

A survey of the vegetation of the habitat “Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidenton* p.p. vegetation” (3270), in selected sites in counties Galway, Clare and Roscommon.



Lough Gash turlough, Co. Clare, September 2024

Survey and reporting by Dr. John Conaghan

11 Dun Ard,

Craughwell, Co. Galway

johnconaghan18@gmail.com – 087 2239858

March 2025

Table of contents

1. Introduction	1
2. Results	2
2.1 Rathbaun turlough, Co. Galway	2
2.2 Lough Gash, Co. Clare	3
2.3 Coole Park, Co. Galway	6
2.4 Lough Funshinagh, Co. Roscommon	9
2.5 Blackrock/Peterswell - Bullaunagh (Turloughnacloghdoo), Co. Galway	10
2.6 Glenamaddy turlough, Co. Galway	13
2.7 Garryland turlough, Gort, Co. Galway	14
2.8 Caherglassaun turlough, Co. Galway	17
References	

1. Introduction

In 2024 a resurvey of areas of the Annex I habitat “Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation” (EU habitat code 3270) referred to as “*Chenopodium rubri* and *Bidention* vegetation” in this report, was carried out in the west of Ireland. The sites surveyed are listed in Table 1 below. All of the sites surveyed are turloughs located in counties Galway, Clare and Roscommon and the extent, composition and condition of the habitat at these sites was initially surveyed in 2018 (see Conaghan and Fuller, 2018). The main purpose of the 2024 survey was to determine the extent, composition and condition of the habitat in comparison to that revealed in the 2018 survey.

This ephemeral habitat is generally found at the bottom of turlough basins which typically only dry out following dry periods, usually between June and September. In some years, when there are wet summers, the habitat may not develop due to high water levels. The vegetation is dominated by low-growing, annual plant species which can complete their life cycle in a very short period of time, typically between 2 and 4 months. In 2024 the sites were initially visited during the month of June however at that time the water levels at most sites were noted to be too high for development of the habitat. Subsequent visits to sites between mid-August and early October of 2024 revealed much lower water levels and a survey of the habitat was possible at most sites.

Table 1. List of sites surveyed

Location name/work	County	Notes
Lough Gash	Clare	
Rathbaun	Galway	
Coole Lough	Galway	
Lough Funshinagh	Roscommon	Water levels consistently high during 2024 – Survey of habitat not possible
Blackrock/Peterswell - Bullaunagh (Turloughnacloghdoo)	Galway	
Glenamaddy turlough/Cloondoyle Beg	Galway	Water levels consistently high during 2024 – Survey of habitat not possible
Garryland	Galway	
Caherglassaun	Galway	

2. Results

2.1 Rathbaun turlough, Co. Galway

Rathbaun turlough was visited on the 14th of June 2024. The site is located north-west of Tuam, on the border of counties Galway and Mayo. On the day of survey there was no surface water evident in any area of the turlough including the very small area which contains *Chenopodium rubri* and *Bidention* vegetation. As noted in the previous 2018 survey, this turlough has been subject to drainage and agricultural intensification with recent decades.

In June 2024 the area of habitat noted was broadly similar to that which was identified in 2018, i.e. c. 0.04 hectares. The intensity of cattle grazing is considered to be moderate with trampling of the small bare mud area evident. Bare soil/mud cover varies between 30 and 60%. Vegetation height is generally between 5 and 10 cm. A similar range of species was noted in 2024, including the characteristic species of the habitat *Oxybasis rubra*, which is locally frequent. Weed/ruderal species such as *Persciaria maculosa*, *Polygonum aviculare* and *Plantago major* are still prominent in the vegetation. Although basal leaves of *Rorippa* species were seen it was not possible to identify the rare species *Rorippa islandica* due to the early survey date and the relatively intensive grazing by cattle.

The soil present is a damp and mineral-rich calcareous soil which overlies limestone bedrock. Organic matter is relatively low. It would appear that levels of cattle grazing and poaching in 2024 are slightly lower than in 2018.

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	No evidence for decline in habitat area since 2018 survey
Structure and Functions	Unfavourable-Bad	Moderate level of cattle grazing still present in 2024. Weedy/ruderal species still common in vegetation.
Future prospects	Unfavourable-Bad	Very small area of habitat present and ongoing grazing pressure.
Overall assessment	Unfavourable-Bad	

2.2 Lough Gash, Co. Clare

This site was surveyed on the 4th of September 2024. It is located just west of the village of Newmarket on Fergus in south Co. Clare and is considered to have some of the best developed, open mud areas occurring in any turlough system in Ireland. At this location *Chenopodium rubri* and *Bidention* vegetation occupies very soft and muddy ground near the centre of the turlough and water levels were low on the day of survey with only a small central, open water channel evident. This channel flows to the west and discharges into swallow hole located close to the western edge of the turlough basin.

