

## 英文要約

英文要約は、安曇野市版レッドデータブックの内容について、より多くの方に知ってもらうために、以下に示す本書の概要を英文にてまとめたものです。

[英文要約の内容]

1. 安曇野市の自然環境の特徴
2. 安曇野市の自然環境の変遷と人間活動の影響
3. 安曇野市の絶滅のおそれのある野生生物
4. 安曇野市の重要な自然環境
5. 安曇野市の注意すべき生物
6. 自然豊かな安曇野市を次世代に引き継ぐために取り組むべきこと



# **AZUMINO CITY RED DATA BOOK 2014**

## **Threatened Wildlife Species and Significant Natural Environments in Azumino City**

### **Abstract**

#### **1. Characteristics of the Natural Environments in Azumino City**

Azumino City is located in the Nagano Prefecture, which is at a central location in Honshu (the largest island in Japan) and about 200 km northwest of Tokyo. To the west of the Matsumoto Basin lies the Northern Alps (the Northern Japan Alps or the Hida Mountain Range), which is a high mountain range with geological remnants of the glacial ages. Opposite to the Matsumoto basin, there is a gentle highland called Chikuma-sanchi. Azumino City, popularly known as “Azumino,” is located on the Matsumoto basin plain. The highest point in Azumino is the peak of Mt. Otensho-dake (Daitenjyo-dake; 2,922 m), which is one of the most prominent peaks in the Northern Alps. On the other hand, the lowest region lies in the Akashina area (497 m). The altitudinal difference of the two regions is >2,400 m.

Several major rivers flow through Azumino from the Northern Alps. The Takase-gawa and Hotaka-gawa rivers merge to form the Sai-gawa River in the Akasina region, which is the lowest area in the Matsumoto basin. Since ancient times, these rivers have transported a variety of rock materials (including clays, silts, sands, and gravels) from the headwater in the mountain areas, thereby leading to the formation of alluvial fans and flood planes. Further, these have led to the development of extremely thick unconsolidated deposits. Aquifers have formed within these sedimentary deposits resulting in an area abundant with springs along the lower regions of the Matsumoto basin.

A large active fault system called the Itoigawa - Sizuoka Tectonic Line winds in a north-south direction in the Matsumoto basin; however, the exact course of this line is yet to be determined. This Tectonic Line divides the basin into two geologically distinct regions. To the west of this Tectonic Line lies the Mesozoic accretionary complex and granitic rocks, which were formed between the Late Cretaceous and the Early Paleogene periods. To the east of this line, the material present has been geologically identified as “Fossa Magna,” and Neogene strata or more recently formed strata are present.

The climatic conditions existing in the Azumino region are as follows: large diurnal and annual temperature ranges, except in the mountainous regions and low humidity throughout the year. The annual precipitation is less than that in the coastal regions; however, it is extremely high in the mountainous regions. In addition, the mountainous region in Japan has a notably strong wind zone.

The natural environments of the alpine zone in Azumino city region are rich in biodiversity, and this is attributed to the large altitudinal difference, diverse topographic features, and large rivers carrying large volumes of water. Because of these attributes, this region is inhabited by diverse wildlife.

#### **2. Evaluation of the changes in the natural environments in Azumino City, and the impact of human activity over the past century**

From the 1950s, the Japanese lifestyle changed to a great extent during the economic growth period. For example, firewood that was used as fuel was substituted with coal followed by petroleum products. Previously, readily available and naturally occurring organic fertilizers were used; however, as time passed, these organic fertilizers were replaced with large quantities of manufactured chemical fertilizers. In addition, pesticides and herbicides are also widely used. In the past, animals and plants were used as food, medicine, and decorations during local traditional events. Traditionally, the fields at the Satoyama\* foothill was a source of natural resources. However, after the 1960s, the use of the natural resources at Satoyama decreased gradually, resulting in degradation of the Satoyama foothills. Furthermore, the land underwent development, transportation networks were built, and large-scale infrastructure was constructed. Due to these significant changes in agricultural methods, life-style, and various other human activities, the natural

\* Satoyama is “village mountain”, literally. The narrow definition is semi-managed woodland surrounding rural settlements.

environment of the region has sustained significant damage, thereby resulting in a change in the regional flora. Furthermore, these changes in general have had a negative impact on the ecosystem, and several familiar wildlife species gradually became extinct.

