Mapping alien plant species in urban areas: an example of open green spaces in Reykjavik, Iceland

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INTRODUCTION

Invasive species threaten urban biodiversity and cities can become hubs for alien species invasions, therefore highlighting the need to monitor their dispersal and ecological impact. Cow parsley (Skógarkerfill = Anthriscus sylvestris) and sweet cicely (Spánarkerfill = Myrrhis odorata) are alien plants spreading in Iceland and becoming a concern in urban areas, but their distribution in Reykjavik has not been mapped before. This study aimed to map the total distribution of cow parsley and sweet cicely in open green spaces of Reykjavik in 2017-2019.

OBJECTIVES

Recording distribution patterns

Identifying areas with high abundance

Assessing overlap of both plants

Increased risk of losing native plant species in those areas

METHODS

GPS locations of surveyed plants were recorded with AllTrailsPro and ArcGIS mobile applications on site. Polygon shapes were drawn on sites to indicate the distribution and extent of cow parsley and sweet cicely.

RESULTS

Overall, cow parsley covered 139,5 ha and sweet cicely 5,4 ha. A total of 2025 cow parsley communities were identified, varying in size from <1 m2 land cover (1-3 plants) to a very large 12,9 ha sized community with thick density of the plant species (Figure 1 and 2). Cow parsley was most abundant near pathways, riversides, lakes, and streams. Sweet cicely was less prevalent, with 212 records, and covering ≤1 ha in all study areas and with the largest distribution in Laugarnes. Cow parsley and sweet cicely rarely overlapped except in Vatnsmýri and Rauðavatn (Figure 3 and 4).

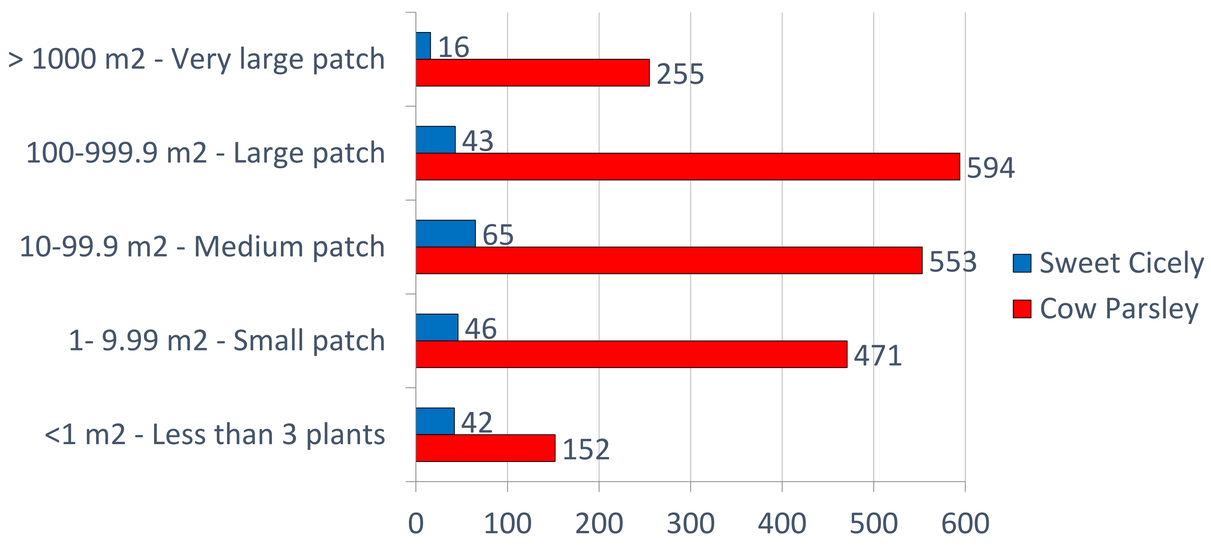

Figure 1. Frequency of patch size for cow parsley and sweet cicely. The number of patches (x axis) for each size category (y axis) are shown.