In September 2024 there was approximately 3.4 hectares of habitat noted. This is similar to the area noted in 2018, when approximately 3.9 hectares of the habitat was mapped. At this site the low growing *Chenopodium rubri* and *Bidention* vegetation is generally dominated by a variable mix of *Bidens tripartita*, *Oenanthe aquatica*, *Rorippa* spp. and *Persicaria maculosa*. The surrounding /adjoining areas of turlough vegetation comprise either low-growing *Eleocharis palustris* swamp, to the south, and a species-poor wet grassland vegetation dominated by *Agrostis stolonifera* and *Persicaria amphibia* to the north. One relevé was recorded in order to show the typical vegetation occurring at the site (see below). In general, vegetation with a high cover of *Bidens tripartita* dominates the northern half of the *Chenopodium rubri* and *Bidention* vegetation area.

During 2024 the vegetation was observed to be ungrazed and there was no indication of significant disturbance taking place. There was some evidence of cattle trampling noted in the east of the turlough basin however this appeared to have taken place in late spring/early summer with no recent grazing evidence seen. This is in contrast to the 2018 survey when much of the western half of the turlough was heavily grazed and poached by cattle. There is evidence of a small amount of visitor access within the site however this is not considered to be a significant threat to the habitat. In recent decades the hydrological quality of this turlough has been compromised as it used an outfall for treated wastewater from Newmarket on Fergus however this will come to an end within the next few years when the upgrade of sewage treatment works in the village is completed.

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	No evidence for decline in habitat area since 2018
Structure and Functions	Favourable	Grazing levels very low in 2024, thus very low levels of disturbance. Vegetation well developed.
Future prospects	Favourable	Future prospects considered good.
Overall assessment	Favourable	

Relevé of *Chenopodium rubri* and *Bidention* vegetation at Lough Gash

Site name – Lough Gash		Relevé area (m)	2x2	GPS (IG) – R39085 68034	
Slope	0	Vegetation height (cm)	5 -10	Grazing - No	
Vegetation cover (%)	65	Bare soil (%)	50	Survey date – 04/9/2024	
Shrub cover (%) -	0	Herb cover (%) -	65	Bryophyte cover (%)	0
Species and % cover.					
<i>Bidens tripartita</i>	20	<i>Oenanthe aquatica</i>	10	<i>Persicaria amphibia</i>	3
<i>Rorippa amphibia</i>	15	<i>Persicaria maculosa</i>	7	<i>Gnaphalium uliginosum</i>	1
<i>Potentilla anserina</i>	10	<i>Oxybasis rubra</i>	7		



Photograph 1. General view of Lough Gash, looking towards the south-east, showing the expanse of annual vegetation growing on muddy substrate.



Photograph 2. *Bidens tripartita* is locally abundant at Lough Gash, forming extensive carpets in the north of the site.



Photograph 3. *Oxybasis rubra* is locally common throughout the turlough basin.

2.3 Coole Park, Co. Galway.

This site was surveyed on the 20th of August 2024. It is located within Coole Park-Garryland Nature Reserve and the habitat occurs at the north-eastern margins of Coole Lough where a seasonal drop in the turlough water levels, usually between May and September, allows the development of *Chenopodium rubri* and *Bidention* vegetation. A previous visit on the 16th of June revealed high water levels with no areas of *Chenopodium rubri* and *Bidention* vegetation exposed at that time.

In August 2024 there was approximately 2.9 hectares of habitat present. This is much smaller than observed in the 2018, when approximately 25 hectares of bare mud area was noted as a result of the very dry summer of that year. At this site the low growing *Chenopodium rubri* and *Bidention* vegetation occurs in mosaic with areas of low-growing swamp vegetation with a high cover of *Eleocharis palustris*, *Equisetum fluviatile* and *Carex vesicaria*. One relevé was recorded in order to show the typical vegetation occurring at the site (see below). The relevé contains the rare species *Limosella aquatica* and *Callitriche palustris*, both of which are listed in the 2022 Flora Protection Order. In Ireland these species are largely confined to areas of turlough habitat in the west of the country.

During 2024 the vegetation was ungrazed and there was no indication of significant disturbance. It should be noted that this area of the Nature Reserve has not been grazed recently due to visitor walking/access though the adjoining woodland/turlough margins. An unofficial walking path occurs just east of the area in which the habitat occurs however there is very little evidence of trampling of *Chenopodium rubri* and *Bidention* vegetation.

