora of County Dublin* (1998); author of *A catalogue of alien plants in Ireland* (2002) and *Flora of County Limerick* (2013), both published by the National Botanic Gardens, Dublin; independent botanical consultant, including co-author of *A survey of rare and scarce vascular plants in County Limerick* (2006) for the National Parks and Wildlife Service.

The Inventory is intended for the use of Limerick County Council (including Heritage Officer and planning officials), for information and to assist in decision-making when any future developments or changes in land use are planned;

for the National Parks and Wildlife Service, for information when considering additional sites to designate, and for Conservation Rangers with responsibility for Limerick sites;

and for other interested parties.

Introduction:

This document presents an Inventory of over 160 Limerick sites of botanical and habitat interest, including sites designated in conformity with European and national legislation, other key sites of conservation interest, and a number of smaller sites of more local interest in the county.

The annotated list also gives an indication of the diversity of semi-natural habitats in Co. Limerick, including estuarine habitats, fens and swamps, bogs and heaths, limestone grassland, woodlands, rivers and lakes, along with the diversity of their flora. Several plant species protected by Irish law are quite common in Limerick where there is suitable habitat, namely *Groenlandia densa* (Opposite-leaved Pondweed), *Hordeum secalinum* (Meadow Barley), *Schoenoplectus triquetus* (Triangular Club-rush) and *Viola hirta* (Hairy Violet), but are rare in most of the rest of Ireland.

Semi-natural habitats and their vegetation change naturally with time and through human influence, such changes noticed while doing field work in Limerick over the last 35 years or so. For example, natural succession is usually from grassland to woodland via encroaching scrub (hence the importance of managed seasonal grazing on semi-natural grassland sites) and the spread by self-seeding of conifers, Birch, Rhododendron etc. onto bogland. Improved agricultural land is relatively lacking in diversity, as are areas planted with conifers or modified by drainage. Although often botanically interesting, urban sites are not included here because they mostly lack semi-natural habitats and tend to have a high proportion of non-native species.

The Inventory of sites presented below is not exhaustive as other good sites may well occur in inaccessible private property, or have not yet been surveyed or even discovered.

Background:

In 1981 An Foras Forbartha published *Areas of scientific interest in Ireland*, listing seven sites of National Importance for Limerick, 15 of Regional Importance and a further 10 of Local Importance, giving the particular interest(s) for each site.

More recently four extensive areas and seven named sites in Co. Limerick (as well as a very small part of the Blackwater River SAC) were designated by the Irish government as Special Areas of Conservation (SACs) to also conform to European legislation, in particular the 1992 Habitats and Species Directive. Four more areas of national importance were designated as Natural Heritage Areas (NHAs). About 40 Limerick sites, considered of significance for wildlife and habitats, were published on a non-statutory basis as Proposed NHAs (pNHAs) in 1995. Of these, over half are now entirely or partly included in SACs and the remainder are awaiting resurvey before any designation.

Three Special Protection Areas (SPAs) designated under the EU Birds Directive include large areas of habitat in Co. Limerick: River Shannon and River Fergus Estuaries SPA; Slievefelim to Silvermines Mountains SPA; and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

Sixty-eight vascular plant species (mostly flowering plants) are legally protected in Ireland by Flora (Protection) Order, 2015, of which 11 have been recorded as native in Limerick. Four bryophyte species occurring in Limerick (three mosses and one liverwort) are also protected by the Flora (Protection) Order.

Most of the sites listed in the Inventory were surveyed during field work for the *Flora of County Limerick* (2013) and some were published as 'Selected sites of botanical interest' in that book, but not all sites have been revisited recently. More sites and many more plant records, including species found new to the county, have been added from field surveys done since then (2013-2020), and results published in annual reports in the BSBI's *Irish Botanical News*.

Notes on the Inventory of Sites:

There are four extensive Limerick SACs – the Askeaton Fen Complex, Ballyhoura Mountains, Galtee (Galty) Mountains and Lower River Shannon (which includes the Shannon Estuary) - and specific sites within those regions are listed separately in the Inventory. NHAs and pNHAs are also indicated, although the latter are not legally protected at this stage.

Additional key sites are indicated in bold type in the Inventory, and a number of these which are considered of particular conservation interest are listed below (p. 3), for example, some lakes and sites with good quality calcareous grassland in the Northern limestone area of the county, turloughs, a fen, tall-herb swamp, a raised bog, and notably Lough Gur with its surrounding habitats. Remaining sites listed in the Inventory, some small in area, are included

because they have botanical and/or habitat interest. Further investigations of these sites and of those yet undiscovered will, no doubt, show some of them to be of particular conservation significance and meriting protection through legal designation.

Inclusion of a site in the Inventory implies that it contains usually good quality semi-natural habitats and vegetation, e.g. a 'lime-rich lake' implies that there is a diverse aquatic flora and fringing vegetation, sometimes bordered by a fen, or a 'raised bog' implies that it contains a suite of characteristic species. A few examples of characteristic or notable or rare plant species are given for most sites, bearing in mind that 100 or more species may have been recorded at that site.

The *Flora of County Limerick* (Reynolds, 2013) is a useful reference to accompany the Inventory. Detailed up-to-date records of Limerick vascular plants are held in the database of the Botanical Society of Britain and Ireland (BSBI), but are not generally available.

Summary and/or detailed reports for SACs and NHAs are on the National Parks and Wildlife Service website, including reasons for their designation, and otherwise the NPWS can be consulted about the sites and for details of protected and vulnerable species. The NPWS also holds more details of other sites resulting from commissioned habitat surveys, e.g. of woodlands and grasslands.

Please note that inclusion of a site on the following Inventory does not imply public access.

Additional Limerick sites of particular conservation interest and for possible legal designation (see more details in the following Inventory):

Craggs Turlough, just S of Barrigone SAC (a true turlough, with bordering scrub and woodland)

Doohyle Lough, near Rathkeale (lime-rich lake and bordering fen)

Dromore Lough and Bleach Lough, E of Pallaskenry (lime-rich lakes, pNHA)

Dromsallagh Bog, near Cappamore (raised bog, pNHA)

Ellaha, SE of Foynes (*Cladium* swamp, fen and calcareous grassland) and adjoining Deelish (calcareous grassland with some limestone pavement)

Graigues Lough, SE of Askeaton (turlough-like)

Herbertstown Fen/Marsh (extensive tall-herb swamp, pNHA)

Kilbreedy Loughs, E of Askeaton (lime-rich lakes bordered in places by fen, calcareous grassland)

Lough Gur (lake with bordering swamp, marshy ground and calcareous grassland; Lough Gur was listed by An Foras Forbartha (1981) as of 'National Importance', also pNHA)

Mullagh, SE of Foynes (good quality calcareous grassland and bordering Hazel scrub)

Routagh Fen, S of Limerick City (species-rich fen and bordering calcareous grassland with outcrop).

Abbreviations used in the following annotated Inventory:

AFF (1981) = Limerick site listed in An Foras Forbartha (1981) *Areas of scientific interest in Ireland*, with reason(s) for listing, but not since given legal protection;

NPWS = National Parks and Wildlife Service;

pNHA (1995) = Proposed Natural Heritage Area, awaiting resurvey; see NPWS for full list;

NHA = Natural Heritage Area, legally protected site;

SAC = Special Area of Conservation, legally protected site;

River Shannon (SAC) = part of Lower River Shannon SAC;

Shannon Estuary (SAC) = part of Lower River Shannon SAC.

Format of Inventory of Limerick sites:

Sites arranged alphabetically and cross-referenced as necessary;

Site name usually as given on Discovery Series 1:50,000 maps;

Grid reference(s) approximate for each site, usually within 1km (four figure) grid squares;

Sites indicated as **SAC, NHA, River Shannon (SAC), Shannon Estuary (SAC)**, pNHA (1995) and AFF (1981) as relevant – see Abbreviations above;

Other key sites of botanical, habitat and conservation interest also indicated **in bold**;

Main habitat(s) and examples of characteristic, notable or rare plant species;

Protected plant species indicated **in bold**; scientific and common names of vascular plants follow Stace (2010) *New Flora of the British Isles*; two moss species and one liverwort are also so indicated;

Additional comments on the site as relevant.

See Reynolds (2013) *Flora of County Limerick* for descriptions of habitats and their characteristic species, and also for context of species cited in the Inventory (excepting those only found since 2013).

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See Introductory section, Abbreviations and Format of Inventory above.

Acres (townland), SSE of Mountcollins (R1616, R1617): Small area of woodland by River Feale near Cork and Kerry county boundaries, e.g. *Quercus petraea* (Sessile Oak), *Hyacinthoides non-scripta* (Bluebell), *Luzula pilosa* (Hairy Wood-rush); marshy ground, e.g. *Achillea ptarmica* (Sneezewort); River Feale, e.g. *Myriophyllum alterniflorum* (Alternate Water-milfoil); heathy banks on nearby roadside. Local interest.

Adare area (R44): Tidal River Maigue (part of **Lower River Shannon SAC**), associated drainage ditches, limestone railway cutting and woodlands. Tidal river between Adare Bridge and railway bridge (R4646), e.g. *Cochlearia anglica* (English Scurvygrass), *Rorippa sylvestris* (Creeping Yellow-cress), and aquatics accessible at low tide, e.g. *Potamogeton gramineus* (Various-leaved Pondweed); just downstream of railway bridge (R4546) *Schoenoplectus triquetus* (**Triangular Club-rush**) and rare *Scirpus sylvaticus* (Wood Club-rush); drainage ditches near River Maigue with *Groenlandia densa* (**Opposite-leaved Pondweed**); railway cutting through limestone N of Adare (R4647), e.g. *Bromopsis erecta* (Upright Brome), *Polypodium cambricum* (Southern Polypody), *Hieracium neosparsum* (a Hawkweed); mixed broad-leaved woodlands around Adare, e.g. semi-natural Oak-Ash woodland with wetter areas SE of Adare (R4845). Adare Woodlands pNHA (1995).

Askeaton (R3350, R3450): Ruined abbey and castle, and limestone outcrop, including relicts of ancient cultivation. Askeaton Abbey, e.g. *Apium graveolens* (Wild Celery) by tidal River Deel and *Verbena officinalis* (Vervain); Askeaton Castle, walls with *Petroselinum crispum* (Garden Parsley) and grassy slope with *Salvia verbenaca* (Wild Clary) at its only site in the county; limestone outcrop by road on E side of River Deel between Abbey and Castle, e.g. *Clinopodium ascendens* (Common Calamint), *Foeniculum vulgare* (Fennel), *Smyrniolum olusatrum* (Alexanders), and extensive patch of *Sambucus ebulus* (Dwarf Elder) above outcrop.

Askeaton Fen Complex SAC (mainly R34, R35): Designated for ‘*Cladium* Fens’ and ‘Alkaline Fens’, to E and SE of Askeaton; areas outlined on NPWS map online. Includes **Ballinvirick**, Ballyhibbin, Ballymorrishen, Ballyvogue, Blind Lough, **Cappagh**, Deegerty, Dromlohan, Feereagh Lough, **Glennameade**, **Gorteenamrock**, Graigues, **Mornane Lough**.

Assaroola Glen, W end of **Galtee Mountains SAC** (e.g. R8223, R8323): Rocky mountain stream with waterfalls in steep-sided glen, and acid grassland, e.g. *Crepis paludosa* (Marsh Hawk’s-beard), *Asplenium trichomanes* subsp. *trichomanes* (Maidenhair Spleenwort), and *Euphorbia hyberna* (Irish Spurge) above river; perhaps also *Saxifraga* spp. (Saxifrages) higher up the river.