Azumino City seeks to show the transitional changes in land use that have taken place at four different periods in time (1910, 1931, 1961, and 1994) by categorizing and logging the land use based upon a series of aerial images/maps of Azumino (see p.35). Based on these images/maps, we aim to verify how the local environment has changed to a large extent over the past century.

### 3. Threatened wildlife species in Azumino City

This Azumino Red Data Book, 2014 details the following wildlife species that have been included on the Red list:

| Classification |               | Taxonomic Groups                           |
|----------------|---------------|--|
| Plants         |               | Vascular plants                            |
| Animals        | Vertebrates   | Mammals, Birds, Reptiles, Amphibians, Fish |
|                | Invertebrates | Insects, Other invertebrates               |

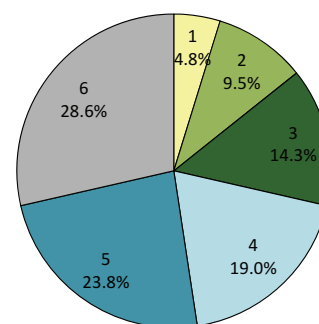
The species were categorized in accordance with the categories adopted by the Ministry of the Environment and Nagano Prefectural Government, while selecting the species to be included on the red list of Azumino City. The categories and number of listed species are recorded in the following tables:

| Red List Category                    |         | Definition   |
|--------------------------------------|---------|--|
| Extinct                              | EX      | No known species remaining in Azumino City   |
| Extinct in the Wild                  | EW      | Known only to survive in captivity or as a naturalized population outside its historic range in Azumino City |
| Critically Endangered and Endangered | CR + EN | Extremely high risk (CR) and high risk (EN) of extinction in the wild in Azumino City                        |
| Vulnerable                           | VU      | High endangerment risk in the wild in Azumino City   |
| Near Threatened                      | NT      | Likely to become endangered in the near future in Azumino City   |
| Data Deficient                       | DD      | Deficient data to carry out an extinction risk assessment in Azumino City                                    |

| Taxonomic Groups    | Red List Category |    |         |     |     |    | Total |
|---------------------|-------------------|----|---------|-----|-----|----|-------|
|                     | EX                | EW | CR + EN | VU  | NT  | DD |       |
| Plants              | 32                | 0  | 95      | 92  | 104 | 19 | 342   |
| Mammals             | 1                 | 0  | 0       | 2   | 8   | 3  | 14    |
| Birds               | 0                 | 0  | 9       | 5   | 10  | 9  | 33    |
| Reptiles            | 0                 | 0  | 0       | 0   | 0   | 2  | 2     |
| Amphibians          | 0                 | 0  | 0       | 1   | 5   | 0  | 6     |
| Fish                | 0                 | 3  | 1       | 2   | 4   | 1  | 11    |
| Insects             | 7                 | 0  | 31      | 61  | 140 | 13 | 252   |
| Other Invertebrates | 0                 | 0  | 1       | 1   | 11  | 1  | 14    |
| Total               | 40                | 3  | 137     | 164 | 282 | 48 | 674   |

The main factor contributing to the reduction of each Red-listed species in Azumino City has been recorded (graph on the right). Although the factors contributing to reduction have been subcategorized in detail in the main text of the Azumino Red Data Book 2014, a more generalized and simplified categorization of these factors is listed here below:

1. Land development and improvement in infrastructure
2. Abandonment of managed forests and agricultural fields
3. Deforestation
4. Development of rivers and wetland environment
5. Confining habitats
6. Others



#### 4. Important natural environments of Azumino City

Azumino City has varied altitudes; the highest point is 2,922 m, which is the peak of Mt. Otensho-dake, and the lowest is 497 m in Akashina. Therefore, the altitudinal difference is >2,400 m. There are also a large number of springs in the lowland areas of the Matsumoto basin, and therefore, a large variety of natural environments exist in Azumino City. These factors have contributed to the high biodiversity in this region.

