

Characteristics of Wild Edible Plants in Japan

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Abstract. This study examines the characteristics of wild edible plants traditionally consumed in Japan, drawing on historical dietary records from the early twentieth century. Using “the Complete Collection of Dietary Habits in Japan”, which compiled oral interviews conducted between 1920 and 1930, the study extracted and analyzed species consumed across multiple prefectures. 66 wild edible plant species (groups) were identified. It is found that Haceous plants dominated the edible flora, accounting for 51 species (79%), while woody plants represented 12 species (18%). Most Haceous species thrived in open environments such as grasslands, whereas woody species were shrubs or pioneer T species which are typically found at forest edge or other disturbed vegetation. These findings suggest that human disturbance around settlements created ecological conditions that facilitated the use of wild plants as food resources. Notably, all Haceous species were Ps, indicating that domestication of wild plants in Japan was unlikely. Overall, the study highlights the ecological and cultural factors that shaped traditional plant use and provides insight into the historical relationship between Japanese communities and their surrounding vegetation and reasons why Japanese plants have become a minor presence in everyday diets of present times.

1 Introduction

The practice of consuming plants found in one’s immediate surroundings is a universal human activity common to all cultures. Ethnobotanical reports on wild edible plants in local communities have been documented from nearly every continent and island region. Furthermore, recent reports indicate that the foraging of wild edible plants is also taking place in urban settings [1].

The Japanese archipelago, with its warm and humid climate, boasts rich vegetation. Many plants survived the Ice Age, and the region is considered to have high plant species diversity among mid-latitude areas. Naturally, even in Japan, diverse plants have been used as food throughout the country [2]. Furthermore, it has become clear that the gathering of wild edible plants involves a rich traditional ecological knowledge [3,4]. The preservation or creation of cultures that utilize wild plants is considered crucial for fostering knowledge about the natural environment and for building a sustainable society rooted in nature.

However, wild edible plants rarely appear in the modern Japanese diet. As an example, Table 1 lists the “designated vegetables” established by Japan’s Ministry of Agriculture,

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Forestry and Fisheries. “Designated vegetables” are those with high consumption levels that are considered essential to daily life; subsidy programs for producers have been established to ensure a stable supply. Naturally, these are cultivated plants, not wild plants.

Table 1. “Designated Vegetables” by Japan’s Ministry of Agriculture, Forestry and Fisheries and Their Origins

Japanese name	English name	Scientific name	Origin
Kyabetsu	Cabbage	<i>Brassica oleracea</i> var. <i>Capitata</i>	Mediterranean coast to the Atlantic coast, domesticated in Europe
Kyuuri	Cucumber	<i>Cucumis sativus</i>	Himalayan Mountains, domesticated in China and southwest asia
Satoimo	Taro	<i>Colocasia esculenta</i>	From eastern India to the Indochina Peninsula
Daikon	Raddish	<i>Rapahanus sativus</i>	Mediterranean coast, domesticated in east mediterranean areas and other various regions
Tomato	Tomato	<i>Solanum lycopersicum</i>	Andes mountains
Nasu	Eggplant	<i>Solanum melongena</i>	India, domesticated in south and east Asia
Ninjin	Carrot	<i>Daucus carota</i> subsp. <i>Sativus</i>	Central Asia, domesticated in around Afganistan
Negi	Welsh Onion	<i>Allium fistulosum</i>	Central asia, domesticated in China
Hakusai	Chinese Cabbage	<i>Brassica rapa</i> var. <i>Glabra</i>	Mediterranean coast, domesticated in China.
Piiman	Sweet Pepper	<i>Capsicum annum</i> var. <i>grossum</i>	Central and southern America, domesticated in Europe
Burokkorii	Broccoli	<i>Brassica oleracea</i> var. <i>italica</i>	Mediterranean coast, domesticated in east mediterranean areas
Retasu	Letuce	<i>Lactuca sativa</i>	Mediterranean coast and west Asia
Tamanegi	Onion	<i>Allium cepa</i>	Central asia
Jagaimo	Potato	<i>Solanum tuberosum</i>	central-southern Andes
Hourensou	Spinach	<i>Spinacia oleracea</i>	West Asia

Source: Compiled by the author based on the Ministry of Agriculture, Forestry and Fisheries website and Hotta et al. (1989) [5]

Furthermore, the plants listed in Table 1 are native to regions outside Japan. This trend is not limited to “designated vegetables.” Nearly all vegetables cultivated in Japan are plants native to countries other than Japan or were domesticated outside of Japan [6]. In other words, despite the fact that most of Japan is covered by forests, it is extremely difficult to feel the benefits of this in modern dietary habits.