Aughinish – Askeaton shore, bordering **Shannon Estuary (SAC)** (R25, R35): Listed in AFF (1981) as ‘National Importance’, ecological interest for its mudflats and (calcareous) grassland.

Aughinish Island, E of Foynes, bordering **Shannon Estuary (SAC)** (R25): Despite the extensive buildings and works by Aughinish Alumina, semi-natural habitats still occur on the island. Dry calcareous grassland with some broken limestone, e.g. *Juniperus communis* (Common Juniper), *Viola hirta* (**Hairy Violet**), *Anacamptis pyramidalis* (Pyramidal Orchid), *Dactylorhiza* spp. (Marsh-orchids), *Ophrys apifera* (Bee Orchid), *Spiranthes spiralis* (Autumn Lady’s-tresses); saltmarsh bordering Poulaweala Creek, e.g. *Artemisia maritima* (Sea Wormwood), *Cochlearia anglica* (English Scurvygrass); Hunt Lough (c.R290531), slightly brackish artificial pond with stands of *Bolboschoenus maritimus* (Sea Club-rush), *Schoenoplectus tabernaemontani* (Grey Club-rush), *Typha latifolia* (Bulrush) and aquatic *Potamogeton pectinatus* (Fennel Pondweed); wet grasslands (R2751) with *Sanguisorba officinalis* (**Great Burnet**) and *Hordeum secalinum* (**Meadow Barley**), these species since translocated to new sites.

Ballinacurra Creek, W side of Limerick City (e.g. R5555, creek mouth R5456): Tidal creek off upper **Shannon Estuary (SAC)**, e.g. *Schoenoplectus triqueter* (**Triangular Club-rush**), *Leucojum aestivum* (Summer Snowflake). Listed in AFF (1981) as ‘National Importance’, ecological (botanical) interest. See Ballynacloough River.

Ballingaddy North (townland), SE of Kilmallock (R6225): Pond bordered by small area of swamp in field depression, e.g. *Carex paniculata* (Greater Tussock-sedge), *Typha latifolia* (Bulrush), *Equisetum fluviatile* (Water Horsetail), *Scutellaria galericulata* (Skullcap). Local interest. See Kilmihil in same area.

Ballingarrane, disused railway NW of station (R3545): Rare arable weeds in sandy soil after some clearance along railway in 2015, e.g. *Euphorbia exigua* (Dwarf Spurge), *Valerianella ramosa* (Broad-fruited Cornsalad), *Chaenorhinum minus* (Small Toadflax); Irish endemic species *Sorbus hibernica* (Irish Whitebeam) by railway.

Ballintlea Wood, S side of Ballyhoura Mountains (c.R6415): Woodlands with *Quercus petraea* (Sessile Oak) straddling Limerick/Cork border. Ballintlea Wood pNHA (1995).

Ballinvirick (townland), N of Cappagh (c.R3847): Part of **Askeaton Fen Complex SAC**. Swamp with *Cladium mariscus* (Great Fen-sedge) and characteristic species in fen with

Schoenus nigricans (Black Bog-rush), e.g. *Dactylorhiza incarnata* (Early Marsh-orchid) and *Dactylorhiza* hybrids; water level drops in summer stranding charophyte algae in fen area.

‘Ballyanna’: See **Ballygeana**.

Ballyclogh (townland), NNE of Creeves Cross (mainly R3048, R3148): Ash-Hazel-Holly woodland over limestone, e.g. *Orchis mascula* (Early-purple Orchid), rare parasitic *Lathraea squamaria* (Toothwort).

Ballycummin (townland), SW of Limerick City (mainly R5452): Wet grassland near Raheen Industrial Estate, e.g. *Hordeum secalinum* (**Meadow Barley**), *Bromus racemosus* (Smooth Brome).

Ballyellinan (townland), E of Barrigone (R3149): Species-rich fen, e.g. *Cladium mariscus* (Great Fen-sedge), *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus), *Cirsium dissectum* (Meadow Thistle), *Baldellia ranunculoides* (Lesser Water-plantain).

Ballygeana (townland), NW side of **Galtee Mountains SAC** (R8424, R8425): Known locally as ‘Ballyanna’. Acid grassland and heath, e.g. *Pseudorchis albida* (**Small-white Orchid**), refound 2018; also rocky mountain stream (R8524), e.g. *Saxifraga hypnoides* (Mossy Saxifrage), *Meconopsis cambrica* (Welsh Poppy), *Huperzia selago* (Fir Clubmoss).

Ballyhibbin (townland), N of Cappagh (c.R3746): Part of **Askeaton Fen Complex SAC**.

Ballyhoura Mountains SAC (R61): Designated for ‘Wet Heath’, ‘Dry Heath’ and ‘Blanket Bogs (Active)’, including Black Rock, Carron Mountain, Little Carron, Coolfree Mountain, Long Mountain and Seefin Mountain. Conglomerate tors also of geological interest. See **Black Rock, Coolavehy**.

Ballylin (townland), SSW of Croagh (R4040): Extensive fen, e.g. *Cladium mariscus* (Great Fen-sedge), *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus), *Potamogeton coloratus* (Fen Pondweed).

Ballymacradden (townland), ESE of Croom (R5440): Old grassland by Camoge River, e.g. rare *Bromus racemosus* (Smooth Brome), *Plantago media* (Hoary Plantain).

Ballymorrisheen (townland), NW of Cappagh (c.R3646): Part of **Askeaton Fen Complex SAC**.

Ballynacloough River, near Dooradoyle (R5654, R5754): Tidal river (flows into Ballinacurra Creek), e.g. *Groenlandia densa* (**Opposite-leaved Pondweed**); nearby drainage ditches behind the embankments, e.g. *Groenlandia densa* (**Opposite-leaved Pondweed**), *Baldellia ranunculoides* (Lesser Water-plantain), *Sparganium natans* (Least Bur-reed).

Ballynacourty (townland), NE of Annacotty (R6659): Extensive cutaway and regenerating raised bog; dominant *Calluna vulgaris* (Heather), *Molinia caerulea* (Purple Moor-grass) and patches of Sphagnum, e.g. *Vaccinium oxycoccos* (Cranberry), *Andromeda polifolia* (Bog-rosemary), *Rhynchospora alba* (White Beak-sedge); also *Myrica gale* (Bog-myrtle).

Ballynacourty (townland), SSE of Kilfinnane (R7019): Oak woodland beside quarry with *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush). Ballynacourty Wood pNHA (1995).

Ballyneale, Ballynoe (townlands), SSE of Ballingarry (R4332): Swamp on S side of road, e.g. *Phragmites australis* (Common Reed) dominant, *Typha latifolia* (Bulrush), *Menyanthes trifoliata* (Bogbean), *Juncus subnodulosus* (Blunt-flowered Rush), with bordering Alder-Ash-Birch woodland. Local interest.

Ballynoe: See Ballyneale, Ballynoe.

Ballynort (townland), NE of Askeaton (R3652): Species-rich calcareous grassland, outcrop and scrub, e.g. *Viola hirta* (**Hairy Violet**), *Antennaria dioica* (Mountain Everlasting), *Carlina vulgaris* (Carlina Thistle).

Ballyorgan (R6718): Small area of wet woodland by river just W of Ballyorgan, e.g. *Alnus glutinosa* (Alder), *Carex paniculata* (Greater Tussock-sedge), *Equisetum sylvaticum* (Wood Horsetail); linked to Glenosheen/Green Wood (R6518) via Ballyhoura Way. Local interest.

Ballyroe Hill, S of Kilfinnane (c.R6721): Included in Ballyroe Hill and Mortlestown Hill pNHA (1995).

Ballysteen, WNW of (R3455): Saltmarsh and stony shore near stone pier by **Shannon Estuary (SAC)**, e.g. *Artemisia maritima* (Sea Wormwood), *Apium graveolens* (Wild Celery), *Carex extensa* (Long-bracted Sedge).

Ballyvogue (townland), E of Askeaton (R3851): Part of **Askeaton Fen Complex SAC**. Fen area to N of main road, e.g. *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus), *Dactylorhiza traunsteinerioides* (Narrow-leaved Marsh-orchid), *Ophrys insectifera* (Fly Orchid); fen drier than formerly and these two orchids not seen since 1988. See Deegerty, part of same fen area.

Ballyvollane (townland), WNW of Lisnagry (R6359): **River Shannon (SAC)**. Diverse aquatic and riverside flora, e.g. *Alisma lanceolatum* (Narrow-leaved Water-plantain), *Lysimachia nummularia* (Creeping-Jenny), *Carex elata* (Tufted-sedge); and riverbank, e.g. *Equisetum hyemale* (Rough Horsetail).

Ballyvorheen Bog, NW of Cappamore (R7453, R7553): Part of **Lower River Shannon SAC**. Cutaway raised bog bordered by woodland; dominant *Calluna vulgaris* (Heather), *Molinia caerulea* (Purple Moor-grass), and many self-sown *Pinus sylvestris* (Scots Pine); Sphagnum patches with abundant *Vaccinium oxycoccos* (Cranberry).

Barnagh railway cutting, SW of Newcastle West (R2230, R2330): Former railway, now part of Great Southern Trail with access from Barnagh viewing point on main road and along railway embankment. Deep railway cutting with wet shale rock faces, e.g. *Chrysosplenium oppositifolium* (Opposite-leaved Golden-saxifrage), dense patches of bryophytes and large ferns *Athyrium filix-femina* (Lady-fern), *Dryopteris affinis* agg. (Scaly Male-fern); on W side of tunnel also *Osmunda regalis* (Royal Fern) and a few heathy species, e.g. *Calluna vulgaris* (Heather), *Vaccinium myrtillus* (Bilberry), *Huperzia selago* (Fir Clubmoss).

Barrigone SAC (Glenbane East, Hazelfield townlands), W of Askeaton (c.R2950, R3050): Designated for 'Juniper Scrub', 'Orchid-rich Calcareous Grassland', 'Limestone Pavement', as well as 'Marsh Fritillary (*Euphydryas aurinia*)'. Dry calcareous heath with *Juniperus communis* (Common Juniper); species-rich grassland with shattered limestone pavement, well-developed ant hills and scrub bordering Roadstone quarry, e.g. *Rosa spinosissima* (Burnet Rose), *Rubus saxatilis* (Stone Bramble), *Viola hirta* (**Hairy Violet**), *Aquilegia vulgaris* (Columbine), *Antennaria dioica* (Mountain Everlasting), *Euphrasia salisburgensis* (Irish Eyebright), *Neotinea maculata* (Dense-flowered Orchid) and other orchids, rare *Cuscuta epithymum* (Dodder); also limestone railway cutting with *Juniperus communis* (Common Juniper) behind old school house.

Barrigone Holy Well (R2849): At inlet off **Shannon Estuary (SAC)**, e.g. *Artemisia maritima* (Sea Wormwood), *Parapholis strigosa* (Hard-grass); species-rich calcareous grassland with outcrop just to W, e.g. *Juniperus communis* (Common Juniper), *Calluna vulgaris* (Heather), *Rosa spinosissima* (Burnet Rose), *Carlina vulgaris* (Carline Thistle).

Barrington's Pier, N side of upper **Shannon Estuary (SAC)** (R5556): Stone pier, e.g. *Cochlearia anglica* (English Scurvygrass), *Rorippa x anceps* (Hybrid Yellow-cress); adjacent stony-muddy shore, e.g. *Schoenoplectus triqueter* (**Triangular Club-rush**), *Eleocharis uniglumis* (Slender Spike-rush); riparian woodland with *Salix* spp. (Willows) E and W of pier, also *Leucojum aestivum* (Summer Snowflake).

