



Stockholm University
C/O Prof. Dr. Wolf Geppert
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Reykjavík 15. June 2018
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09.05.01.

Subject: Research permit - Hveravellir, Krýsuvík and Kerlingarfjöll

The Environment Agency received an application from prof. Dr. Wolf Geppert, on behalf of Stockholm University, dated 4th of June 2018, for a permit to collect research samples in Krýsuvík, Hveravellir and Kerlingarfjöll, from the 27th June until the 2nd of July 2018.

Hveravellir was protected as a natural monument on the 25th of April 1975, cf. regulation no. 217/1975. According to the terms of protection it is prohibited to disturb the hot springs, brake their bowls or throw things into them. All disturbance is subject to a permit from the Environment Agency of Iceland.

Krýsuvík is located within the Reykjanes country park which was protected on the 1st of December 1975, cf. regulation no. 520/1975. According to the terms of protection disturbance to geological formations in the protected area is prohibited without permission from the Environment Agency of Iceland. That also includes sampling for scientific research.

Kerlingarfjöll are listed on the Nature Conservation Register.

Silica sinter deposit is subject to a special protection by Act. No. 60/2013 on nature conserve.

Description of the project:

The project applied for is for geochemical and geological studies in Icelandic hot springs. The composition of the geothermal facies at the rock-water interface will be investigated in order to understand the degree and kind of alteration of rocks through reactions with geothermal water.

Possible disturbances to flora and fauna and geological features will be kept to an absolute minimum. No off-road driving will be done. It might be necessary to deviate from marked trails for short stretches to reach hot springs. Geological samples will be collected from along the edges of inactive or active hot springs near the high-temperature ends of such systems with a small chisel. Fractured sample pieces will be collected with a sampling arm fitted with a small basket to collect material that breaks away from the surface of the hot spring rock. Effort and care will be taken to minimize the impact of such sampling as to not to disturb the natural beauty of the hot springs sampled yet maintain the sample orientation relative to its growth position along the edge of hot spring pools. Water samples will be taken with a vessel on a stick. Photographs of the sampling areas prior to and after sampling will be archived to document the impact of sampling on the collection sites. When possible, rock sampling will be done beneath the surface of near-boiling hot spring fluids in quiescent pools to minimize the visual impact of sample collection on the

sites. No chemicals will be taken to or used in the protected areas apart from small amounts of alcohol to disinfect the sampling equipment. No motorised equipment will be used in the field. Three people will be working on location.

The following number of samples will be taken on the following sites:

Hveravellir: 20 small rock pieces of samples (maximally 5x5x5 cm³) from hot temperature facies and low temperature facies. 20 samples of 50 ml water from hot springs.

Kerlingarfjöll: 10 small rock pieces of samples (maximally 5x5x5 cm³) from hot temperature facies and low temperature facies. 10 samples of 50 ml water from hot springs.

Krýsuvík: 10 small rock pieces of samples (maximally 5x5x5 cm³) from hot temperature facies and low temperature facies. 10 samples of 50 ml water from hot springs.

At each site there will be immersed some glass slides into the springs that will be stored in falcon tubes to understand the solid particles (supposed to be silica) dispersed in liquid. No glass slides will be left in the springs. pH values and temperatures of hot spring water will be measured. As mentioned, no microbial studies are planned.

Impact assessment:

The Environment Agency of Iceland considers the project not likely to have negative impact on the areas if samples size and number will be kept at minimum and collected where the laceration is not visible to other guests in the areas.

Conclusions and conditions:

The Environment Agency of Iceland hereby grants a research permit on its behalf on following conditions:

- Keep the signed permit letter with you at location during the research.
- If the dates of the project change the Environment Agency shall be notified, with at least 5 days notice, if possible, when the project starts. Otherwise as soon as possible.
- The Environment Agency requests that the ranger will be contacted before starting the project and inform him on your intentions with at least 24 hours' notice.
- The permit is valid for the period 27. June - 2. July 2018.
- The sample collection shall be done in consultation with a ranger and the crew members shall follow the ranger's instructions.
- This permit is only valid for sample collection according to the application.
- This permit is only valid for research purposes. It does not include permit to utilize the samples for commercial purposes. The samples cannot be signed over to third party for commercial use.
- Every measure should be taken to avoid damage to the sites and unnecessary disturbance while collecting the samples.
- All participants in the project must wear high-visibility clothing during field work, labelled with the identity of the researcher or the research institute.
- Crew members should always stay on authorized paths as much as possible.
- Fauna, geological formations and landscape should not be disturbed.
- All disturbance to animals and wildlife is prohibited.
- Off-road driving in Iceland is strictly prohibited.
- The Environment Agency should be informed if there will be any changes to the project description.

- The project's staff is required to prevent all disturbance to the environment and make sure that all litter is removed from the sites.
- A sign saying that a permission for the project has been obtained from the Environment Agency should be put up.
- The permit conditions should be introduced to the staff before the work begins.
- All traces of the work must be removed carefully off the site by the end of the work/project.
- If any complications occur during the project, please contact the ranger or the Environment Agency of Iceland, tel. +354 591 2000.

According to art. 88 in act no. 60/2013 on nature conservation the ranger has the authority to stop the project if the project is likely to cause damage to the area.

A permission from the municipality might be required for the research in Kerlingarfjöll.
A permission from the municipality might be required for the research in Krýsuvík.
A permission for any researches within geothermal areas in Iceland can be subject to permission from the National Energy Authorisation (www.os.is).
If you wish to export samples from Iceland a special permit is needed from the Icelandic Institute of Natural History (www.ni.is).

Request:

The Environment Agency of Iceland wishes to be secured, free of charge, a copy of all reports and scientific articles that results from the research project.

Permission fee:

The Environment Agency of Iceland charges a fee for processing applications for permits in protected areas on the basis of Article 92 of Act no. 61/2013 on Nature Conservation. The fee is 39.400 ISK according to art. 24. b. in the agency's tariff no. 535/2015.

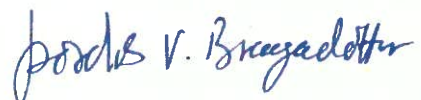
Supervision:

The Environment Agency will supervise the project. The supervisor will be a ranger from the Environment Agency.

Sincerely



Sigrún Ágústsdóttir
Director



Þórdís Vilhelmína Bragadóttir
Advisor

