Kettleholes as habitat islands and their role in facilitating primary succession on an outwash plain

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Powerful jökulhlaups continue to change the surface of the vast plain of Skeiðarársandur. These flood events break ice blocks from Skeiðarárjökull's margin and deposit them onto the sandur at varying distances from the glacier. These ice blocks are often buried by sediments, delaying their melting by months or even years. When the ice melts, the upper sediment layer collapses, creating a kettlehole (*jökulker*): a steep, usually circular depression in an otherwise level surface.

Kettleholes provide some of the only topographic variation on Skeiðarársandur, likely creating a distinct small-scale habitat. They may function as seed traps or as seed sources. In addition, environmental conditions inside of the hole may differ from the rest of the sandur plain: less wind and abrasive sand, higher levels of soil moisture and a different temperature regime.

In summer of 2005, a project investigating the kettleholes of Skeiðarársandur was launched. The aim of the project is to understand the potential facilitative role the holes may play for vascular plant establishment and succession at three different scales. First, within the hole we ask whether there are discernable patterns in the arrangement of plants to suggest the influence of small-scale environmental gradients. Second, we ask if there are differences between the abundance and cover of vascular plant species inside and outside of the kettleholes, indicating conditions inside the hole are better suited for plant establishment. Finally, at the scale of the entire sand plain we investigate whether kettleholes serve as "biogeographical islands" on the sandur plain, functioning as seed traps or sources and helping species to disperse over the plain.

This poster introduces the theoretical foundations of the kettlehole project and the hypotheses the project will test.