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	Much smaller area of habitat exposed in 2024 due to higher water levels but no indication of habitat area reduction.
Structure and Functions	Favourable	No grazing evident in 2024. Vegetation well developed.
Future prospects	Favourable	Future prospects considered good as the area lies within a Nature Reserve.
Overall assessment	Favourable	

Relevé of *Chenopodium rubri* and *Bidention* vegetation at Coole Park

Site name – Coole Park		Relevé area (m)	2x2	GPS (IG) – M 43272 04475	
Slope	0	Vegetation height (cm)	<5	Grazing - No	
Vegetation cover (%)	65	Bare soil (%)	40	Survey date – 20/8/2024	
Shrub cover (%) -	0	Herb cover (%) -	65	Bryophyte cover (%)	0
Species and % cover.					
<i>Lythrum portula</i>	20	<i>Polygonum minus</i>	5	<i>Baldellia ranunculoides</i>	1
<i>Callitriche palustris</i>	15	<i>Eleocharis palustris</i>	3	<i>Gnaphalium uliginosum</i>	0.5
<i>Equisetum fluviatile</i>	10	<i>Juncus bufonius</i>	3		
<i>Limosella aquatica</i>	5	<i>Rorippa sp.</i>	3		



Photograph 1. Low-growing *Chenopodium rubri* and *Bidention* vegetation at the north-eastern corner of Coole Lough with taller *Eleocharis palustris*/*Equisetum fluviatile* swamp also visible.



Photograph 2. Close-up of vegetation with frequent *Lythrum portula* and *Limosella aquatica* visible.

2.4 Lough Funshinagh, Co. Roscommon

Lough Funshinagh is a large turlough located in south Co. Roscommon. Previous studies have estimated that there was approximately 33 hectares of *Chenopodion rubri* and *Bidention* vegetation present at the site (Goodwillie, 1992). Since c. 2005, however the water levels within the turlough have been consistently high and it is unlikely the water levels have been suitably low for the development of the habitat since then. A previous survey of the site in 2018 reported high water levels which filled the lake basin. The site was visited on the 16th of August 2024 and water levels were again observed to be very high, with areas suitable for the development of *Chenopodion rubri* and *Bidention* vegetation submerged under many metres of water.

As the habitat has not been noted at Lough Funshinagh for many years, due to the persistently high water levels present, it is suggested that the status of this site as supporting areas of the Annex habitat 'rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation [3270]' is reviewed in the future.

2.5 Blackrock/Peterswell - Bullaunagh (Turloughnacloghdoo), Co. Galway

Turloughnacloghdoo is a medium-sized turlough located approximately 7 kilometres north-east of Gort in south-county Galway. This site was visited on the 4th of June and again on 4th of October in 2024. In June there were high water levels observed with areas of *Chenopodium rubri* and *Bidention* vegetation under approximately 20 cms of water, however in the October visit to the site the vegetation was accessible with small shallow pools of water present in places. The soil consists of a wet, muddy and base-rich, inorganic soil which occurs in an area with limestone bedrock.

The previous survey of the site in 2018 revealed the presence of approximately 0.6 ha of *Chenopodium rubri* and *Bidention* vegetation and the 2024 survey confirmed the presence of a similar area of the habitat, including presence of *Polygonum aviculare*, *Oxybasis rubra*, and *Eleocharis palustris*. The habitat is restricted to a depression in the south-east of the turlough basin. The areas surrounding this depression are dominated by a tightly grazed sward of vegetation dominated by *Potentilla anserina* with frequent *Poa annua* and *Persicaria maculosa*. The high cover of *Poa annua* and *Persicaria maculosa* demonstrates the heavily grazed and poached nature of the vegetation. One relevé was recorded in order to show the typical vegetation occurring (see below). In general, the vegetation occurring in the bare mud habitat at this site is dominated by ruderal plant species more typical of heavily poached agricultural conditions.

During 2024 it was observed that the vegetation/habitat has been grazed by cattle with approximately 30 cattle counted within the turlough basin in October 2024. The turlough basin area is a commonage which is grazed by livestock belonging to a number of surrounding landowners. Although there was little evidence of severe poaching of soil within the *Chenopodium rubri* and *Bidention* vegetation area in 2024, especially when compared with the 2018 survey, the vegetation still supports a high cover of weedy plant species which reduces the botanical value of the habitat. The very rare and protected Flora Protection Order species *Limosella aquatica* and *Callitriche palustris* were recorded again in 2024 and they appear to be largely confined to the southern half of the area.