Beagh Castle and Beagh Quay, N of Askeaton by **Shannon Estuary (SAC)** (R3556): Ruined castle with *Tanacetum vulgare* (Tansy), *Malva sylvestris* (Common Mallow), *Silene uniflora* (Sea Campion); stone pier; small area of saltmarsh with outcropping limestone, e.g. *Limonium humile* (Lax-flowered Sea-lavender); roadside hedge to SE (R3656) with uncommon *Rosa agrestis* (Small-leaved Sweet-briar).

Bilboa River valley (R85): Part of **Lower River Shannon SAC**. Wooded valley N of Doon (e.g. R8252) with *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush), and *Equisetum telmateia* (Great Horesetail) on wet slopes; Ash-Hazel-Willow woodland by river upstream of Bilboa Bridge (R8151) with varied ground layer, e.g. *Galium odoratum* (Woodruff), *Epipactis helleborine* (Broad-leaved Helleborine).

Black Rock, part of **Ballyhoura Mountains SAC** (R6418): Bluffs below Black Rock (c.R643188) and tors just to the S (c.R644180, R644179), e.g. *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern), *Hymenophyllum wilsonii* (Wilson's Filmy-fern), *Cystopteris fragilis* (Brittle Bladder-fern); blanket bog in saddle between Black Rock and Seefin Mountain, e.g. *Empetrum nigrum* (Crowberry); nearby forestry roads (R6318, R6319) with *Pinguicula grandiflora* (Large-flowered Butterwort), a native species but introduced here.

'Black Rocks', Galtee/Galty Mountains: See **Knockaterriff bluffs**.

Blackrock River valley, S side of **Galtee Montains SAC** (mainly R8520, R8521): Acid grassland, e.g. *Festuca vivipara* (Viviparous Sheep's-fescue), *Ophioglossum vulgatum* (Adder's-tongue), *Botrychium lunaria* (Moonwort), the last two species found in 2014; and substantial outcrop. See **Knockaterriff bluffs**.

Bleach Lough, E of Pallaskenry (R4454): Lime-rich lake with stands of *Schoenoplectus lacustris* (Common Club-rush), *Phragmites australis* (Common Reed) and some *Cladium*

mariscus (Great Fen-sedge); rich aquatic flora, e.g. *Nuphar lutea* (Yellow Water-lily), *Nymphaea alba* (White Water-lily), several *Potamogeton* spp. (Pondweeds) and charophyte algae; marly lake edge at NW end, e.g. *Baldellia ranunculoides* (Lesser Water-plantain), rare *Eleocharis quinqueflora* (Few-flowered Spike-rush); also limestone knoll and small area of degraded fen with *Schoenus nigricans* (Black Bog-rush). **Dromore and Bleach Loughs pNHA (1995).**

Blind Lough (partly in Glenameade townland), S side of main road (c.R4252): Part of **Askeaton Fen Complex SAC.**

Blue Lough, Kilcornan N of Curraghchase (mainly R4051): Part of **Curraghchase Woods SAC.** Species-rich swamp and open water, e.g. *Phragmites australis* (Common Reed), *Cladium mariscus* (Great Fen-sedge), *Carex elata* (Tufted-sedge), *Carex lasiocarpa* (Slender Sedge), *Epipactis palustris* (Marsh Helleborine), *Utricularia australis* (Bladderwort); bordered on W side by swampy woodland, e.g. *Salix cinerea* (Grey Willow), *Carex paniculata* (Greater Tussock-sedge), *Lysimachia vulgaris* (Yellow Loosestrife), *Menyanthes trifoliata* (Bogbean).

Bruree, River Maigue at (R5430): Aquatic flora abundant in river beside old mill, e.g. *Potamogeton perfoliatus* (Perfoliate Pondweed), *Myriophyllum spicatum* (Spiked Water-milfoil), *Ranunculus penicillatus* (Stream Water-crowfoot). Local interest.

Cappagh, just N of (R3745, R3746): Part of **Askeaton Fen Complex SAC.** Swamps and fens, e.g. *Phragmites australis* (Common Reed), *Cladium mariscus* (Great Fen-sedge).

Cappercullen Glen = Glenstal Wood SAC, Glenstal Abbey, Murroe (R7356, R7357, R7457): Broad-leaved woodland, e.g. *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush), *Silene dioica* (Red Campion), *Carex laevigata* (Smooth-stalked Sedge); wet rock outcrop in glen, e.g. *Trichomanes speciosum* (**Killarney Fern**), *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern).

Carraig Aille, just NNW of Lough Gur crossroads (R6540): Dry calcareous grassland and limestone outcrop near ring forts, e.g. *Arabis hirsuta* (Hairy Rock-cress), *Vicia hirsuta* (Hairy Tare), *Vicia sativa* subsp. *nigra* (Common Vetch). Local interest. See **Lough Gur area.**

Carrigeenamronety Hill SAC, E of Ballyhoura Mountains (highest part in R7016): Designated for 'Killarney Fern (*Trichomanes speciosum*)' and 'Dry Heath'. Characteristic dry heath with *Calluna vulgaris* (Heather), *Erica cinerea* (Bell Heather), *Ulex gallii* (Western Gorse), *Vaccinium myrtillus* (Bilberry); substantial conglomerate tors with crevices, e.g.

Trichomanes speciosum (**Killarney Fern**), *Asplenium adiantum-nigrum* (Black Spleenwort), *Dryopteris aemula* (Hay-scented Buckler-fern), *Oxalis acetosella* (Wood-sorrel).

Carrigkerry Bogs NHA, western uplands (R13, R23): Designated for ‘Peatlands’. See Knockaunnagun (= ‘Scotland Bog’) and **Knockfinnisk**.

Carrignabinnia (R8523) and **Carrignabinnia-Lyracappul ridge** (R8423), **Galtee Mountains SAC**: Varied montane vegetation on summit of Carrignabinnia, on outcrop just N of and below the summit, and along the ridge to Lyracappul, e.g. *Vaccinium vitis-idaea* (Cowberry), *Carex bigelowii* (Stiff Sedge), *Festuca vivipara* (Viviparous Sheep’s-fescue), *Campanula rotundifolia* (Harebell), *Sedum rosea* (Roseroot), *Saxifraga rosacea* (Irish Saxifrage), *Saxifraga stellaris* (Starry Saxifrage), *Hymenophyllum wilsonii* (Wilson’s Filmy-fern).

Carrigogunnel, NNW of Clarina (R4955): Volcanic exposure, e.g. *Polypodium cambricum* (Southern Polypody); ruined castle, e.g. *Smyrniolum olusatrum* (Alexanders), relict of ancient cultivation. Listed in AFF (1981) as ‘Regional Importance’, geological interest. Local interest.

Carron Mountain, Little Carron: See **Ballyhoura Mountains SAC**.

Castle Demesne, Newcastle West (R2633, R2733): Public park, part of former demesne, with much planting; woodland including native species, e.g. rare *Elymus caninus* (Bearded Couch) and *Carex strigosa* (Thin-spiked Wood-sedge). Local interest.

Castleconnell (R6562): **River Shannon (SAC)**. Characteristic aquatic and emergent species, and vegetated outcrops; bordering strip of woodland, e.g. *Viola reichenbachiana* (Early Dog-violet); wet meadow downstream of footbridge (R6561), e.g. *Bromus racemosus* (Smooth Brome), *Myosotis discolor* (Changing Forget-me-not).

Castleconnell Bog (mainly R6862, R6863): Raised bog (extends into Co. Tipperary), cut over and now largely degraded, but still with many characteristic and some rare species, e.g. *Andromeda polifolia* (Bog-rosemary), *Vaccinium oxycoccos* (Cranberry), *Myrica gale* (Bog-myrtle), *Trichophorum germanicum* (Deergrass), rare *Trichophorum cespitosum* s.s. (Northern Deergrass), *Drosera anglica* (Great Sundew), *Drosera intermedia* (Oblong-leaved Sundew), *Drosera rotundifolia* (Round-leaved Sundew), *Rhynchospora alba* (White Beak-sedge), rare *Rhynchospora fusca* (Brown Beak-sedge); pools with *Utricularia minor* (Lesser Bladderwort); encroaching *Betula pubescens* (Downy Birch).

Castleconnell/Clareville Waterworks, near (R6461): **River Shannon (SAC)**. Aquatic flora and diverse riverside vegetation, e.g. *Butomus umbellatus* (Flowering-rush), *Hydrocharis morsus-ranae* (Frogbit); Doonass Falls also along this stretch of river, where rare *Teucrium scordium* (Water Germander) was last seen c.1905; riparian woodland just SW of Waterworks (R6361), e.g. *Alnus glutinosa* (Alder), *Oenanthe crocata* (Hemlock Water-dropwort).

Castleoliver Woods, NW of Ballyorgan (c.R6619): pNHA (1995).

Castletown, WNW of (R4330): Wooded valley, e.g. *Quercus petraea* (Sessile Oak), *Corylus avellana* (Hazel), *Luzula sylvatica* (Great Wood-rush), *Solidago virgaurea* (Goldenrod).

Clare Glen SAC (R7359, R7458): Designated for ‘Old Oak Woodlands’ and ‘Killarney Fern (*Trichomanes speciosum*)’. Wooded glen along Clare River on county boundary, e.g. *Quercus* spp. (Oaks), *Luzula sylvatica* (Great Wood-rush), *Dryopteris aemula* (Hay-scented Buckler-fern), *Crepis paludosa* (Marsh Hawk’s-beard); seepage area at top of glen, e.g. *Carex panicea* (Carnation Sedge), *Cirsium dissectum* (Meadow Thistle). Protected species *Trichomanes speciosum* (Killarney Fern) known on Co. Tipperary side of Clare River.

Clareville Waterworks. See Castleconnell/Clareville Waterworks.

Clogh Fen, NE of Rathkeale (R3843): Species-rich fen, e.g. *Schoenus nigricans* (Black Bog-rush), *Epipactis palustris* (Marsh Helleborine), *Dactylorhiza incarnata* (Early Marsh-orchid), *Equisetum variegatum* (Variegated Horsetail), *Potamogeton coloratus* (Fen Pondweed).

Clonmacken-Coonagh (townlands), N side of upper **Shannon Estuary (SAC)** (R55): Reed beds on tidal mud more varied than usual, e.g. *Phragmites australis* (Common Reed), *Typha angustifolia* (Lesser Bulrush), *Schoenoplectus triqueter* (**Triangular Club-rush**), *Schoenoplectus lacustris* (Common Club-rush), *Schoenoplectus tabernaemontani* (Grey Club-rush); species-rich tidal marsh on embankment terraces; wet grassland, e.g. *Hordeum secalinum* (**Meadow Barley**).

Clooncunna North (townland), SE of Limerick City (R6453): Extensive former gravel works with a variety of semi-natural habitats including swamp and open water bodies with aquatics, e.g. *Potamogeton* spp. (Pondweeds), *Eleogiton fluitans* (Floating Club-rush). Local interest.

Cloonlahard Bridge, SSW of Ballyhahill (R1844): Unimproved wet meadow on slope just SE of bridge, e.g. *Cirsium dissectum* (Meadow Thistle), *Carex hostiana* (Tawny Sedge); and *Dactylorhiza kerryensis* (Irish Marsh-orchid) found nearby.