In this Azumino Red Data Book, these diverse natural environments are divided into five categories, out of which, four were classified according to their altitudinal range. The remaining one corresponds to rivers and their surrounding areas, regardless of their elevation. Thereafter, a number of typical and significant areas representing each category were selected, as stated below:

| Category  | Typical Features  | Sites Selected |
|---|---|----------------|
| Alpine Zone:<br>above 2,400m                      | This zone is too cold for tree growth. The temperature is low throughout the year, and strong winds often blow. This zone comprises of exposed rocky ridges and the Rock Ptarmigan. The dominant vegetation typically includes Siberian Dwarf Pines, Cowberry, and short alpine plants. | 5              |
| Sub-alpine Zone:<br>from 1,600m to 2,400m         | This zone mainly comprises of Evergreen coniferous forests. Deciduous broad-leaved trees, grew at higher altitudes in this zone due to their ability to withstand avalanches. The area near the forest limit altitude is covered with grasslands.                                       | 5              |
| Mountain Zone:<br>from 700m to 1,600m             | This zone mainly consists of secondarily reforested areas after human forestry and habitation. Virgin forests are still partially present.  | 12             |
| Foothill and Plains:<br>below 700m                | Various human activities are carried out in this zone. There are villages and towns, paddy fields, and various other agricultural fields. This zone also has temples and shrine groves and homestead woodlands.   | 10             |
| Rivers and Wetlands<br>(irrespective of altitude) | These regions contain aquatic habitats, such as rivers. There are also some agricultural ponds in the foothill areas. There are many springs and waterways in lowland areas the basin.  | 11             |

## 5. Creatures requiring special monitoring

The species categorized as “creatures requiring special monitoring” are those that have a negative impact on the native species. For a species to be listed in this category, one or more of the following four criteria must be satisfied: 1) predation on or elimination of native species (indigenous strains) by the alien species (non-native strains) or competition between the native and alien species; 2) genetic variation due to cross-breeding between native and alien species; 3) hosting and transmission of pathogens or parasites from alien to native species; and 4) modification of the ecological functionality of the habitat with respect to the native species.

Unfortunately, many alien species (non-native strains) have inhabited Azumino City, most of which are detrimental to the native species.

| Taxonomical Groups  | Native species | Invasive alien species                           |               |        | Total |
|---------------------|----------------|--|---------------|--------|-------|
|                     |                | Species listed in the Invasive Alien Species Act |               | Others |       |
|                     |                | Regulated  | Not regulated |        |       |
| Plants              | 0              | 3  | 7             | 5      | 15    |
| Mammals             | 2              | 1  | 0             | 1      | 4     |
| Birds               | 0              | 2  | 1             | 0      | 3     |
| Reptiles            | 0              | 0  | 0             | 0      | 0     |
| Amphibians          | 0              | 1  | 0             | 0      | 1     |
| Fish                | 0              | 3  | 3             | 0      | 6     |
| Insects             | 5              | 0  | 2             | 1      | 8     |
| Other Invertebrates | 0              | 1  | 1             | 2      | 4     |
| Total               | 7              | 11   | 14            | 9      | 41    |

## 6. Things we need to manage in order to preserve a rich and varied natural environment of Azumino

Recording of the current wildlife status in Azumino is the first step towards achieving the true purpose behind the logging of the Azumino City Red Data Book 2014. This book records basic data to clearly ascertain the current wildlife status in order to conserve the rich and varied natural environment and ensure its preservation for future generations. This book details factors such as various human developmental activities, abandonment of managed forests and agricultural fields, and deforestation that contribute to the depletion of the Red List species. We should not only aim to conserve the Red List species, but should also endeavor to conserve entire natural environments that are essential for the survival of the red-listed species. To achieve these objectives, local authorities, citizens, and land developers must all work together to conserve and maintain our natural environment. This book can serve as a valuable tool for this purpose. We must also ensure that our youth are educated on the importance of bearing the responsibility of protecting our abundant natural environment.

We must develop plans and implement measures to prevent the widespread distribution and inhibit the population of alien species (non-native strains) that have a significant impact on the biodiversity of the native species. In addition, measures should be taken to prevent the entry of any new alien species. Therefore, it is important to develop monitoring systems for red-listed and native species along with a record of the condition of their current natural habitats to aid in the detection of any newly introduced alien species.