

Vegetation as an indicator of long-term water levels of four drained wetland sites

Ölvir Styrmisson¹, Ágústa Helgadóttir¹, Jóhann Thorarensen¹ & Sunna Áskelsdóttir¹
1: The Soil Conservation Service of Iceland (SCSI)

Context

Wetlands in Iceland have suffered extensive drainage¹. This e.g. alters their vegetation composition, often over decades². As a result, vegetation condition could be used to evaluate the extent of drainage, which affects other wetland functions. Here we examine relationship of vegetation and the water level at 4 sites (figure 1), at least ca 35-50 years since drainage.

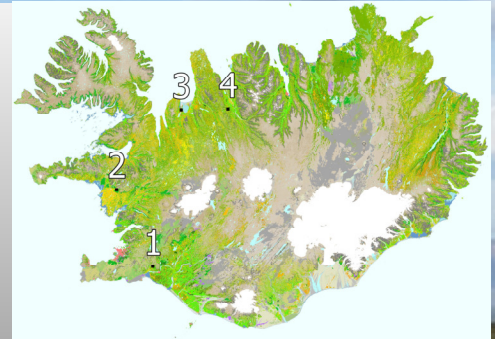


Figure 1: The locations of the four sampling sites within Iceland, 1: Sogn, 2: Ytri-Hraundalur, 3: Ásbjarnarnes and 4: Brekka

Methods

The post-drainage water level was measured at four-week intervals, spring-autumn, 2017 to 2019 and the vegetation of the area was mapped and measured. Vegetation type (gróðurlendi) and weighted mean Wetland Indicator Status (mWIS) were then regressed on plots mean yearly water levels in shifted log-linear models.

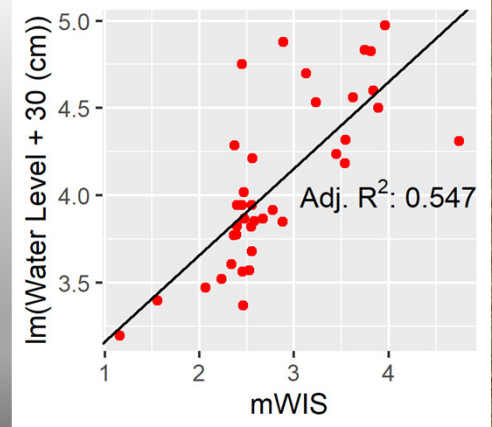


Figure 2: Log-linear model of drained wetlands water level based on the Wetland indicator Status.

Results and discussion

We observe a good fit between mWIS and the water level (figure 2), which support prior results³⁻⁴, that mWIS is applicable in Iceland. The vegetation type explained less of the variation (adj. R²: 39.3). The current vegetation of the sites appears to reflect drained conditions. This may commonly be replicable, as intensive drainage occurred in Iceland between 1942 and 1993¹, 28-79 years ago.

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Sources.

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