Cooga Bog, WNW of Doon (R7950, R8050): Extensive raised bog, drier than formerly but still with characteristic species, e.g. *Vaccinium oxycoccos* (Cranberry), *Carex canescens* (White Sedge), *Dryopteris carthusiana* (Narrow Buckler-fern). West end of bog is in Knocknacarriga townland.

Coolavehy (townland), SE side of Coolfree Mountain (R6815): Part of **Ballyhoura Mountains SAC**. Wet peaty slope with Sphagnum and rills, and with several rare species, e.g. *Scutellaria minor* (Lesser Skullcap), *Hypericum elodes* (Marsh St John's-wort), *Carex dioica* (Dioecious Sedge), *Eleocharis multicaulis* (Many-stalked Spike-rush).

Coolfree Mountain: See **Ballyhoura Mountains SAC, Coolavehy**.

Coolready (townland), SE of O'Briensbridge, bordering Gooig townland (R6764, R6864): Rushy wet field with diverse flora, e.g. *Juncus acutiflorus* (Sharp-flowered Rush), *Sisyrinchium bermudiana* (Blue-eyed-grass), *Cirsium dissectum* (Meadow Thistle), *Dactylorhiza kerryensis* (Irish Marsh-orchid), *Carex pallescens* (Pale Sedge).

Coonagh (townland), N side of upper **Shannon Estuary (SAC)**: See Clonmacken-Coonagh.

Corbally (R5759): Tidal **River Shannon (SAC)**. Wet Willow woodland and swamp, e.g. *Leucojum aestivum* (Summer Snowflake), *Caltha palustris* (Marsh-marigold). See Corbally Baths, **Corbally Swamp**.

Corbally Baths and **River Shannon (SAC)** (R5859): Small overgrown swimming pool, e.g. *Ceratophyllum demersum* (Rigid Hornwort), *Sagittaria sagittifolia* (Arrowhead); nearby edge of River Shannon, e.g. rare *Carex aquatilis* (Water Sedge) and accessible aquatic plants.

Corbally Swamp (R5858): Species-rich swamp between Abbey River and Corbally Road, e.g. *Carex acutiformis* (Lesser Pond-sedge), *Lysimachia nummularia* (Creeping-Jenny), *Stellaria palustris* (Marsh Stitchwort), *Oenanthe fistulosa* (Tubular Water-dropwort); bordered by waste ground.

Craggs Turlough, SE of Barrigone (R2948): Known locally as ‘Lough Selleher’. A true turlough with a sink-hole, flooded in winter and drying out in summer with diverse vegetation, e.g. fine-leaved turlough-form of *Ranunculus repens* (Creeping Buttercup), *Potentilla anserina* (Silverweed), *Ophioglossum vulgatum* (Adder’s-tongue), rare *Viola canina* (Heath Dog-violet); stony turlough edge, e.g. *Rubus saxatilis* (Stone Bramble); scrub, e.g. *Rhamnus cathartica* (Buckthorn), *Cornus sanguinea* (Dogwood); bordering Ash-Hazel woodland on slope, e.g. *Melica uniflora* (Wood Melick); ***Viola hirta* (Hairy Violet)** in nearby calcareous grassland.

Crompaun River: See Meelick Creek.

Curraghchase Forest Park, E of Askeaton (R44, R45): Most of the Forest Park falls within **Curraghchase Woods SAC**. Variety of good habitats accessible to the public. Yew wood on limestone ridge E side of Glenisca Lough; alluvial woodland along stream; mixture of semi-natural woodland with Ash and Hazel and estate woodland with Beech, e.g. *Neottia nidus-avis* (Bird’s-nest Orchid), *Galium odoratum* (Woodruff); Glenisca Lough and bordering swamp; artificial lakes below ruined house fringed by tall sedges and wet grassland; knoll with memorial cross and limestone outcrop beside lake, e.g. *Melica uniflora* (Wood Melick); rare *Hypopitys monotropa* (Yellow Bird’s-nest); grassland in arboretum with attractive spring flora, e.g. *Primula vulgaris* (Primrose), *Viola reichenbachiana* (Early Dog-violet); also parasitic *Lathraea squamaria* (Toothwort) under trees and shrubs. See Glenisca Lough.

Curraghchase Woods SAC (R44, R45): Designated for ‘Alluvial Forests’ and ‘Yew Woodlands’, also a snail and Lesser Horseshoe Bat. The SAC more or less overlaps the Forest Park and includes swamp/fen along the stream just S of the ruined house and lakes. See **Blue Lough, Curraghchase Forest Park**.

Deegerty (townland), E of Askeaton (R3851): Part of **Askeaton Fen Complex SAC**. Small fen area on S side of main road, part of Deegerty-Ballyvogue fen, e.g. *Schoenus nigricans* (Black Bog-rush), *Cirsium dissectum* (Meadow Thistle), *Dactylorhiza incarnata* (Early Marsh-orchid); fen now drier than formerly; drainage ditches with *Myriophyllum alterniflorum* (Alternate Water-milfoil). See Ballyvogue.

(River) Deel: Many good aquatic and marginal habitats along the river; tidal stretch to where it enters the Shannon Estuary, part of **Lower River Shannon SAC**, e.g. *Apium graveolens* (Wild Celery), *Cochlearia anglica* (English Scurvygrass).

Deelish (townland), NW of Creeves Cross (R2847): Limestone pavement and calcareous grassland on E side of road, e.g. *Rubus saxatilis* (Stone Bramble), ***Viola hirta* (Hairy Violet)**; and Hazel scrub, e.g. *Melica uniflora* (Wood Melick).

Derk Hill, S of Old Pallas Grean (R7541): Volcanic hill with heathy vegetation, e.g. *Sedum anglicum* (English Stonecrop), *Galium saxatile* (Heath Bedstraw). Listed in AFF (1981) as 'Regional Importance', geological interest.

Doohyle Lough, NE of Rathkeale (R3743): Lime-rich lake with fringing *Schoenoplectus lacustris* (Common Club-rush), bordering wet grassland, e.g. *Thalictrum flavum* (Common Meadow-rue), and fen, e.g. *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus); channel to former swimming pool with *Potamogeton praelongus* (Long-stalked Pondweed), *Hippuris vulgaris* (Mare's-tail), *Myriophyllum verticillatum* (Whorled Water-milfoil) and dense charophyte algae; **Groenlandia densa (Opposite-leaved Pondweed)** in shallow drain just W of lake.

Doonass Falls on River Shannon: See Castleconnell/Clareville Waterworks.

Dooradoyle: See Ballynaclough River.

Dromlohan (townland), E of Askeaton (c.R3952): Part of **Askeaton Fen Complex SAC**.

Dromore Lough, ESE of Pallaskenry (e.g. R4354): Lime-rich lake, e.g. *Cladium mariscus* (Great Fen-sedge), *Carex pseudocyperus* (Cyperus Sedge), *Myriophyllum verticillatum* (Whorled Water-milfoil), charophyte algae; bordered in part by mixed woodland. **Dromore and Bleach Loughs pNHA (1995)**.

Dromreask (townland) and 'Burma Road', S of Glin (R1239): Cutover blanket bog in western uplands, e.g. *Rhynchospora alba* (White Beak-sedge), *Eleocharis multicaulis* (Many-stalked Spike-rush), *Myrica gale* (Bog-myrtle); bog cuttings, e.g. *Phragmites australis* (Common Reed).

Dromsallagh Bog, NW of Cappamore (R7552, R7652): Raised bog with hummocks, apparently regenerating well, e.g. *Vaccinium oxycoccos* (Cranberry), *Andromeda polifolia* (Bog-rosemary), *Erica tetralix* (Cross-leaved Heath), *Dryopteris carthusiana* (Narrow Buckler-fern). **Dromsallagh Bog pNHA (1995)**.

Ellaha (townland), NW of Creeves Cross (R2848): Swamp to E of road with *Cladium mariscus* (Great Fen-sedge); fen with *Schoenus nigricans* (Black Bog-rush) and *Erica tetralix* (Cross-leaved Heath) among the tussocks; *Pinguicula lusitanica* (Pale Butterwort) at its only

current Limerick site; bordering species-rich calcareous grassland. *Viola hirta* (**Hairy Violet**) in calcareous grassland on W side of road to Creeves Cross.

Eyon Hill, bog just NNE of (R7351): Residual raised bog; dominant *Calluna vulgaris* (Heather), *Molinia caerulea* (Purple Moor-grass); Sphagnum patches at N end, e.g. *Erica tetralix* (Cross-leaved Heath), *Rhynchospora alba* (White Beak-sedge); invaded by Rhododendron.

(River) Feale, SW of the county: River Feale and sub-catchments, e.g. Allaghaun, Galey and Oolagh Rivers, part of **Lower River Shannon SAC**. River-edge habitats with e.g. *Euphorbia hyberna* (Irish Spurge), *Cytisus scoparius* (Broom); non-native *Mimulus guttatus* (Monkeyflower) apparently established by the river at Mountcollins. See Acres, SSE of Mountcollins.

Feereagh Lough (Glennnameade townland), N side of main road (R4252): Part of **Askeaton Fen Complex SAC**.

Ferry Bridge, E of Kildimo (R4852): Tidal River Maigue, part of **Lower River Shannon SAC**, e.g. *Schoenoplectus triqueter* (**Triangular Club-rush**); unusual tidal marsh on embankment terraces with mixture of brackish and freshwater species, e.g. *Apium graveolens* (Wild Celery), *Trifolium fragiferum* (Strawberry Clover), *Triglochin palustris* (Marsh Arrowgrass); embankments, e.g. *Hordeum secalinum* (**Meadow Barley**); drainage ditches just west and south with *Groenlandia densa* (**Opposite-leaved Pondweed**).

Foynes Island, in **Shannon Estuary (SAC)** (R25): Remnants of saltmarsh; vegetated shale promontories; semi-natural woodland. Extensively afforested in 1990s.

Friarstown (townland) (R5749): Swamp and species-rich fen, e.g. *Phragmites australis* (Common Reed), *Cladium mariscus* (Great Fen-sedge), *Epipactis palustris* (Marsh Helleborine).

Galtee (Galty) Mountains SAC, E Limerick and extending into S Tipperary (mainly R82): Designated for 'Wet Heath', 'Dry Heath', 'Alpine and Subalpine Heaths', 'Species-rich *Nardus* Grassland', 'Blanket Bogs (Active)', 'Siliceous Scree', 'Calcareous Rocky Slopes' and 'Siliceous Rocky Slopes'. Montane vegetation and a number of species at their only Limerick location, e.g. *Vaccinium vitis-idaea* (Cowberry), *Salix herbacea* (Dwarf Willow), *Saxifraga* spp. (Saxifrages), *Oxyria digyna* (Mountain Sorrel, recent records), *Carex bigelowii* (Stiff Sedge), *Asplenium viride* (Green Spleenwort, recent records); blanket bog and heath; acid grassland; gullies and river valleys; substantial rock outcrops. See Assaroola

Glen, **Ballygeana**, Blackrock River valley, **Carrignabinnia** and **Carrignabinnia-Lyracappul ridge**, Galtymore, Glounreagh, **Knockaterriff bluffs**, **Lyraveg Glen**, **Pigeonrock Glen**, **Temple Hill**.

Galtymore, **Galtee Mountains SAC** (R8723): Montane vegetation, e.g. *Carex bigelowii* (Stiff Sedge), *Festuca vivipara* (Viviparous Sheep's-fescue), and outcrop on summit; bog with deep peat in saddle towards Galtybeg (R8823).

