British Isles Flowering Plant Resource

Steven L Byrd

Invasive species pose a challenge to land managers

An abandoned factory overgrow with kudzu in Saga prefecture, Japan

The protection of threatened species is a challenge faced by conservationists

The mission blue butterfly is threatened by lack of suitable habitat.

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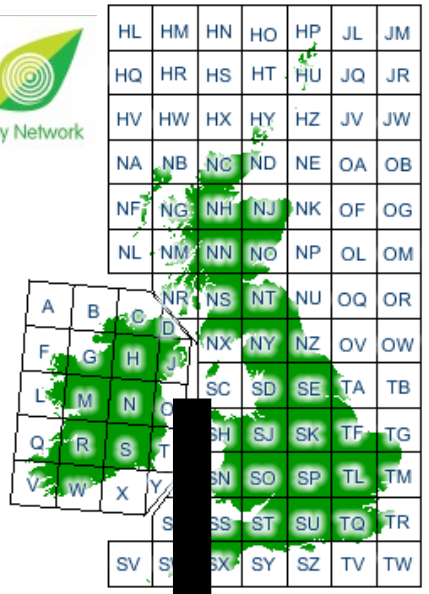
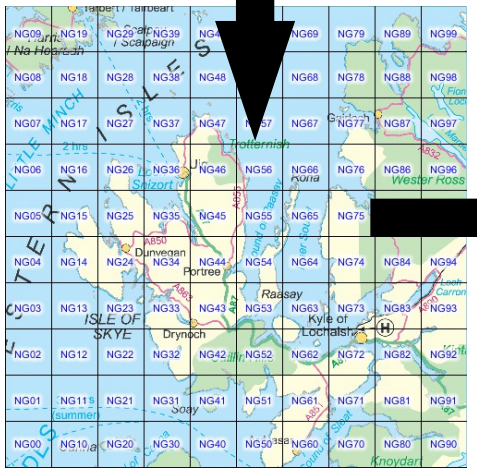
challenge faced by co

- Collected and processed species data from National Biodiversity Network
- Species location data has been collected for hundreds of years





10200 Sites

Species Lists

~7300 Taxa

	Species 1	Species 2	Species 3	Species 4
Site 1	0	0.33	0.2	0.166
Site 2	0.25	0	0.4	0.33
Site 3	0	0.66	0	0
Site 4	0	1	0	0
Site 5	0.5	0	0.2	0.5
Site 6	0	0	0.4	0
Site 7	0.75	0	0	0
Site 8	0	0.66	0.6	0.166
Site 9	0.25	0	0	0
Site 10	0	0.33	0	0

Survey proprtional data

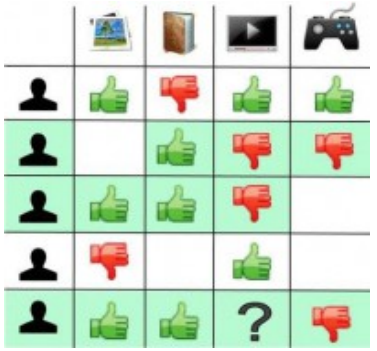
	Species 1	Species 2	Species 3	Species 4
Site 1	0	1	1	1
Site 2	1	0	1	1
Site 3	0	1	0	0
Site 4	0	1	0	0
Site 5	1	0	1	1
Site 6	0	0	0	0
Site 7	1	0	0	0
Site 8	0	1	1	1
Site 9	1	0	0	0
Site 10	0	1	0	0

Binary data

Used a non-negative matrix factorization for collaborative filtering to build invasive species recommender and endangered species location recommender.

- Used survey proportional data for invasive recommender
- Used binary data for endangered taxa site recommender

Invasive Recommender



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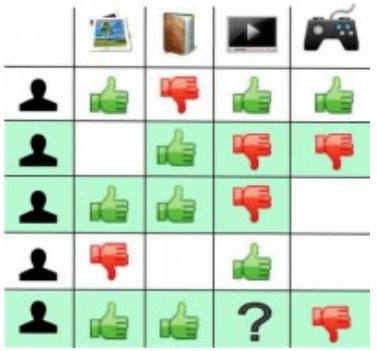
Survey proprtional data