Relevé of *Chenopodium rubri* and *Bidenton* vegetation at Blackrock/Peterswell turlough

Site name – Blackrock/Peterswell turlough		Relevé area (m)	2x2	GPS (IG) – M 49932 07991	
Slope	0	Vegetation height (cm)	<5	Grazing – Yes, moderate cattle grazing.	
Vegetation cover (%)	35	Bare soil (%)	70	Survey date – 4/10/2024	
Shrub cover (%)	0	Herb cover (%)	35	Bryophyte cover (%)	0
Species and % cover.					
<i>Plantago major</i>	10	<i>Poa annua</i>	7	<i>Plantago lanceolata</i>	3
<i>Persicaria maculosa</i>	10	<i>Rorippa</i> sp.	3	<i>Polygonum aviculare</i>	1

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	No evidence for decline in habitat area since the 2018 survey.
Structure and Functions	Unfavourable-Bad	Moderate to high level of cattle grazing still present in 2024. Weedy/ruderal species still abundant in vegetation and in surrounding drier turlough vegetation.
Future prospects	Unfavourable-Bad	Turlough area is commonage, therefore difficult to control future levels of grazing.
Overall assessment	Unfavourable-Bad	



Photograph 1. General view the area in the south-east of Blackrock/Peterswell turlough where *Chenopodium rubri* and *Bidention* vegetation occurs. Note the tightly grazing nature of the adjoining vegetation.



Photograph 2. A large proportion of the vegetation in this area has a high cover of *Plantago major*, *Persicaria maculosa* and *Poa annua* on muddy substrate which demonstrates the poached and disturbed nature of the habitat.

2.6 Glenmaddy turlough, Co. Galway

Glenmaddy turlough is located in the east of Co. Galway, just east of Glenamaddy village. A previous survey of the turlough estimated that approximately 1.7 hectares of *Chenopodium rubri* and *Bidenton* vegetation occurred at the site (Goodwillie, 1992). When the site was visited in 2018 as part of a previous survey of the habitat the water levels were very high and no areas of the vegetation/habitat were noted. The site was visited on the 7^h of September 2024 and water levels were also noted to be high (Photograph 1) and areas suitable for the development of *Chenopodium rubri* and *Bidenton* vegetation were not found. As the conditions suitable for the development of the habitat at Glenamaddy do not appear to occur often in recent years it is suggested that the status of this site as supporting areas of the Annex habitat 'rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidenton* p.p. vegetation [3270]' is reviewed in the future.



Photograph 1. View of Glenamaddy turlough looking to the south-west, showing high water levels in September 2024.

2.7 Garryland turlough, Gort, Co. Galway.

This site was surveyed on the 20th of August 2024. It is located within Coole Park-Garryland Nature Reserve and the habitat occurs mostly within the main basin of Garryland turlough, with a smaller area of the habitat to the north of a permanent pond to the east of the main basin. On a visit to the site on the 16th of June 2024 the water levels were relatively high with only small areas of *Chenopodium rubri* and *Bidention* vegetation exposed at that time.

In August 2024 approximately 2 hectares of habitat was recorded which is similar to the area noted during the 2018 survey. As noted in 2018 the habitat at this site is demarcated by the distribution of *Eleocharis acicularis*, which has a distinctive yellow-green colour. At this site the low growing *Chenopodium rubri* and *Bidention* vegetation occurs in mosaic with areas of low-growing wet grassland/poor fen dominated by species such as *Carex nigra*, *Ranunculus repens* and *Potentilla anserina*. The habitat occupies wet and soft, mineral-rich alluvial mud with the associated wet grassland/poor fen vegetation occurring on slightly firmer soils. One relevé was recorded in order to show the typical vegetation occurring at the site (see below). The relevé contains the rare species *Limosella aquatica* and *Callitriche palustris*, both of which are listed in the 2022 Flora Protection Order. In Ireland these species are largely confined to areas of turlough habitat in the west of the country.

During 2024 it was observed that vegetation/habitat has been grazed by sheep, probably since late June, when water levels began to decline. There are clear indications of poaching by sheep and whilst the intensity of grazing/poaching pressure does not appear to be excessive in general, the grazing levels should be reviewed in the future. This turlough is not visited by many visitors and there is no evidence of trampling of *Chenopodium rubri* and *Bidention* vegetation by walkers.

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	No evidence of habitat area reduction since 2018.
Structure and Functions	Favourable	Moderate level of sheep grazing/poaching evident in 2024 but vegetation well developed.
Future prospects	Favourable	Future prospects considered good as the area lies within a Nature Reserve.
Overall assessment	Favourable	Review of livestock grazing levels is advised.

