APPENDIX No. 5

A Survey of Shingle Vegetation at Renmore, Co Galway
September 2017

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1. Introduction to shingle bank vegetation at Renmore

A small area (c. 0.50 hectares) of shingle bank habitat occurs at Renmore, Co. Galway (Grid ref. M 3104 2482). This vegetation is an example of the EU Annex Habitat "Perennial vegetation of stony banks" (1220) and lies within the Galway Bay Complex Special Area of Conservation (Site No. 000268). During August 2017 a survey of the vegetation composition and condition was undertaken. The primary purpose of this survey was to describe the habitat present in terms of vegetation composition and structure and to make comments/recommendations regarding the future conservation of the habitat.

The small area of shingle habitat at Renmore lies north of a small sandy beach (Photograph 1). The front of this shingle bank is currently covered by sand which has been deposited during recent storms. In January of 2014 a significant storm event completely overtopped the shingle bank and washed away much of the vegetation leaving the area dominated by bare shingle. The vegetation which now occurs has developed since that storm event.

Photograph 1. General view of the vegetated shingle area at Renmore.

Photograph 2. The blue flowered alien plant species *Lactuca tatarica* is frequent in shingle habitat at Renmore.

2.1 Vegetation composition

Shingle vegetation at Renmore was surveyed on the 9th of August 2017. A number of quadrats were recorded and these may be used as monitoring points or stops which can be used to monitor the composition and condition of the vegetation in the future.

The shingle habitat at Renmore supports quite a species-rich vegetation which is generally characterised by tall vegetation dominated by sea radish (*Raphanus maritimus*) with few areas of open pebbles visible. Over most of the area this species reaches a height in excess of 1 metre. Behind the zone of sea radish-dominated vegetation the vegetated shingle is dominated by the robust grass false oat-grass (*Arrhenatherum elatius*). Other frequent species in the vegetation generally include dandelion (*Taraxacum officinale*), ribwort plantain *(Plantago lanceolata*), red fescue (*Festuca rubra*), bramble (*Rubus fruticosus*), ragwort (*Senecio jacobea*) and couch grass (*Elytriga repens*). The vegetation associated with shingle habitat is outlined in the following Tables 1 and 2.

During the survey three non-native alien plant species were noted namely blue lettuce (*Lactuca tatarica*), narrow-leaved ragwort (*Senecio inaequidens*) and potato (*Solanum tuberosum*). These species are well established in the shingle vegetation with blue lettuce locally frequent (Photograph 2). The near threatened species henbane (*Hyoscyamus niger*) has previously been noted growing at this location in the early 2000's (personal observation) however the species was not seen during this survey. This species is known to have a very capricious occurrence and it is possible that natural factors such storm events and associated erosion may be responsible for its current absence.

Table 1. Species list for perennial vegetation of stony banks habitat at Renmore.

Achillea millefolium	*Lotus corniculatus*
Agrostis stolonifera	*Medicago lupulina*
Angelica sylvestris	*Plantago lanceolata*
Anthriscus sylvestris	*Potentilla anserina*
Anthyllis vulneraria	*Prunella vulgaris*
Arrhenatherum elatius	*Ranunculus repens*
Aster tripolium	*Raphanus maritimus*
Atriplex sp.	*Rubus fruticosus*
Beta vulgaris ssp. *maritima*	*Rumex crispus*
Centaurea nigra	*Salix cinerea oleifolia*
Crepis capillaris	*Senecio inaequidens*
Dactylis glomerata	*Senecio jacobea*
Elytrigia repens	*Silene uniflora*
Festuca rubra	*Solanum dulcamara*
Fraxinus excelsior	*Solanum tuberosum*
Galium aparine	*Sonchus arvensis*
Holcus lanatus	*Stachys palustris*
Lactuca tatarica	*Taraxacum officinale*
Leontodon autumnalis	*Trifolium repens*
Lolium perenne	*Tripleurospermum maritimum*
	Urtica dioica

Table 2. Shingle vegetation quadrats at Renmore.

Code	R1	R2	R3	R4	R5	R6	R7	R8
Quadrat size	2x2	2x2	2x2	2x2	2x2	2x2	2x2	2x2
Easting	M30971	M30982	M31010	M31031	M31062	M31089	M31080	M31068
Northing	24839	24838	24827	24823	24808	24792	24810	24834
Veg Ht. (cm)	130	10 to 20	130	120	30 to 70	5 to15	10 to 30	10 to 15
Veg cover (%)	99	99	95	98	98	60	50	70
Bare ground (%)	1	1	5	2	2	50	50	40
Shrub (%)	0	0	3	15	5	15	1	0
Herb (%)	99	99	95	85	90	50	50	70
Bryophyte (%)	0	0	0	0	0	0	0	0
Raphanus maritimus	70		70	60	50	5	2	
Arrhenatherum elatius	3	8		10	15		3	5
Taraxacum officinale	5	15	8	10	5	15	15	3
Plantago lanceolata		10	35	25	2	1	10	15
Senecio jacobea	2	5	1			3	2	2
Festuca rubra		15	3	10		3		5
Agrostis stolonifera	5	3			5			3
Rubus fruticosus			3	15	5	15	1	
Trifolium repens		40		5			3	
Elytrigia repens	30	3		8	40			
Potentilla anserina	2						1	1
Medicago lupulina		5					15	10
Tripleurospermum marit			1				3	35
Achillea millefolium			1		1	2	15	
Ranunculus repens	5					20		
Galium aparine					1			1
Leontodon autumnalis				1		3		3
Sonchus arvensis		3			3			
Stachys palustris	1							
Lactuca tatarica		5						
Lotus corniculatus			5					
Rumex crispus				1				
Atriplex sp.					1			