Glen Bog SAC, NE of Bruff (R6537, R6538): Designated for 'Alluvial Forests' and includes top and S side of Knockderc. Wet woodland, e.g. *Alnus glutinosa* (Alder), *Salix cinerea* (Grey Willow) with *Fraxinus excelsior* (Ash) and large tussocks of *Carex paniculata* (Greater Tussock-sedge); open swampy ground adjacent, e.g. *Menyanthes trifoliata* (Bogbean), *Comarum palustre* (Marsh Cinquefoil), *Lysimachia vulgaris* (Yellow Loosestrife). See **Knockderc**.

Glenacurrane (townland), N of Mitchelstown (mainly R8017): Wooded valley, e.g. *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush), *Anemone nemorosa* (Wood Anemone), *Galium odoratum* (Woodruff). Glenacurrane River Valley pNHA (1995).

Glenastar (townland), W of Ardagh (R2338, R2438): Waterfall and wooded valley along River Daar, e.g. *Quercus petraea* (Sessile Oak), *Corylus avellana* (Hazel), *Luzula sylvatica* (Great Wood-rush), *Anemone nemorosa* (Wood Anemone), *Hyacinthoides non-scripta* (Bluebell). Listed in AFF (1981) as 'Regional Importance', ecological interest for its woodland. Glenastar Wood pNHA (1995).

Glenastar Bog, W of Ardagh (R2439): Cutover bog, e.g. *Vaccinium oxycoccos* (Cranberry), *Osmunda regalis* (Royal Fern), *Rhynchospora alba* (White Beak-sedge); bog cuttings with open water, e.g. *Utricularia minor* (Lesser Bladderwort). Local interest.

Glenbane East (townland). See **Barrigone SAC**.

Glenbaun (townland): See **Knockfinnisk**, one of the **Carrigkerry Bogs NHA**.

Glenisca Lough, in **Curraghchase Woods SAC** (R4150): Lime-rich lake with marl infilling at its S end and surrounded by woodland, e.g. *Cladium mariscus* (Great Fen-sedge), *Schoenus nigricans* (Black Bog-rush), *Carex pseudocyperus* (Cyperus Sedge), calcified *Potamogeton pectinatus* (Fennel Pondweed) and charophyte algae. See **Curragh Chase Forest Park**.

Glennamade (townland), SE of Pallaskenry (c.R4252, R4253): Part of **Askeaton Fen Complex SAC**. Swamp on N side of main road, e.g. *Cladium mariscus* (Great Fen-sedge), *Carex elata* (Tufted-sedge), and fen; also small waterbody, e.g. *Littorella uniflora* (Shoreweed), *Apium inundatum* (Lesser Marshwort), abundant charophyte algae.

Glenosheen/Green Wood, below Seefin Mountain (R6518): Part of **Ballyhoura Mountains SAC**. Remnants of Oak woodland with *Quercus petraea* (Sessile Oak) and mixed broad-leaved/conifer woodland; *Campylostelium saxicola*, legally protected moss; *Euphorbia hyberna* (Irish Spurge) on roadside banks; linked via Ballyhoura Way to small area of wet woodland at Ballyorgan (R6718).

Glensharrold (townland): See Knockaunnagun, one of the **Carrigkerry Bogs NHA**.

Glenstal Abbey and demesne, Murroe (mainly R7356): Wooded **Cappercullen Glen** with outcrop (= **Glenstal Wood SAC**); estate woodland; several lakes, e.g. *Ranunculus circinatus* (Fan-leaved Water-crowfoot), *Potamogeton obtusifolius* (Blunt-leaved Pondweed), bordered by marshy vegetation, e.g. *Bidens cernua* (Nodding Bur-marigold), *Lycopus europaeus* (Gypsywort), *Scutellaria galericulata* (Skullcap), and ponds, e.g. *Apium inundatum* (Lesser Marshwort); at 'Boating Lake' *Typha angustifolia* (Lesser Bulrush) is well established, probably originally planted. See **Cappercullen Glen**.

Glenstal Wood SAC: Designated for 'Killarney Fern (*Trichomanes speciosum*)' in **Cappercullen Glen** in the grounds of Glenstal Abbey. See **Cappercullen Glen**.

Glin Pier, by **Shannon Estuary (SAC)** (R1347): Stone pier with *Asplenium marinum* (Sea Spleenwort) and *Catapodium marinum* (Sea Fern-grass) at their only currently known Limerick site; also *Silene uniflora* (Sea Campion), *Cochlearia officinalis* s.s. (Common Scurvygrass) to W of pier, the latter a maritime species just getting into Limerick here.

Glounreagh, S side of **Galtee Mountains SAC** (R8621, R8622): Broad valley, including heath, acid grassland and mountain stream, e.g. *Hymenophyllum wilsonii* (Wilson's Filmy-fern), *Viola palustris* (Marsh Violet).

Goleen Bridge, N of Askeaton (R3353): Tidal creek off Deel estuary, part of **Shannon Estuary (SAC)**, with bordering saltmarsh, brackish marsh and wet grassland, e.g. *Oenanthe lachenalii* (Parsley Water-dropwort), *Trifolium fragiferum* (Strawberry Clover), *Hordeum secalinum* (**Meadow Barley**).

Gooig (townland), NE of Castleconnell (R6763): Gravel/sand pits on W and E sides of old main road, e.g. *Filago minima* (**Small Cudweed**), *Centaureum erythraea* (Common Centaury). A second protected species, *Scleranthus annuus* (Annual Knawel), formerly known in a 'Castleconnell gravel pit' in 1902 may yet be found in this habitat.

Gorteenamrock Fen, SE of Askeaton (R3747, R3748): Part of **Askeaton Fen Complex SAC**, across several townlands just S of Ardrageen Bridge. Swamp and fen habitats, e.g. *Cladium mariscus* (Great Fen-sedge), *Phragmites australis* (Common Reed), *Juncus subnodulosus* (Blunt-flowered Rush), *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus); substantial limestone outcrop on E side.

Gortnageragh River, N of Doon (R85): Part of **Lower River Shannon SAC**. Woodland near confluence with Bilboa River (R8252) with *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush); dense patch of *Equisetum sylvaticum* (Wood Horsetail) by river just upstream of former quarry.

Grageen Fen and Bog NHA, N side of Grageen Hill, Slievefelim Mountains (R75): Designated for 'Peatlands', including alkaline fen and upland blanket bog. **Grageen Fen**, best species-rich upland 'poor' fen (i.e. poor in nutrients) in the county, e.g. *Phragmites australis* (Common Reed), *Carex paniculata* (Greater Tussock-sedge), *Carex dioica* (Dioecious Sedge), *Carex lasiocarpa* (Slender Sedge), *Carex limosa* (Bog-sedge), *Galium uliginosum* (Fen Bedstraw), *Vaccinium oxycoccos* (Cranberry), *Dactylorhiza incarnata* (Early Marsh-orchid), *Coeloglossum viride* (Frog Orchid) and other orchids. Fen bordered by **Grageen Bog**, extensive blanket bog, e.g. *Empetrum nigrum* (Crowberry). More than 70 higher plant species have been recorded in Grageen Fen (R7956, R7957).

Graigues Lough, SE of Askeaton (mainly R3647): Turlough-like lake with fluctuating water levels and a rich flora, e.g. fine-leaved turlough-form of *Ranunculus repens* (Creeping Buttercup), *Littorella uniflora* (Shoreweed); bordering grassland, seasonally inundated, e.g. *Ophioglossum vulgatum* (Adder's-tongue), *Lysimachia vulgaris* (Yellow Loosestrife), *Thalictrum flavum* (Common Meadow-rue), *Viola hirta* (**Hairy Violet**), *Rhamnus cathartica* (Buckthorn); the turlough moss *Cinclidotus fontinaloides* on rocks indicates high-water level.

Graigues (townland), SW of Pallaskenry (c.R3953): Part of **Askeaton Fen Complex SAC**.

Green Wood: See Glenosheen/Green Wood.

Griston Bog, SSW of Ballylanders (R7523): Lowland bog, now drying out, e.g. *Calluna vulgaris* (Heather), *Eriophorum vaginatum* (Hare's-tail Cottongrass), *Dryopteris carthusiana* (Narrow Buckler-fern), *Osmunda regalis* (Royal Fern); large artificial pond nearby, e.g. *Comarum palustre* (Marsh Cinquefoil), introduced *Potamogeton alpinus* (Red Pondweed) and invasive *Lagarosiphon major* (Curly Waterweed). 'Wildlife bog', developed for education.

Hazelfield (townland): See **Barrigone SAC**.

Heathfield Wood, W of Castletown (R4030): Beech wood. Listed in AFF (1981) as 'Local Importance', ecological interest. Heathfield Wood pNHA (1995).

Herbertstown Fen/Marsh (R6839, R6840): Species-rich tall-herb swamp, e.g. *Rumex hydrolapathum* (Water Dock), *Menyanthes trifoliata* (Bogbean), *Comarum palustre* (Marsh Cinquefoil), *Scutellaria galericulata* (Skullcap); bordered on E side by small peaty area with bog species. **Herbertstown Fen pNHA (1995)**.

Island MacTeige, just S of Aughinish Island (R2750): wet grassland, e.g. *Hordeum secalinum* (**Meadow Barley**).

Keale River (R6917): Woodland along river, e.g. *Quercus petraea* (Sessile Oak), *Luzula sylvatica* (Great Wood-rush), *Euphorbia hyberna* (Irish Spurge). Local interest.

Kilbreedy Loughs (R4350, R4351): Lime-rich lakes, with fringing *Schoenoplectus lacustris* (Common Club-rush), *Typha latifolia* (Bulrush), *Cladium mariscus* (Great Fen-sedge); lakes bordered by fen/wet grassland, e.g. *Juncus subnodulosus* (Blunt-flowered Rush), *Schoenus nigricans* (Black Bog-rush), *Lysimachia vulgaris* (Yellow Loosestrife), *Epipactis palustris* (Marsh Helleborine), *Parnassia palustris* (Grass-of-Parnassus), *Ophioglossum vulgatum* (Adder's-tongue); limestone outcrop at N end of more westerly lake, e.g. ***Viola hirta* (Hairy Violet)**, *Euphrasia salisburgensis* (Irish Eyebright), *Thymus polytrichus* (Wild Thyme); rare *Lithospermum officinale* (Common Gromwell) at wood edge near more easterly lake, found 2020.

Kilfinny, SSE of (c.R4538): Site for Protected Species *Colchicum autumnale* (Meadow Saffron) in old pasture, periodically flooded; site apparently greatly modified and *Colchicum autumnale* not noted since c.1995. NPWS has details.

Kilmallock (R62): Old town walls and ruins, e.g. *Malva sylvestris* (Common Mallow), *Parietaria judaica* (Pellitory-of-the-wall), *Umbilicus rupestris* (Navelwort); River Loobagh aquatics, e.g. *Zannichellia palustris* (Horned Pondweed), *Ranunculus penicillatus* (Stream Water-crowfoot), *Myriophyllum spicatum* (Spiked Water-milfoil). Local interest.

Kilmihil (townland), S of Kilmallock (c.R6124): Swamp in wide depression between sloping fields, e.g. *Carex paniculata* (Greater Tussock-sedge), *Carex rostrata* (Bottle Sedge), *Equisetum fluviatile* (Water Horsetail). See Ballingaddy North in same area. Local interest.

Kilteely (R7240): Volcanic hill with heathy vegetation, e.g. *Rumex acetosella* (Sheep's Sorrel), *Galium saxatile* (Heath Bedstraw), *Senecio sylvaticus* (Heath Groundsel). Listed in AFF (1981) as 'Regional Importance', geological interest.