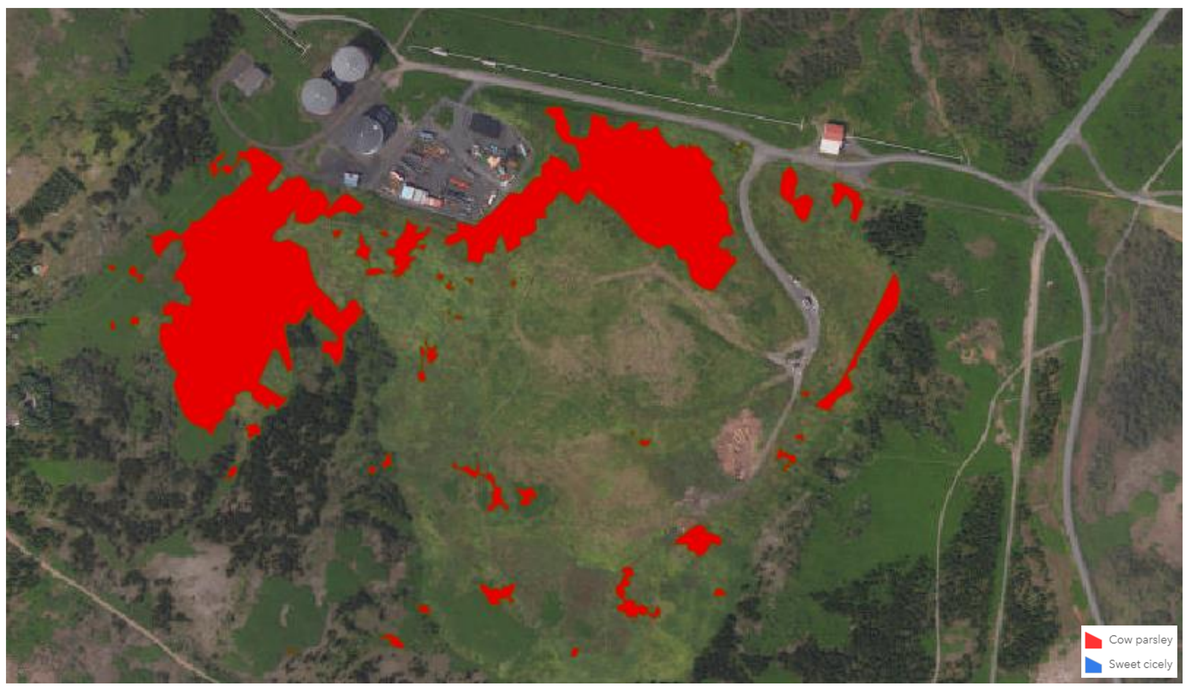

Figure 2. Two largest Cow parsley patches are located in Reynisvatnsheiði (12,9 ha and 9,1 ha).

Figure 3. Cow parsley and sweet cicely patches up to 1.3 ha in size by Rauðavatn.

Figure 4. Cow parsley and sweet cicely growing by Rauðavatn (2019).

Figure 5. Cow parsley growing by the river Elliðaár (2018).

IMPORTANCE OF RESEARCH

Cow parsley is a growing concern as an invasive alien species in Iceland, as it can drastically change landscapes and has proven to be very hard to eradicate (1,2,3). Cow parsley is becoming a prevalent plant species in green spaces in Reykjavík and is a serious concern in the wildlife nature reserve of Vatnsmýri and the popular outdoor area of Elliðaárdalur (Figure 5). Although sweet cicely is less abundant, it should be managed to control its distribution in the city. Lack of control measures enables the spread of both plants and affects plant diversity. The importance of this research lies in generating much needed information on the distribution and impact of cow parsley and sweet cicely in Reykjavík. Additionally, it provides baseline data to monitor future changes in distribution and species composition.

PROJECT FUNDING

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Department of Environment and Planning Reykjavík (2018 & 2019)

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Figures 2 and 3: Basemap: LUKR Loftmynd 27.7.2020.

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