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Subject: permit to conduct research at Mývatn and Laxá and Skútustaðargígar

The Environment Agency of Iceland has received an application from Dr. Sebastiaan de Vet at the Faculty of Aerospace Engineering Dept. Space Engineering, Section Planetary Exploration, dated May 30th, 2022, with a changed description of the project dated July 6th 2022 for permit to conduct research within the protected area Mývatn and Laxá and Skútustaðargígar.

Mývatn and Laxá area is protected according to act no. 97/2004. Permission from the Environment Agency of Iceland is needed for construction work and all activity that can affect wildlife, geological formations, vegetation, and landscape in the area. Permit is needed from the Environment Agency to conducting observations, monitoring, or research on the nature of the protected area, such as sampling for research, collection of natural treasures, bird photography from hiding places, filming, bird marking, as well as other similar observations.

Skútustaðargígar is protected as a natural monument, cf. regulation no. 399/1973. Disturbance to geological formations is prohibited.

Description of the project:

The research will take place at Helgey within Mývatn and Laxá protected area, Aðaldal and Þrengslaborgir-Lúdentdsborgir craters in the period July 5th- 11th 2022. Map showing locations of the research areas was attached to the application. Number of employees for the project is 2 persons. The aim of this project is to identify geomorphological and morphometric characteristics of Icelandic rootless cones in order to infer the formation conditions and palaeo-environmental significance of rootless cones on the planet Mars. The research will be conducted mainly through drone-assisted photogrammetry and visual examination of the craters. Images will be taken of materials at various places at Skútustaðargígar and Helgey to document soil and image the granulometry of the surface, and make some field observations of the vegetation cover and tephra properties. Small drone will be used to take a few high-res images of the craters for future visit.

Review:

In accordance to art. 17. in regulation 665/2012 the Environment Agency of Iceland requested a review from the Icelandic Institute of Natural History and the Lake Mývatn Research station

on June 28th 2022. The review from Icelandic Institute of Natural History was received on June 29th 2022. In their review they say it is unwise to grant a permit for drone flights within the protected area during the breeding season for birds, which is still in progress at the beginning of July. It is well known that drone flying disturbs birds and in areas where the density of birds in the nest is very high, such as within the protected area of Mývatn and Laxá, and there is a significant risk in allowing drone flying in the area. Although individuals are trusted to exercise caution, it is better to have clear general rules governing drone flying in the area, thus preventing accidents and undesirable disruptions. The drone flight is for research purposes and no comments are made that drone flights are allowed at Þrengslaborgir-Lúdentsborgir, but at Skútustaðagígar and especially at Helgey there is a risk that bird life will be disturbed. It is proposed that applicants be asked to postpone the drone flight until late August or September. The review from the Lake Mývatn Research station was received on July 7th, 2022. In their review they consider neither Skútustaðagígar nor Helgey areas with dense bird nesting or particularly sensitive to drone flights of the type described in the application (surveying flights at the end of the breeding season with small drones at some altitude). The research station emphasize that the applicant should not fly over Helgey except in consultation with landowners but there is a considerable dense duck nesting area at Geirastaðabær, which is close to Helgey. If landowner advises against drone flight in Helgey, this should of course be considered.

Impact assessment:

The Environment Agency of Iceland considers the project not likely to have negative impact on the area since Skútustaðagígar and Helgey are not considered areas with high density of birds nesting but close to it there are areas with high density, therefore it's important that the crew will contact the landowners or the ranger to have detailed information regarding where to fly the drone without disturbance.

Conclusions and conditions:

The Environment Agency of Iceland hereby grants Dr. Sebastiaan de Vet at the Faculty of Aerospace Engineering Dept. Space Engineering, Section Planetary Exploration permission on its behalf to conduct research within Mývatn og Laxá area and Skútustaðagígar as described above on July 8th- 11th 2022 on the following conditions:

- Contact the landowners before conducting the drone.
- Keep this letter with you on site during the project. The permit conditions should be introduced to the staff of the project before work begins.
- The applicant shall inform rangers in the area about their arrival and departure. This is to be done 24 hours before entering the area and again before leaving it.
- If the project dates or description changes the Environment Agency shall be notified as soon as possible.
- When it is necessary to go off-path, extra care must be taken not to cause damage to terrain, including vegetation, soil, and geological formation. All traces of activity must be removed afterwards.
- The crew must follow rules of conduct that apply to the area.
- If any complications occur during the project, please contact the ranger or the Environment Agency of Iceland, tel. +354 591 2000.
- The crew should be conscious of other guests on the sites and make sure that the droneflight causes as little disturbance as possible to other visitors. If the material is

meant for public viewing it must be noted in the video/subtext that permission from the Environment Agency was obtained for the droneflight.

- All disturbance to animals and wildlife is strictly prohibited.
- Off-road driving in Iceland is strictly prohibited.
- The project's staff is required to prevent all disturbance to the environment and make sure that all litter is removed from the sites.
- The 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.
- All participants in the project must wear high-visibility clothing during field work, labelled with the identity of the researcher or the research institute.
- Drone flight takes place under the supervision of rangers and under directions from them and/or landowner.
- The drone shall take off in safe distance from area which birds are staying.
- Minimum flight altitude over the Helgey and Skútustaðargígar should be 100 meters.
- An unmanned aircraft should never be flown in close proximity to people. Please take precaution not to disturb people's experience, their safety or personal privacy nor the general peace of the protected areas being filmed.
- According to Icelandic law it is forbidden to fly close to cliffs where birds nest. An unmanned aircraft should never be flown near animals or birds, neither in nesting areas nor during nesting season or any other seasonal time when animals or bird habitats are considered vulnerable.
- Flight time should be kept to a minimum and flight should be avoided during the area's busiest times of the day.
- If the use of unmanned aircraft causes disturbance to wildlife in the area, its use should be ceased at once.
- The conductor of the unmanned aircraft is responsible for the aircraft within the protected area. This includes taking responsibility of any possible risk of harm to people, fauna and nature and leaving no permanent marks on the site in question. Should the aircraft crash, all components from it must be collected and removed from the area.
- For safety reasons, the pilot of an unmanned aerial vehicle must wear marked clothing so that the person can be identified.

If the applicant causes damage to nature, according to art. 87 in the Nature Conservation Act no. 60/2013, the Environment Agency of Iceland can, according to the Nature Conservation Act, f.e. order the licensee to fix damage to nature and vegetation and/or stop the project.

The Environment Agency of Iceland can according to art. 89 in the Nature Conservation Act no. 60/2013 change conditions of the permit, add new conditions or withdraw the permit in order to prevent damage to nature if environmental conditions change.

According to art 89. in the Nature Conservation Act no. 60/2013 the Environment Agency can withdraw the permit if conditions of the permit are not complied to.

Unmanned aircraft should take off and land in a safe distance from other visitors according to regulation 990/2017 on unmanned aircrafts.

The usage of a drone shall be according to regulation no. 990/2017 on the operation of remotely piloted aircraft (<https://www.icetra.is/aviation/drones/>).

Please note that according to the regulation all drones used for commercial flight need to be registered at the Icelandic Transport Authority.

A permission from the landowners and/or the municipality might be needed for the project.

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

Permission fee:

Environment Agency of Iceland charges a fee for processing applications for permits in protected areas based on Article 92 of Act no. 61/2013 on Nature Conservation. The fee for research 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

Ragnheiður Björk Sigurðardóttir
advisor

Þórdís Björt Sigþórsdóttir
team leader