Therefore, in this paper, by analyzing the characteristics of wild plants that were once commonly consumed in Japan, we will examine some of the factors contributing to their diminished presence in modern Japanese dietary habits.

2 Materials and Methods

As in Osawa 2024 [2], we used “The Complete Collection of Habits in Japan” as our source material. This collection compiles information obtained through oral interviews regarding dietary habits from around 1920 to 1930. For each prefecture, 3 to 7 survey locations were designated.

From this source, we extracted the wild edible plants that were consumed as vegetables at each location. While Osawa 2024 [2] also included berries and other fruits eaten by

children as snacks, this paper limits the analysis to plants used as vegetables in order to simplify the analysis and discussion. Additionally, we excluded “Mousou Take” bamboo (*Phyllostachys edulis*), which is often treated as a wild plant but has a clear record of introduction to Japan.

Plants recorded only in dialects were identified by converting them to standard Japanese names using Yasaka Shobo (2001) [7]. Tabulation was generally conducted on a species-by-species basis; however, for cases where species-level differentiation was impossible, or where multiple species were recognized as a single group, the group was treated as the unit of analysis. Groups treated in this manner include *Artemisia* spp., *Fallopia* spp., *Cirsium* spp., *Kalimeris* spp., *Eleutherococcus* spp., *Lilium* spp., *Taraxacum* spp., *Smilax* spp., *Vicia* spp., and *Trillium* spp.

For the plant species (groups) extracted from the data, we added information regarding the following points and conducted an analysis.

- 1) Life form: Classified as Haceous plants, woody plants, and others (in this study, this category includes bamboo and vines). Haceous plants were further classified into As and Ps.
- 2) Season: Based on descriptions in the source materials, the seasons in which the plants are considered edible were classified into four periods: spring, summer, autumn, and winter.
- 3) Habitat: The primary environments in which each plant grows were classified as forest, forest edge, grassland, farmland, wetlands/waterways, and coastal areas. Some plants may grow across multiple environments. In such cases, multiple habitats were assigned as attributes.

3 Results and Discussion

3.1 Overview

Wild plants used as vegetables were confirmed at 250 of the 259 sites. At the site with the highest number of species utilized, 22 species of wild plants were used. The average per site was 7.6 species.

A total of 65 species (groups) of wild plants were identified. Table 2 shows the results ranked in order of frequency of occurrence.