Kilteery Pier, W of Loghill by **Shannon Estuary (SAC)** (R1749): Stone pier, e.g. *Cochlearia danica* (Danish Scurvygrass); coastal acid grassland just W of pier (R1649, R1749), e.g. *Calluna vulgaris* (Heather), *Carex binervis* (Green-ribbed Sedge), *Nardus stricta* (Mat-grass), *Pedicularis sylvatica* (Lousewort).

King's Island, Limerick City (mainly R5758): Low banks by tidal **River Shannon (SAC)**, e.g. *Schoenoplectus triquetus* (**Triangular Club-rush**) on mud, also garden escapes *Aster lanceolatus* (Narrow-leaved Michaelmas-daisy), *Aster x salignus* (Common Michaelmas-daisy); tidal Abbey River; swamp; drainage ditches, e.g. *Groenlandia densa* (**Opposite-leaved Pondweed**), *Lemna gibba* (Fat Duckweed), *Spirodela polyrhiza* (Greater Duckweed).

Knockadoon: See **Lough Gur area**.

Knockalisheen Marsh, NNW side of Limerick City (mainly R5659): Part of **Lower River Shannon SAC**. Extensive swamp straddling Limerick/Clare border with stands of *Phragmites australis* (Common Reed) and *Typha latifolia* (Bulrush) in mosaic with lower growing species, e.g. *Stellaria palustris* (Marsh Stitchwort), *Lysimachia nummularia* (Creeping-Jenny), *Scutellaria galericulata* (Skullcap); associated swamp just S of railway (R5658), e.g. *Typha angustifolia* (Lesser Bulrush).

Knockaterriff bluffs, Blackrock River valley, S side of **Galtee Mountains SAC** (R8521, R8522): Known locally as 'Black Rocks'. Substantial wet siliceous bluffs, e.g. *Saxifraga hypnoides* (Mossy Saxifrage), *Campanula rotundifolia* (Harebell), *Meconopsis cambrica* (Welsh Poppy), *Asplenium viride* (Green Spleenwort), *Hymenophyllum wilsonii* (Wilson's Filmy-fern).

Knockaunnagun (townland), just NE of Carrigkerry (R2239): Known locally as ‘Scotland Bog’. One of the **Carrigkerry Bogs NHA**, extending into Glensharrold townland. Cutover wet bog in the western uplands, e.g. *Rhynchospora alba* (White Beak-sedge), *Drosera anglica* (Great Sundew). See **Knockfinnisk**, the other Carrigkerry Bog.

Knockderc, NE of Bruff (R6538): Part of **Glen Bog SAC**. Quarried volcanic hill with gravel floor, e.g. *Ophrys apifera* (Bee Orchid), *Anacamptis pyramidalis* (Pyramidal Orchid), *Dactylorhiza fuchsii* (Common Spotted-orchid); grassland and dense Bracken on hill itself. Listed in AFF (1981) as ‘Regional Importance’, geological interest. See **Glen Bog SAC**.

Knockfeerina: See Knockfierna.

Knockfennell: See **Lough Gur area**.

Knockfierna, E of Ballingarry (R43): Hill with heath, e.g. *Ulex gallii* (Western Gorse), *Calluna vulgaris* (Heather), *Erica cinerea* (Bell Heather); short dry grassland and outcrop on summit (R4536), e.g. *Festuca ovina* (Sheep’s-fescue), *Carex binervis* (Green-ribbed Sedge), *Galium saxatile* (Heath Bedstraw).

Knockfinnisk (townland), WNW of Carrigkerry (R1939, R2039): One of the **Carrigkerry Bogs NHA**, extending into Glenbaun townland. Wet bog in the western uplands, e.g. *Vaccinium oxycoccos* (Cranberry), *Carex limosa* (Bog-sedge), *Rhynchospora alba* (White Beak-sedge), rare *Trichophorum x foersteri* (hybrid Deergrass), stunted *Menyanthes trifoliata* (Bogbean) and *Pinguicula grandiflora* (Large-flowered Butterwort), the last at edge of its native range in Ireland. See Knockaunnagun (= ‘Scotland Bog’), the other Carrigkerry Bog.

Knocknacarriga (townland), ESE of Cappamore: See Cooga Bog.

Knockroe, SW of Caherconlish (R6547, R6647): Substantial bluffs and outcrop on hill, heathy vegetation, e.g. *Erica cinerea* (Bell Heather), *Vaccinium myrtillus* (Bilberry), *Pedicularis sylvatica* (Lousewort), *Polygala serpyllifolia* (Heath Milkwort), *Vicia sativa* subsp. *nigra* (Common Vetch).

Knockseefin, SW of Pallas Grean (mainly R7545): Volcanic hill, outcrop e.g. *Vicia sativa* subsp. *nigra* (Common Vetch); small wet flush in hollow on top of hill, e.g. *Juncus foliosus* (Leafy Rush). Listed in AFF (1981) as ‘Regional Importance’, geological interest.

Lacka (townland), N of Castleconnell (mainly R6664): **River Shannon (SAC)**. Species-rich unimproved wet meadow (= designated ‘*Molinia* Meadow’) just N of Worldsend, e.g. *Sisyrinchium bermudiana* (Blue-eyed-grass), *Cirsium dissectum* (Meadow Thistle), *Thalictrum flavum* (Common Meadow-rue), *Bromus racemosus* (Smooth Brome), *Carex pallescens* (Pale Sedge); some 17 grass species and 10 *Carex* (Sedge) species have been recorded at this site. Rare *Stellaria palustris* (Marsh Stitchwort) and *Alisma lanceolatum* (Narrow-leaved Water-plantain) by River Shannon.

‘Lake Bog’, SE side of Knockadoon near Lough Gur (R6440, R6540): Swamp, open water and peaty quaking transition to wet grassland, e.g. *Phragmites australis* (Common Reed), *Menyanthes trifoliata* (Bogbean); originally confluent with Lough Gur. See **Lough Gur area**.

Limerick Canal (R5857, R5957): Also known as Park Canal. Rich aquatic flora, e.g. *Groenlandia densa* (**Opposite-leaved Pondweed**), *Hydrocharis morsus-ranae* (Frogbit), *Sagittaria sagittifolia* (Arrowhead), *Oenanthe aquatica* (Fine-leaved Water-dropwort), *Ranunculus circinatus* (Fan-leaved Water-crowfoot), *Ceratophyllum demersum* (Rigid Hornwort), *Spirodela polyrhiza* (Greater Duckweed).

Limerick City (R55): Old stone walls, e.g. *Geranium lucidum* (Shining Crane’s-bill), *Cheiranthus cheiri* (Wallflower), *Antirrhinum majus* (Snapdragon), *Petroselinum crispum* (Garden Parsley), the last found near St Mary’s Cathedral and known there since before 1866; varied and established urban flora. See King’s Island, **Limerick Canal, (River) Shannon at Limerick City**.

Long Mountain: See **Ballyhoura Mountains SAC**.

Long Rock, NE of Glin by **Shannon Estuary (SAC)** (R1548): Rocky shore; saltmarsh just E of Long Rock (R1549), e.g. *Salicornia* spp. (Glassworts), *Parapholis strigosa* (Hard-grass).

Lough Aguole, W of Ballingarry (R3935): Small pond bordered by swampy vegetation on heathy hillside (Old Red Sandstone), e.g. *Menyanthes trifoliata* (Bogbean), *Potamogeton natans* (Broad-leaved Pondweed), *Carex rostrata* (Bottle Sedge), *Hydrocotyle vulgaris* (Marsh Pennywort) and free-floating liverwort *Riccia fluitans*.

Lough Gay Bog NHA (c.R2720): Designated for 'Peatlands'. Upland blanket bog, cut away at edge, at E end of Mullaghareirk Mountains, e.g. *Vaccinium oxycoccos* (Cranberry); Lough Gay itself is a small peaty water-body, e.g. *Carex rostrata* (Bottle Sedge).

Lough Gur, W of Herbertstown (R64): Shallow eutrophic lake with rich aquatic flora, e.g. *Ceratophyllum demersum* (Rigid Hornwort), *Potamogeton friesii* (Flat-stalked Pondweed), emergent plants, e.g. *Schoenoplectus lacustris* (Common Club-rush), *Rumex hydrolapathum* (Water Dock), and bordering marshy ground, e.g. *Rumex maritimus* (Golden Dock), *Bidens cernua* (Nodding Bur-Marigold), *Bidens tripartita* (Trifid Bur-Marigold), *Chenopodium rubrum* (Red Goosefoot); extensive swamp in NE corner (R6441), e.g. *Ranunculus lingua* (Greater Spearwort) at its only known Limerick site; and dry calcareous grassland around the lake, including on Knockfennell and Knockadoon. Over 160 higher plants have been recorded in this area. Lough Gur is also renowned for its archaeological importance. Listed in AFF (1981) as 'National Importance', ecological (botanical, ornithological) interest for its fen, lake and marsh. **Lough Gur pNHA (1995)**.

Lough Gur area (R64): Including **Lough Gur** itself; Knockadoon (R6440) and Knockfennell (R6341, R6441) with species-rich short calcareous grassland and outcrop; open water and swamp on SE side of Knockadoon; and nearby ring forts. See Carraig Aille, 'Lake Bog', **Lough Gur, Red Bog**.

Lough Nagirra, just N of Tory Hill (R5343): Part of **Tory Hill SAC**. Lime-rich lake, e.g. *Nymphaea alba* (White Water-lily), *Nuphar lutea* (Yellow Water-lily); bordering swamp and fen, e.g. *Cladium mariscus* (Great Fen-sedge), *Phragmites australis* (Common Reed), *Juncus subnodulosus* (Blunt-flowered Rush), *Schoenus nigricans* (Black Bog-rush), *Parnassia palustris* (Grass-of-Parnassus). See **Tory Hill**.

'**Lough Selleher**': See **Craggs Turlough**.

Loughmore Common and Loughmore Turlough, SE of Mungret (R5452): Turlough area, e.g. fine-leaved turlough-form of *Ranunculus repens* (Creeping Buttercup), *Persicaria amphibia* (Amphibious Bistort), *Apium inundatum* (Lesser Marshwort); species-rich marshy ground and wet grassland, e.g. *Equisetum fluviatile* (Water Horsetail), *Hydrocotyle vulgaris* (Marsh Pennywort), *Oenanthe fistulosa* (Tubular Water-dropwort), *Dactylorhiza incarnata* (Early Marsh-orchid); bordering grassland with *Hordeum secalinum* (**Meadow Barley**); drainage ditch with *Groenlandia densa* (**Opposite-leaved Pondweed**). This general area drier than formerly due to drainage and tree planting. Loughmore listed in AFF (1981) as 'Local Importance', ecological interest. **Loughmore Common Turlough pNHA (1995)**.

Lower River Shannon SAC: In Limerick from just above O'Briensbridge to near Tarbert, including Mulkear River catchment, River Feale sub-catchment, sub-estuaries of Rivers Maigue and Deel. Limerick section of SAC designated for 'Estuaries', 'Tidal Mudflats and Sandflats', 'Coastal Lagoons', '*Salicornia* mud', 'Atlantic Salt Meadows', 'Mediterranean Salt Meadows', 'Floating River Vegetation', '*Molinia* Meadows' 'Alluvial Forests'. See **(River) Shannon (SAC)** and **Shannon Estuary (SAC)** where specific sites are listed, and **(River) Shannon at Limerick City**.