Relevé of *Chenopodium rubri* and *Bidention* vegetation at Garryland turlough

Site name – Garryland turlough		Relevé area (m)	2x2	GPS (IG) – M 41434 03842	
Slope	0	Vegetation height (cm)	<5	Grazing – Yes, moderate sheep grazing.	
Vegetation cover (%)	75	Bare soil (%)	25	Survey date – 20/8/2024	
Shrub cover (%)	0	Herb cover (%)	65	Bryophyte cover (%)	15
Species and % cover.					
<i>Lythrum portula</i>	20	<i>Carex nigra</i>	7	<i>Limosella aquatica</i>	1
Moss sp.	15	<i>Callitriche palustris</i>	3	<i>Poa annua</i>	1
<i>Eleocharis acicularis</i>	10	<i>Eleocharis palustris</i>	3	<i>Plantago major</i>	1
<i>Persicaria maculosa</i>	10	<i>Gnaphalium uliginosum</i>	3	<i>Rorippa</i> sp.	1
<i>Oxybasis rubra</i>	10	<i>Agrostis stolonifera</i>	3	<i>Sonchus</i> sp.	0.5



Photograph 1. View of *Chenopodium rubri* and *Bidenton* vegetation growing on poached areas with a high cover of bare soil at Garryland turlough.



Photograph 2. Close-up of *Limosella aquatica* at Garryland turlough.

2.8 Caherglassaun turlough, Co. Galway

This site was surveyed on the 21st of August 2024. The turlough basin is relatively large (c. 26 hectares) with the northern two thirds of the turlough usually dominated by permanent open water. The southern third of the turlough dries out most years and areas of *Chenopodium rubri* and *Bidention* vegetation develop if the water levels are low for a sufficient amount of time. On a visit to the site on the 18th of June 2024 the water levels were relatively high with a relatively small area of *Chenopodium rubri* and *Bidention* vegetation exposed at that time.

In August 2024 approximately 1.2 hectares of habitat was recorded which is less than the area noted during the 2018 survey, however it is noted that water levels were higher in 2024 than in 2018 which was a particularly dry summer. At this location the very sparse vegetation typically supports varying mixtures *Rorippa spp.*, *Persicaria maculosa*, *Eleocharis palustris*, *Oxybasis rubra*, *Gnaphalium uliginosum* and *Agrostis stolonifera*. The rare and protected plant species *Callitriche palustris* and *Limosella aquatica* are also found growing occasionally in this vegetation. The associated soil is wet and soft with a very low organic content. Bare soil generally covers at least 80% of the habitat area (See relevé).

During 2024 it was observed that vegetation/habitat has been grazed by cattle with clear signs of moderate poaching evident. It was noted however that the intensity of grazing/poaching is not as severe as in 2018, which is probably due to the fact that much of the area has only become dry enough for livestock access since late June 2024.

Habitat assessment 2024

Parameter	Outcome	Comments
Area	Favourable	Smaller area of habitat exposed in 2024 due to higher water levels but no indication of loss in habitat area.
Structure and Functions	Unfavourable-Bad	Moderate level of cattle poaching/grazing still present in 2024, though slightly lower than observed in 2008.
Future prospects	Unfavourable-Bad	Livestock grazing levels at this site need to be reduced.
Overall assessment	Unfavourable-Bad	

Relevé of *Chenopodium rubri* and *Bidention* vegetation at Caherglassan turlough

Site name – Caherglassaun turlough		Relevé area (m)	2x2	GPS (IG) – M 41082 05957
Slope	0	Vegetation height (cm)	<5	Grazing – Moderate
Vegetation cover (%)	10	Bare soil (%)	90	Survey date – 21/8/2024

Shrub cover (%)	0	Herb cover (%)	10	Bryophyte cover (%)	0
Species and % cover.					
<i>Agrostis stolonifera</i>	5	<i>Gnaphalium uliginosum</i>	1	<i>Plantago major</i>	1
<i>Oxybasis rubra</i>	3	<i>Limosella aquatica</i>	1	<i>Juncus bufonius</i>	0.5

References

- Conaghan, J. and Fuller, J.A (2018). *Survey of the vegetation of the Habitats Directive Annex I habitat Rivers with muddy banks with Chenopodion rubri p.p. and Bidenton p.p. vegetation (3270), in Ireland*. Unpublished report to NPWS
- Goodwillie, R.N. (1992). *Turloughs over 10ha - Vegetation survey and evaluation*. Unpublished report to NPWS