Endangered Species Recommender



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Site 9	1	0	0	0
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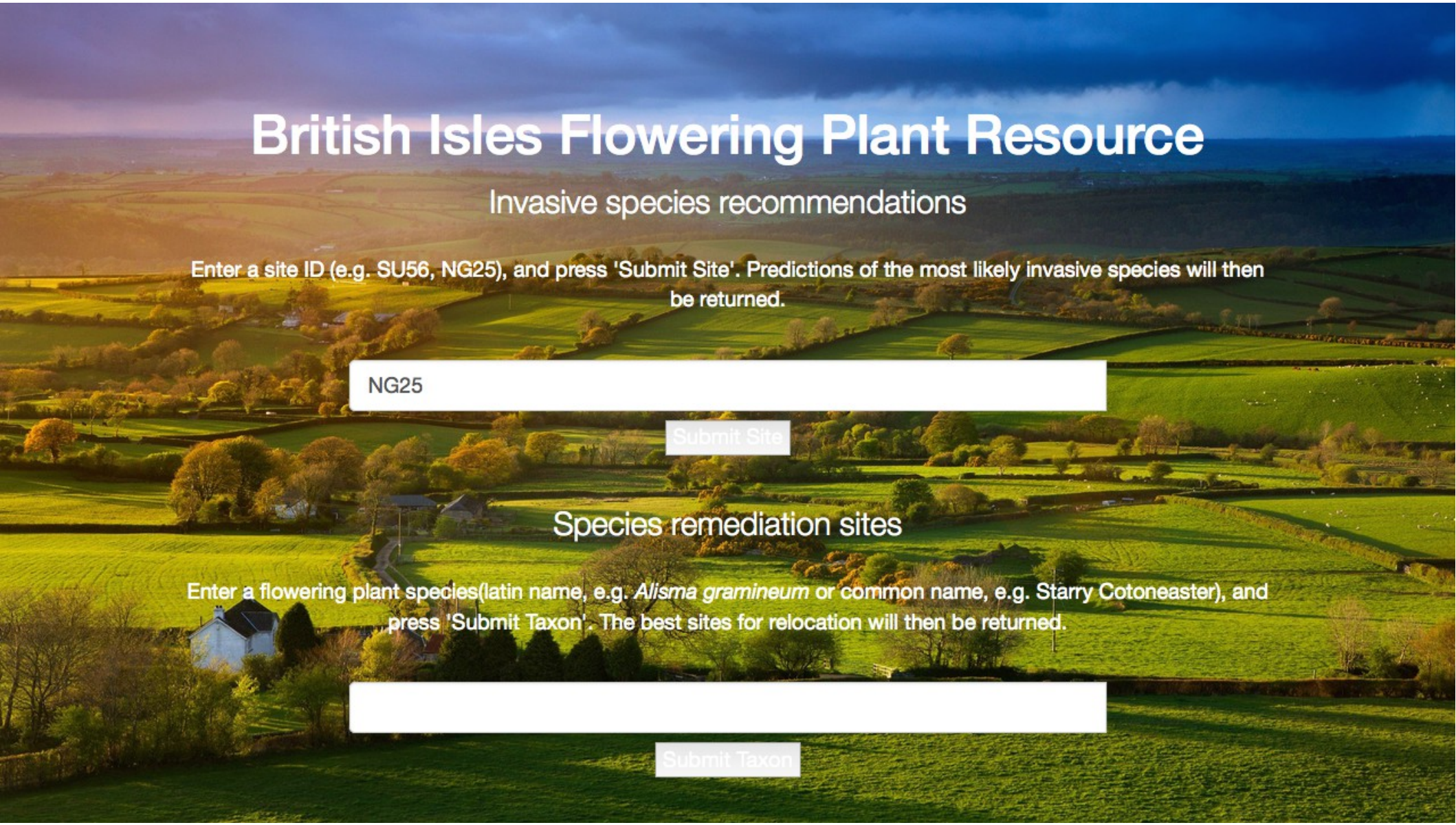
Binary data

NG25, a region on the Isle of Skye...



