# Can we find out the natural abundance of biodiversity of the dandelion?

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**ABSTRACT**

These students decided to investigate whether biodiversity of the dandelion varied with environment type around their school. To do this they used 5 m² quadrats and recorded the position of certain types of leaves. However, they found that there was no correlation between certain types of leaves and the environment. They hope to target other inherited features in future studies.

## Introduction

There are three kinds of dandelions around our school; The Japanese Dandelion, the Dandelion, and the Rock Dandelion. Japanese Dandelions are native species, Dandelions and Rock Dandelions are naturalized species. As shown in Figure 1, we can distinguish dandelions easily by appearance.

Furthermore, it has been said that native species prefer growing in suburbs and naturalized species prefer growing in urban areas, which means that they can be used as environmental indicator species. However, we found that dandelions are not suitable as an environmental indicator species because mongrelization is advancing between native species and naturalized species.

During the fieldwork, we found that the population and form of their leaves differed greatly from place to place. This led us to hypothesize that there is a relationship between the differences of the dandelions and their environmental state. Then we started this research for the purpose of making the standard for new environment assessment by dandelions.

## Materials and Methods

1. We looked for the research area of 5 m², and divided it into 100 meshes.
2. We plotted the positions of all dandelions in the research area, and took each leaf.
3. We took photographs of their leaves and classified the type from the form of the leaves.

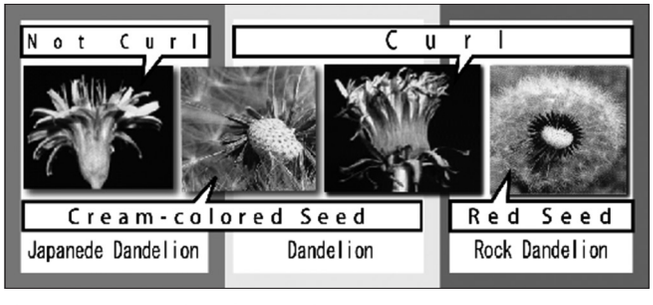


**Figure 1: The species of dandelion around the school and how to identify them**

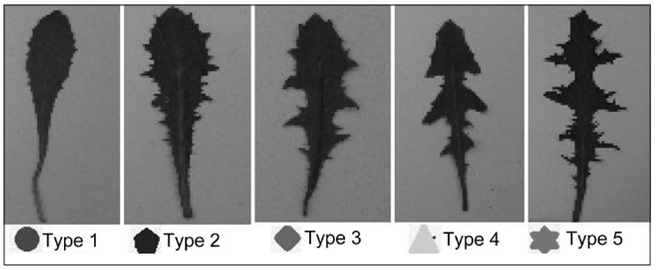


**Figure 2: The different types of dandelion leaves collected in the study and their corresponding key for the resultant plots**

4. We extracted DNA of dandelions and classified the type from differences of several areas of DNA.

## Results and Discussion

We classified the type of dandelions from the form of their leaves as shown in Figure 2. Figure 3 shows the position of each dandelion and the type of their leaves. It was expected that the same type of dandelion would be growing in the same place, but, in reality, each type was distributed widely,

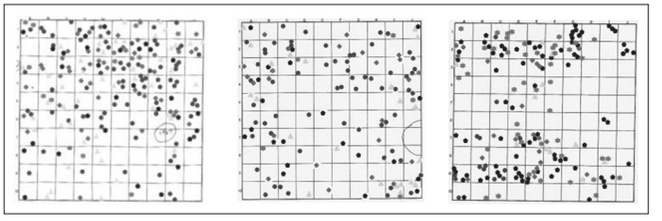

**Figure 3: The positions of the dandelions and their types of leaves**

and the frequency with which each type occupies was different depending on research areas. We think the environment of each area made that difference.

## Conclusion

Environmental conditions appear not to affect the presence of dandelion species but may affect their population density. Now we are conducting the gene analysis of dandelions. We'll classify the type by differences of several areas of their DNA, which will help us create a new standard of environmental assessment.

## About the Authors

**Masatoshi, Shunsuke, Takahiro, Masataka and Daiki** became interested in the Biodiversity of Dandelions around their school. After studying it, they decided to make a poster presentation at the St. Paul's Anglo-Japanese Conference 2012.