Lucas' Lough, NE side of Limerick City (R5958): Floodplain lake bordering **River Shannon (SAC)** at edge of Shannon Fields, e.g. *Potamogeton lucens* (Shining Pondweed), and emergent plants characteristic of River Shannon basin, e.g. *Sium latifolium* (Greater Water-parsnip), *Butomus umbellatus* (Flowering-rush), *Sagittaria sagittifolia* (Arrowhead), *Rumex hydrolapathum* (Water Dock). See Shannon Fields.

Lyracappul-Carrignabinnia: See **Carrignabinnia** and **Carrignabinnia-Lyracappul ridge**.

Lyraveg Glen, NW side of **Galtee Mountains SAC** (R8323, R8423): Rocky mountain stream, e.g. *Saxifraga rosacea* (Irish Saxifrage), *Meconopsis cambrica* (Welsh Poppy), *Alchemilla glabra* (Smooth Lady's-mantle), *Alchemilla filicaulis* subsp. *vestita* (Hairy Lady's-mantle), and in nearby gully *Saxifraga stellaris* (Starry Saxifrage).

(River) Maigue: Many good aquatic and marginal habitats along the river; tidal from Adare to where it enters the Shannon Estuary (part of **Lower River Shannon SAC**), e.g. *Cochlearia anglica* (English Scurvygrass), *Apium graveolens* (Wild Celery), *Oenanthe lachenalii* (Parsley Water-dropwort), and rare *Lepidium latifolium* (Dittander) found 2019. See **Adare area**, Bruree, **Ferry Bridge**.

Meelick Creek, NW of Limerick City on county boundary (R55): Also called Crompaun River. Tidal creek off upper **Shannon Estuary (SAC)**, e.g. *Schoenoplectus triqueter* (**Triangular Club-rush**); and *Carex pseudocyperus* (Cyperus Sedge) near Meelick Bridge (R5459).

Milltown Lake, NE of Askeaton (R3754): Lime-rich lake and bordering vegetation, e.g. *Schoenus nigricans* (Black Bog-rush), *Juncus subnodulosus* (Blunt-flowered Rush), *Lysimachia nummularia* (Creeping-Jenny). Part of Askeaton Fen Complex SAC lies just S of the lake (R3753).

Moreena Point, E of Aughinish Island by **Shannon Estuary (SAC)** (R3053): Calcareous grassland and scrub; *Artemisia maritima* (Sea Wormwood) on low causeway. Local interest.

Morgans North (townland), E of Aughinish Island by **Shannon Estuary (SAC)** (mainly R2952): Species-rich dry calcareous grassland with outcrop between end of lane by Poulaweala Creek and Morgans bird-hide, e.g. *Viola hirta* (**Hairy Violet**), *Gentianella amarella* (Autumn Gentian), *Gentianella campestris* (Field Gentian), *Euphrasia salisburgensis* (Irish Eyebright); small brackish ponds/coastal lagoons; also estuary shore and saltmarsh. See Poulaweala Creek, **Poulaweala Lough, Quayfield Lough**.

Mornane Lough, ENE of Askeaton (R3852): Part of **Askeaton Fen Complex SAC**. Small species-rich site with open water and bordering fen, e.g. *Cladium mariscus* (Great Fen-sedge), *Carex elata* (Tufted-sedge), *Carex oederi* (Small-fruited Yellow-sedge), *Juncus subnodulosus* (Blunt-flowered Rush), *Potamogeton coloratus* (Fen Pondweed), *Parnassia palustris* (Grass-of-Parnassus), *Epipactis palustris* (Marsh Helleborine).

Mortlestown Hill, SW of Kilfinnane (R6621): Included in Ballyroe Hill and Mortlestown Hill pNHA (1995).

Mountcollins, SSE of: See Acres.

Mountrussell (townland), N side of Ballyhoura Mountains (R6119): Wooded valley along river, e.g. *Quercus petraea* (Sessile Oak), *Euphorbia hyberna* (Irish Spurge), *Anemone nemorosa* (Wood Anemone), *Hyacinthoides non-scripta* (Bluebell), also *Silene dioica* (Red Campion). **Mountrussell Wood pNHA (1995)**.

Mount Trenchard demesne, W of Foynes (mainly R2150): Estate woodland including many native species, e.g. *Milium effusum* (Wood Millet), a rare grass in Ireland at its only current Limerick site.

Moyreen Bog NHA, S of Ballyhahill (c.R1942): Designated for 'Peatlands' and described as 'lowland blanket bog'. Bog with much Sphagnum and small shallow pools, e.g. *Rhynchospora alba* (White Beak-sedge), *Menyanthes trifoliata* (Bogbean), *Carex limosa* (Bog-sedge), *Drosera intermedia* (Oblong-leaved Sundew), and *Myrica gale* (Bog-myrtle) at bog edge.

Mulkear River: Mulkear catchment in NE Limerick is part of **Lower River Shannon SAC**. Many good aquatic and marginal habitats along the river to where it enters the River Shannon N of Annacotty; less diverse aquatic flora than in Rivers Maigne and Deel.

Mullagh (townland), NW of Creeves Cross (mainly R2846, R2946): Good quality calcareous grassland, e.g. *Rosa spinosissima* (Burnet Rose), *Viola hirta* (**Hairy Violet**), *Poterium sanguisorba* (Salad Burnet); damp area in hollow, e.g. *Trifolium medium* (Zigzag Clover), *Potentilla anserina* (Silverweed); Ash-Hazel scrub, e.g. *Melica uniflora* (Wood Melick). R.L. Praeger made many records here in 1900.

Newcastle West: See Castle Demesne.

Northern limestone area: Bounded by **Shannon Estuary (SAC)** from just E of Foynes to Beagh, inland to Bleach Lough, S to Adare, W to Rathkeale and NW almost to Shanagolden. Fens, including those in **Askeaton Fen Complex SAC**, and e.g. Ballyellinan, Ballylin, Clogh; species-rich calcareous grassland with outcrop, including **Barrigone SAC**, and e.g. **Deelish, Ellaha, Mullagh**; lime-rich lakes, e.g. **Bleach Lough, Blue Lough, Doohyle Lough, Dromore Lough, Kilbreedy Loughs, Milltown Lake; Craggs Turlough.** and turlough-like **Graigues Lough**.

O'Briensbridge-Montpelier (R6666): **River Shannon (SAC)**. Aquatics, e.g. *Potamogeton lucens* (Shining Pondweed), *Potamogeton perfoliatus* (Perfoliate Pondweed), *Potamogeton pusillus* (Lesser Pondweed); bordering marshy ground, e.g. *Bidens cernua* (Nodding Bur-marigold), *Bidens tripartita* (Trifid Bur-marigold).

Palatine Bridge, SW of Rathkeale (R3539): Wet meadow with diverse flora on S side of River Deel just E of bridge, e.g. *Dactylorhiza incarnata* (Early Marsh-Orchid), *Lysimachia nummularia* (Creeping-Jenny), *Myosotis discolor* (Changing Forget-me-not).

Park Canal: See **Limerick Canal**.

Pigeonrock Glen, S side of **Galtee Mountains SAC** (R8420, R8520): Wet siliceous bluffs above Pigeonrock River, e.g. *Hymenophyllum wilsonii* (Wilson's Filmy-fern), *Saxifraga hypnoides* (Mossy Saxifrage), *Solidago virgaurea* (Goldenrod); and *Meconopsis cambrica* (Welsh Poppy) by the river; adjoining valley of Blackrock River.

Plassey/University of Limerick (R6058, R6158, R6258): **River Shannon (SAC)**. Wooded islets, e.g. rare *Scirpus sylvaticus* (Wood Club-rush); riparian woodland, e.g. *Alnus glutinosa* (Alder); millrace with aquatic plants. Invasive *Heracleum mantegazzianum* (Giant Hogweed) and *Impatiens glandulifera* (Indian Balsam) well established by the river.

Portcrusha (townland), N of Castleconnell (e.g. R6564, R6664): **River Shannon (SAC)**. Shallow river edge, e.g. *Hippuris vulgaris* (Mare's-tail), *Oenanthe aquatica* (Fine-leaved Water-dropwort); marshy ground merging into wet grassland, e.g. *Apium inundatum* (Lesser Marshwort), *Lysimachia nummularia* (Creeping-Jenny), *Bidens cernua* (Nodding Bur-marigold). See **Lacka**, adjoining this site, with unimproved wet meadow.

Poulaweala Creek, E side of (R25): Creek off **Shannon Estuary (SAC)**. Saltmarsh near and by end of lane, e.g. *Artemisia maritima* (Sea Wormwood), *Salicornia* spp. (Glassworts), *Elytrigia atherica* (Sea Couch); species-rich dry calcareous grassland with outcrop between end of lane and Morgans bird-hide, e.g. *Viola hirta* (**Hairy Violet**); Shannon Estuary shore and saltmarsh beyond the hide; small brackish pond by lane (R2952), e.g. *Eleocharis uniglumis* (Slender Spike-rush), *Juncus ranarius* (Frog Rush), *Triglochin maritima* (Sea Arrowgrass). See Aughinish Island, **Morgans North**.

Poulaweala Lough, Morgans North (R295524): Brackish pond/coastal lagoon, part of **Shannon Estuary (SAC)**, e.g. rare *Ranunculus baudotii* (Brackish Water-crowfoot) found 2017, also *Potamogeton pectinatus* (Fennel Pondweed). Priority habitat under EU Habitats Directive.

Poultallin Point, just W of Foynes (R2352): Mixed woodland with Oak and *Luzula sylvatica* (Great Wood-rush); low shale cliffs by **Shannon Estuary (SAC)**, e.g. *Teucrium scorodonia* (Wood Sage), *Erica cinerea* (Bell Heather); stony shore; low grassy promontory, e.g. *Vicia sativa* subsp. *nigra* (Common Vetch), *Galium verum* (Lady's Bedstraw). Local interest.

Quayfield Lough, Morgans North (R296526): Brackish pond/coastal lagoon, part of **Shannon Estuary (SAC)**, e.g. *Ruppia maritima* (Beaked Tasselweed). Priority habitat under EU Habitats Directive.

Reboge, E side of Limerick City (R6057): Small floodplain lake bordering **River Shannon (SAC)** with a rich flora and surrounding marshy ground, e.g. *Sium latifolium* (Greater Water-parsnip), *Lysimachia nummularia* (Creeping-Jenny), *Persicaria mitis* (Tasteless Water-pepper); and drainage ditches in field just to E, e.g. *Carex pseudocyperus* (Cyperus Sedge), *Groenlandia densa* (**Opposite-leaved Pondweed**).

Red Bog, just S of Lough Gur (R6439): Species-rich quaking swamp, e.g. *Carex paniculata* (Greater Tussock-sedge), *Carex diandra* (Lesser Tussock-sedge), *Menyanthes trifoliata* (Bogbean), *Epipactis palustris* (Marsh Helleborine). See **Lough Gur area**.

Ringmoylan/Ringmoylan Quay, NNW of Pallaskenry (R4057): Estuarine grassland bordering estuarine saltmarsh W of quay by **Shannon Estuary (SAC)**, e.g. *Hordeum secalinum* (**Meadow Barley**), *Trifolium fragiferum* (Strawberry Clover), *Oenanthe lachenalii* (Parsley Water-dropwort), and rare grass hybrid X *Elytrordeum langei* between *Hordeum secalinum* and *Elytrigia repens* (Common Couch) at its only Irish site.

River Shannon: See **Lower River Shannon SAC, (River) Shannon, Shannon Estuary**.