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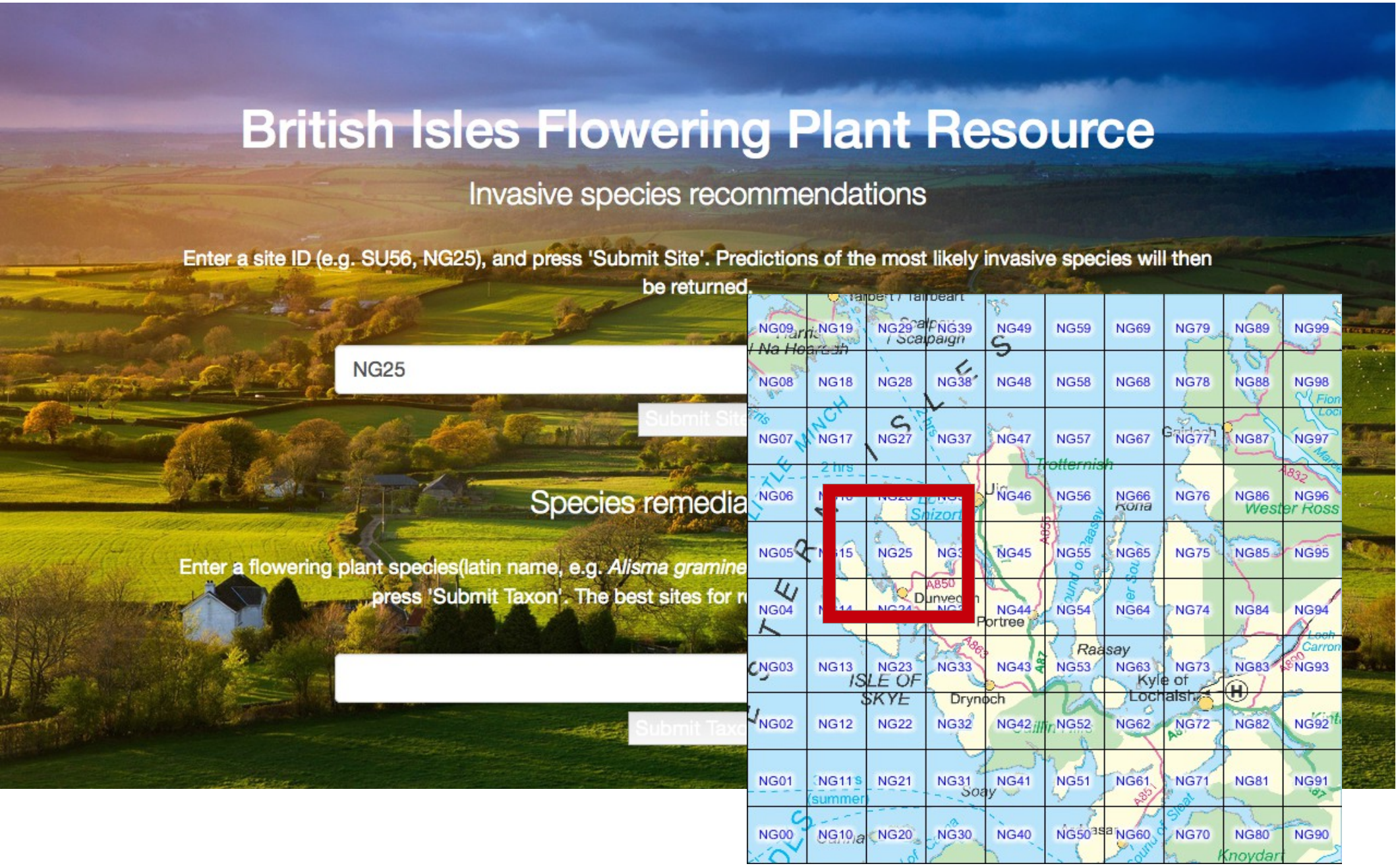

Taxa	Rank	Site	Region	Score	Flags
Epilobium hirsutum	1	NG25	Isle of Skye	0.403078147384	
Ilex aquifolium	2	NG25	Isle of Skye	0.365398504946	
Quercus robur	3	NG25	Isle of Skye	0.346966901037	
Glechoma hederacea	4	NG25	Isle of Skye	0.337929093453	
Solanum dulcamara	5	NG25	Isle of Skye	0.325368070218	
Mercurialis perennis	6	NG25	Isle of Skye	0.323281043383	
Potentilla reptans	7	NG25	Isle of Skye	0.319242471072	
Juncus inflexus	8	NG25	Isle of Skye	0.316694476816	
Senecio vulgaris	9	NG25	Isle of Skye	0.312832796189	
Capsella bursa-pastoris	10	NG25	Isle of Skye	0.301810109231	
Apium nodiflorum	11	NG25	Isle of Skye	0.296988197777	
Arum maculatum	12	NG25	Isle of Skye	0.295128488156	
Impatiens glandulifera	13	NG25	Isle of Skye	0.291471400472	invasive

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Next Steps

- Introduce broader dataset, at a finer resolution (2x2 km instead of 10x10km)
- Get access to restricted data about protected species to improve predictions about them
- Test predictions on the ground

Thank you

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