Solanum tuberosum					1			
Anthyllis vulneraria						5	1	
Crepis capillaris						2		
Lolium perenne							2	
Prunella vulgaris							1	
Hypochoeris radicata								1

2.2 Assessment of habitat

The condition of the stony bank habitat is assessed in accordance with the criteria outlined in Martin *et al*. (2017). Table 3 presents the results which are based on the monitoring stops/quadrats outlined above. The stony bank habitat at Renmore shows two fails when marked on the various habitat assessment criteria. This suggests that the area of the habitat is in Unfavourable-Inadequate conservation condition. The main reasons for these fails is the relatively high occurrence and cover of negative indicator plant species and non-native species. Of particular note is the high cover of the alien plant species *Lactuca tatarica* which is locally sub-dominant in parts of the shingle bank.

In table 3 all of the columns are ascribable to the Fossitt habitat Shingle and gravel banks (CB1).

Table 3. Shingle habitat assessment at Renmore.

Survey and assessment of vegetated shingle 2017

1220 Perennial vegetation of stony banks

Monitoring stop data	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Shingle habitat																
List Fossitt code for 1220 community	✓	✓	✓	✓	✓	✓	✓	✓								
2. Native species (list species present)	Record presence/absence of vascular plant species															
3. Notable species	Record % cover															
Crambe maritima																
Glaucium flavum																
Lathyrus japonicus																
Matteuccia maritima																
Other:																
4. Negative indicator species	Record % cover															
Cirsium arvense																
Cirsium vulgare																
Lolium perenne							2									
Pteridium aquilinum																
Senecio jacobaea	2	5	1			3	2	2								
Urtica dioica																
Other:																
5. Non-native species (Domin)	Record % cover															
Centranthus ruber																
Other: LACTUCA TATARICA		4														
SOLANUM TUBEROSUM					1											

Notes:
1. Calculate % of habitat by averaging % cover scores for stops

2. No failures = Favourable, 1-2 failures = Unfavourable - Inadequate, 3+ failures = Unfavourable - Bad

Habitat assessment criteria	Required to pass	Result (pass/fail)
1. Shingle habitat	No evidence of decline in 1220 community diversity over time. Ideally both pioneer and mature/stable 1220 communities (eg. grassland on shingle) are	Pass
2. Native plant species	No evidence of a decline over time in the diversity of typical species within 1220 communities present. Consider additional typical species observed outside	Pass
3. Notable species	No evidence of decline in number of individuals over time. Individuals both within and outside stops should be counted	N/A
4. Negative indicator species		
a)	No species present in more than 80% of stops Senecio jacobea in 75%	Fail
b)	Combined cover in any individual stop 25% or less Yes, cover <25%	
5. Non-native species		
a)	No species present in more than 20% of stops	Fail
b)	Combined cover in any individual stop 1% or less	
c)	Cover across whole site[1] 1% or less. At a site level if a non-native species has been under recorded, or not recorded, via the stops the % cover for the species across the site should be recorded and assessed	
6. Coastal defences		
a)	None built pre-designation which currently affect the habitat due to modification of the shingle habitat or changes to the sediment cycle at the site. Stabilising features such as groyne made could be included (presence/absence)	Pass
b)	Post-designation anthropogenic impacts on the substrate/mobility of the system (eg. new stabilisation works, sediment extraction) (presence/absence)	
7. Disturbance	No more than 20% of 1220 habitat affected by disturbance (eg. heavy trampling, vehicle damage, removal of substrate)	Pass
	No. of criteria failed	2
	Habitat assessment[2]	

General observations

3. Habitat management

Areas of coastal shingle habitat in Ireland are vulnerable to a range of threats including shingle extraction, catastrophic storm damage, agricultural reclamation, overgrazing and trampling by livestock (Martin *et al*. 2017). These damaging operations can, over time, have a detrimental effect on the composition and quality of the habitat. Obvious threats such as the removal of shingle and the trafficking of machinery should be stopped as they can result in damage to the shingle bank structure and lead to losses of characteristic shingle vegetation.

At present there is little evidence of disturbance, such as grazing, trampling and shingle extraction, taking place on the area shingle habitat at Renmore. It is likely that the action of high tides and storms is the only form of disturbance taking place at present. From a habitat disturbance point of view there are few damaging operations taking place at Renmore however there is a relatively high presence/cover of non-native/negative indicator plant species. Future management of this site should investigate the possibility of the removal/reduction in cover of non-native plant species and also native shrub species such as *Rubus fruticosus* and *Salix cinerea*. As this area lies within an SAC the permission and advice of the National Parks and Wildlife should be sought prior to the start of any such work. If permission is given to construct the new Galway Port facility in the future the monitoring of vegetation composition within the stony bank area should be continued in order to assess the effect of the lower incidence of future wave action/storm events on the stony bank habitat.

Reference

Martin, J.R., Daly, O.H. and Devaney F.M. (2017). Survey and assessment of vegetated shingle and associated habitats at 30 coastal sites in Ireland. *Irish Wildlife Manuals*, No. 98. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Ireland.