Robertstown Creek/River off **Shannon Estuary (SAC)**, SW side of Aughinish Island (R25): Tidal creek and mud flats, e.g. *Artemisia maritima* (Sea Wormwood), *Zostera marina* (Eelgrass); low banks along railway near old metal bridge, e.g. *Ononis repens* (Common Restharrow); shallow limestone railway cutting just E of bridge (R2850), e.g. *Viola hirta* (**Hairy Violet**), *Origanum vulgare* (Wild Marjoram), rare *Euphorbia exigua* (Dwarf Spurge).

Rootiagh (townland), SSE of Mungret (R5451): Wet grassland on peaty soil, e.g. *Juncus subnodulosus* (Blunt-flowered Rush), *Cirsium dissectum* (Meadow Thistle), *Pedicularis palustris* (Marsh Lousewort), *Menyanthes trifoliata* (Bogbean), *Epipactis palustris* (Marsh Helleborine); bordered by disused railway, e.g. *Origanum vulgare* (Wild Marjoram); drainage ditch in NW part of site with *Groenlandia densa* (**Opposite-leaved Pondweed**). Local interest.

Routagh Fen, S of Limerick City (R5952): Good quality species-rich fen, e.g. *Schoenus nigricans* (Black Bog-rush) dominant, *Parnassia palustris* (Grass-of-Parnassus), *Potamogeton coloratus* (Fen Pondweed), *Pinguicula vulgaris* (Common Butterwort), orchids including *Dactylorhiza incarnata* (Early Marsh-orchid), *Epipactis palustris* (Marsh Helleborine), *Gymnadenia conopsea* s.l. (Fragrant Orchid), also rare *Eriophorum latifolium* (Broad-leaved Cottongrass) found 2017; bordering calcareous grassland with outcrop; e.g. *Antennaria dioica* (Mountain Everlasting), *Brachypodium pinnatum* (Heath False-brome), *Leontodon hispidus* (Rough Hawkbit).

‘Scotland Bog’: See Knockaunnagun, one of the **Carrigkerry Bogs NHA**.

Seefin Mountain (R6517): See **Ballyhoura Mountains SAC, Black Rock**.

Shanid Castle, SSW of Shanagolden (R2445): Ruins, e.g. *Conium maculatum* (Hemlock); short turf around castle, e.g. *Arabis hirsuta* (Hairy Rock-cress); grassy slope, e.g. *Platanthera chlorantha* (Greater Butterfly-orchid). *Silybum marianum* (Milk Thistle), associated with old castles, last seen here in 1906. Local interest.

(River) Shannon (SAC): Freshwater river from O’Briensbridge to Limerick City, part of **Lower River Shannon SAC**. Diverse aquatic and emergent flora in the river; good habitats include bordering marshy ground, wet meadows, riparian woodland. See Ballyvollane, Castleconnell, Castleconnell/Clareville Waterworks, Corbally, **Lacka**, O’Briensbridge, Plassey, Portcrusha, Shannon Fields, **Worldsend**.

(River) Shannon at Limerick City (mainly R55): Part of **Lower River Shannon SAC**. Freshwater river from Plassey to Corbally, including wooded islets and rapids; tidal river from Corbally to below Shannon Bridge; marshy vegetation exposed at low tide between Thomond Bridge and Sarsfield Bridge (R5757), e.g. *Schoenoplectus triqueter* (**Triangular Club-rush**) on W side at Clancy’s Strand, and *Leucojum aestivum* (Summer Snowflake), *Caltha palustris* (Marsh-marigold) on E side beside King John’s Castle; tidal mud on N side of river at Shannon Bridge (R5756), e.g. *Groenlandia densa* (**Opposite-leaved Pondweed**), *Zannichellia palustris* (Horned Pondweed); and associated swamps and floodplain lakes. See Corbally, Corbally Baths, **Corbally Swamp**, King’s Island, **Knockalisheen Marsh**, **Lucas’ Lough**, **Reboge**, Shannon Fields.

Shannon Estuary (SAC): Part of **Lower River Shannon SAC**. Tidal estuary from Limerick City to near Tarbert; habitats include extensive reed beds with *Phragmites australis* (Common Reed), mud flats, saltmarsh, estuarine grassland, tidal creeks, and from Foynes W some wooded promontories. See Aughinish Island, Ballinacurra Creek, near Ballysteen, Barrigone Holy Well, Barrington’s Pier, Beagh Castle/Quay, Clonmacken-Coonagh, (River) Deel (tidal part), Foynes Island, **Glin Pier**, Goleen Bridge, Kiltteery Pier, (River) Maigue (tidal part), Meelick Creek, **Morgans North**, Moreena Point, **Poulaweala Creek**, **Poulaweala Lough**, Poultallin Point, **Quayfield Lough**, **Ringmoylan/Ringmoylan Quay**, Robertstown Creek, Sturamus Island, Tomdeely Point, Trummera Big.

Shannon Fields, NE side of Limerick City (R5958): **River Shannon (SAC)**. Aquatics, e.g. *Ranunculus circinatus* (Fan-leaved Water-crowfoot); floodplain with neutral rushy grassland, e.g. *Conopodium majus* (Pignut), *Lotus pedunculatus* (Greater Bird’s-foot-trefoil), wetter depressions, e.g. *Persicaria amphibia* (Amphibious Bistort), and bordering Willows; also a floodplain lake. See **Lucas’ Lough**.

Skoolhill, NW of Grange (R6244, R6245): Hill with old estate woodland (indicated on 1840s map), e.g. Ash and large originally planted trees such as Beech and Sweet Chestnut; limestone outcrop, e.g. ferns *Polypodium cambricum* (Southern Polypody) *Polypodium interjectum* (Intermediate Polypody); also established non-native *Festuca heterophylla* (Various-leaved Fescue). Local interest. Skoolhill pNHA (1995).

Slievefelim Mountains (mainly R75): Much afforestation, but areas of bog still with good species, e.g. *Andromeda polifolia* (Bog-rosemary), *Vaccinium oxycoccos* (Cranberry); the best upland ‘poor’ fen in the county (Grageen Fen); substantial Old Red Sandstone outcrops, e.g. *Hymenophyllum tunbrigense* (Tunbridge Filmy-fern), *Dryopteris aemula* (Hay-scented Buckler-fern), and gametophyte of *Trichomanes speciosum* (**Killarney Fern**) in at least one place. See **Grageen Fen and Bog NHA**.

Slievemaan, NE of Kilfinnane (R72): Largely forested, but wet heath remaining around highest point; small conglomerate tor, e.g. *Polypodium vulgare* s.s. (Polypody). Local interest.

Sturamus Island, off NE side of Foynes Island, **Shannon Estuary (SAC)** (R2553): Low islet with shelly sand, limited number of characteristic estuarine species, including tussock-forming *Puccinellia maritima* (*‘Puccinellia foucaudii’*, Common Saltmarsh-grass); breeding site for terns. Listed in AFF (1981) as ‘Local Importance’, ecological interest (ornithological).

Sugar Hill, WSW of Newcastle West (R2032): Site in western uplands for legally protected liverwort *Pallavicinia lyellii*.

Temple Hill, W end of **Galtee Mountains SAC** (R8321): Acid grassland on slopes; grazed summit, e.g. *Empetrum nigrum* (Crowberry), *Festuca vivipara* (Viviparous Sheep’s-fescue), *Huperzia selago* (Fir Clubmoss); eroded blanket bog on broad shoulder; prominent conglomerate outcrop on W side (c.R830215), e.g. *Campanula rotundifolia* (Harebell), rare *Vaccinium vitis-idaea* (Cowberry) and *Botrychium lunaria* (Moonwort, found 2015); and legally protected moss *Encalypta ciliata* (only three known sites in Ireland in 2020).

Tomdeely Point, NNW of Askeaton by **Shannon Estuary (SAC)** (mainly R3252): Extensive grazed saltmarsh just S and SE of Tomdeely Point bordering Deel estuary; brackish lagoon, e.g. *Salicornia* spp. (Glassworts), *Suaeda maritima* (Annual Sea-blite); embankments, e.g. *Linum bienne* (Pale Flax), *Linum catharticum* (Fairy Flax), *Briza media* (Quaking-grass).

Tory Hill, NE of Croom (mainly R5342): Part of **Tory Hill SAC**. Ash-Hazel woodland with *Taxus baccata* (Yew) on limestone hill, e.g. *Galium odoratum* (Woodruff), *Ranunculus auricomus* (Goldilocks Buttercup), *Orchis mascula* (Early-purple Orchid); characteristic limestone flora at N end of hill, formerly quarried, e.g. *Ophrys apifera* (Bee Orchid), *Anacamptis pyramidalis* (Pyramidal Orchid), *Carlina vulgaris* (Carlina Thistle), *Thymus polytrichus* (Wild Thyme), *Antennaria dioica* (Mountain Everlasting), *Geranium columbinum* (Long-stalked Crane’s-bill). See **Lough Nagirra**.

Tory Hill SAC: Includes **Tory Hill** and **Lough Nagirra**. Designated for ‘Orchid-rich Calcareous Grassland’, ‘*Cladium* Fens’ and ‘Alkaline Fens’. This SAC contains many of the same plant species as would be found further to the NW in the Northern limestone area of Limerick. See **Lough Nagirra, Tory Hill, Northern limestone area**.

Trummera Big, off NE side of Aughinish Island, **Shannon Estuary (SAC)** (R2954): Low islet, e.g. tussock-forming *Puccinellia maritima* (‘*Puccinellia foucaudii*’, Common Saltmarsh-grass).

Tullig Wood, E of Abbeyfeale (R1726, R1827): Ash-Beech-Oak woodland, e.g. *Hyacinthoides non-scripta* (Bluebell), scattered *Euphorbia hyberna* (Irish Spurge); shallow rock cutting, e.g. *Teucrium scorodonia* (Wood Sage), *Digitalis purpurea* (Foxglove) - along former railway, now Great Southern Trail. Local interest.

University of Limerick: See Plassey.

Westfields ponds, just W of Shannon Bridge, Limerick City (R5656): Part of **Lower River Shannon SAC**. Two ponds with a diverse flora, the larger on the N side of the road with emergent and aquatic species, e.g. *Typha angustifolia* (Lesser Bulrush), *Typha latifolia* (Bulrush), *Bidens cernua* (Nodding Bur-marigold), *Ceratophyllum demersum* (Rigid Hornwort); extensive swamp nearby, e.g. *Phragmites australis* (Common Reed), *Typha* spp. (Bulrushes), *Glyceria maxima* (Reed Sweet-grass).

White River, between Ballyhahill and Loughill (R14): River valley, including Hazel wood near Ballyhahill (R1946), e.g. *Allium ursinum* (Ramsons, Wild Garlic); river edge, e.g. *Crepis paludosa* (Marsh Hawk’s-beard); saltmarsh plants by river at Loughill, near where it enters Shannon Estuary (R1949). Local interest.

Worldsend, N of Castleconnell (mainly R6563): **River Shannon (SAC)**. Aquatics, e.g. *Potamogeton perfoliatus* (Perfoliate Pondweed), *Potamogeton lucens* (Shining Pondweed), *Potamogeton friesii* (Flat-stalked Pondweed), *Potamogeton x angustifolius* (Long-leaved Pondweed); emergent plants at river’s edge, e.g. *Butomus umbellatus* (Flowering-rush), *Alisma lanceolatum* (Narrow-leaved Water-plantain), the latter first found in Limerick 2019. Species-rich unimproved wet meadow just N of Worldsend. See **Lacka**.

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