Table 2. List of Wild Plants Used as Vegetables

Japanese common name	Scientific name	(%)	Life form*		Season**				Habitat***					
			T/H/O	A/P	S	S	A	W	1	2	3	4	5	6
Fuki	<i>Petasites japonicus</i>	77.2	H	P	•						•			
Warabi	<i>Pteridium aquilinum</i>	74.9	H	P	•						•			
Zenmai	<i>Osmunda japonica</i>	57.5	H	P	•					•				
Yomogi	<i>Artemisia spp.</i>	52.1	H	P	•						•			
Udo	<i>Aralia cordata</i>	43.6	H	P	•					•	•			
Seri	<i>Oenanthe javanica</i>	42.1	H	P	•								•	
Taranoki	<i>Aralia elata</i>	33.6	T		•					•				
Nobiru	<i>Allium macrostemon</i>	23.6	H	P	•			•			•			
Mitsuba	<i>Cryptotaenia canadensis</i>	20.8	H	P	•				•					
Sugina	<i>Equisetum arvense</i>	19.3	H	P	•						•			
Fuki	<i>Petasites japonicus</i>	77.2	H	P	•						•			
Warabi	<i>Pteridium aquilinum</i>	74.9	H	P	•						•			
Zenmai	<i>Osmunda japonica</i>	57.5	H	P	•					•				
Yomogi	<i>Artemisia spp.</i>	52.1	H	P	•						•			
Sansho	<i>Zanthoxylum piperitum</i>	17.0	T		•				•					
Uwabamisou	<i>Elatostema involucratum</i>	17.0	H	P	•				•					
Kusasotetsu	<i>Matteuccia struthiopteris</i>	16.2	H	P	•				•					
Oobagiboushi	<i>Hosta sieboldiana</i>	14.3	H	P	•				•					
Itadori	<i>Fallopia spp.</i>	13.5	H	P	•						•			
Tsuwabuki	<i>Farfugium japonicum</i>	11.6	H	P	•					•	•			
Momijigasa	<i>Japonicalia delphiniifolia</i>	10.4	H	P	•				•					
Azami	<i>Cirsium spp.</i>	9.3	H	P	•					•	•			
Kusagi	<i>Clerodendrum trichotomum</i>	8.9	T		•					•				
Yomena	<i>Kalimeris spp.</i>	8.1	H	P	•						•			
Chisimazasa	<i>Sasa kurilensis</i>	6.6	O		•				•					
Asatsuki	<i>Allium schoenoprasum</i>	6.6	H	P	•						•	•		
Ukogi	<i>Eleutherococcus spp.</i>	6.6	T		•					•				
Wasabi	<i>Eutrema japonicum</i>	6.2	H	P	•				•					
Nazuna	<i>Capsella bursa-pastoris</i>	5.8	H	P	•						•	•		

Table 2. (continued).						
Oyamabokuchi	<i>Synurus pungens</i>	5.4	H	P	•	•
Yamayuri	<i>Lilium spp.</i>	5.0	H	P	•	•
Ryoubu	<i>Clethra barbinervis</i>	4.6	T		•	• •
Tanpopo	<i>Taraxacum spp.</i>	4.2	H	P	•	• •
Shiode	<i>Smilax spp.</i>	4.2	H	P	•	•
Wasuregusa	<i>Hemerocallis fulva</i>	4.2	H	P	•	•
Katakuri	<i>Erythronium japonicum</i>	3.9	H	P	•	•
Yobusumaso	<i>Parasenecio robustus</i>	3.9	H	P	•	•
Tsuriganeninjin	<i>Adenophora triphylla</i>	3.9	H	P	•	•
Suberihiyu	<i>Portulaca oleracea</i>	3.5	H	A	•	•
Miyamairakusa	<i>Laportea cuspidata</i>	2.7	H	P	•	•
Suiba	<i>Rumex acetosa</i>	2.7	H	P	•	•
Hahakokgusa	<i>Pseudognaphalium affine</i>	2.3	H	P	•	• •
Akaza	<i>Chenopodium album</i>	2.3	H	A	•	•
Ezonyu	<i>Angelica ursina</i>	2.3	H	P	•	•
Oobako	<i>Plantago asiatica</i>	2.3	H	P	• • • •	•
Yamabukishoma	<i>Aruncus dioicus</i>	1.9	H	P	•	•
Nantenhagi	<i>Vicia spp.</i>	1.9	H	P	•	•
Hosobawadan	<i>Crepidiastrum lanceolatum</i>	1.9	H	P	•	•
Gyoujaninniku	<i>Allium victorialis</i>	1.5	H	P	•	•
Gishigishi	<i>Rumex japonicus</i>	1.2	H	P	•	•
Shaku	<i>nthriscus sylvestris</i>	1.2	H	P	•	•
Inudouna	<i>Parasenecio aidzuensis</i>	1.2	H	P	•	•
Ashitaba	<i>Angelica keiskei</i>	0.8	H	P	•	•
Koshiabura	<i>Chengiopanax sciadophylloides</i>	0.8	T		•	•
Okera	<i>Atractylodes ovata</i>	0.8	H	P	•	•
Toriashishouma	<i>Astilbe odontophylla</i>	0.8	H	P	•	•
Urushi	<i>Toxicodendron vernicifluum</i>	0.8	T		•	•
Nogeshi	<i>Sonchus oleraceus</i>	0.8	H	A	•	•

Table 2. (continued).

