Estimation of habitat suitability for Japanese rock ptarmigan (*Lagopus muta japonica*) of the Northern Alps and the Kubiki Mountain Range.

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The Japanese rock ptarmigan only distributes in the Northern Alps and the Southern Alps. Currently, it is classified as Endangered II in Japan. Once inhabited the Central Alps, Tateshina, Yatsugatake, Hakusan, but these populations have already been confirmed extinct. Currently, due to various problems such as habitat reduction and fragmentation by tourism development, disturbance of habitat, the increase of natural foxes and crows, environmental pollution diseases and parasites, the habitat of the rock ptarmigan is getting worse. Therefore, urgent conservative measures must be taken. In conducting conservation of rare species, detecting and visualizing areas suitable for habitat will be the basic information of conservation scenarios. In this presentation, we aim to conduct an evaluation of the suitable habitats of the rock ptarmigan. Especially, we will clarify the difference of environment suitable for the North Alps and the Kubiki Mountain Ranges.

When evaluating the relationship between the habitat of the rock ptarmigan and the surrounding environment, land cover information of the habitat is necessary. Since the available satellite data was limited this time, LANDSAT data taken in 2006 was used. Only the forest boundary was extracted from the LANDSAT data, and the covering in the forest used the vegetation map of the Ministry of the Environment. Here, a total of nine land cover classes were established. Broadleaf forests, coniferous forests, low-height grasslands, high-grade grasslands, cultivated land, bare grounds, urban areas, watersheds, and dwarf stone pine. Based on these classes, we created multiple environmental factors concerning land covering. As topographic personnel, we used 10 m - DEM, the inclination angle created from it, and the standard deviation of DEM. We finally confirmed the correlation between variables, and finally, the forest, dwarf stone pine, low height grassland, area proportion of tall grassland, inclination angle, inclination direction were taken as environmental factors. In order to evaluate the potential distribution of the rock ptarmigan, the distribution area was estimated by the maximum entropy method (MaxEnt). MaxEnt is one of the methods to estimate the distribution of animals based only on information present. In this time, the results of the survey at the Northern Alps and the survey results at the Kubiki Mountains exist. Therefore, we created a suitable habitat model using only the position information of each survey area.

The suitable habitat for the rock ptarmigan is divided into two large areas (the Northern Alps and Kubiki Mountain Ranges). These areas are the same as the areas where the geologic location survey was conducted. This result shows that the suitable habitats of the rock ptarmigan are quite limited. In addition, differences were confirmed in the habitable areas of the local populations of the Northern Alps and the local populations of the Kubiki Mountain Ranges. In the suitable land area estimation using the local population of the Kubiki Mountain Ranges, the habitat of the Northern Alps was also extracted as a suitable environment, but in the estimation of the suitable land using the local population of the Northern Alps, confirmed. From this, it was inferred that the rock ptarmigan utilizes the environment that depends on the environment specific to each area. Furthermore, from both results, in addition to the habitats of the two populations, the high habitation potential of Mt. Takatsuma was high. Mt. Takatsuma suggested that there is an environment suitable for the inhabitants of the Grouse, possibly functioning as an alternative habitat.

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