Adan	<i>Pandanus odoratissimus</i>	0.8	T			•
Kuko	<i>Lycium chinense</i>	0.4	T		•	•
Niwatoko	<i>Sambucus racemosa</i>	0.4	T		•	•
Ooubayuri	<i>Cardiocrinum cordatum</i>	0.4	H	P	•	•
Enreisou	<i>Trillium</i> spp.	0.4	H	P	•	•
Noriutsugi	<i>Hydrangea paniculata</i>	0.4	T		•	•
Mitsubaakebi	<i>Akebia trifoliata</i>	0.4	O		•	•
Nirinsou	<i>Anemone flaccida</i>	0.4	H	P	•	•
Ootaniwatari	<i>Asplenium antiquum</i>	0.4	H	P	•	•
Botanboufuu	<i>Peucedanum japonicum</i>	0.4	H	P		•
Birou	<i>Livistona chinensis</i>	0.4	T			•

Source: Compiled by the author based on “The Complete Collection of Dietary Habits in Japan”

- Notes:
- *Life forms are abbreviated as follows:
- T = tree
 - H = herb
 - O = other
 - A = annual
 - P = perennial
- **The seasons of use are abbreviated as follows:
- Sp = Spring
 - Su = Summer
 - Au = Autumn
 - Wi = Winter
- ***Habitat is represented by the following numbers:
- 1 = forest
 - 2 = forest edge
 - 3 = grassland
 - 4 = farmland
 - 5 = wetlands/waterways
 - 6 = coastal areas

3.2 Characteristics of Plants

3.2.1 Life Form

Focusing on life form, Haceous plants accounted for 79%, while woody plants accounted for 18% (Fig. 1). When Haceous plants were further classified into As and Ps, Ps were overwhelmingly predominant, with only a few annuals.

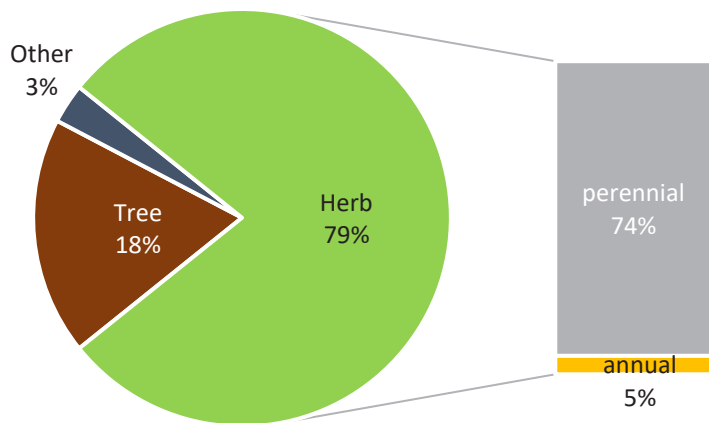


Fig. 1. Life form of wild edible plants (N=65)

3.2.2 Season

The season in which wild plants are used as vegetables is generally limited to spring (Fig. 2).

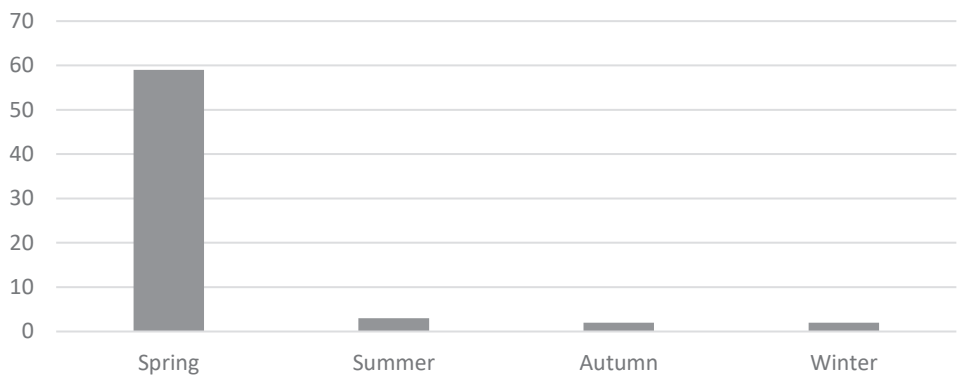


Fig. 2. Life form of wild edible plants (N=65)

3.2.3 Habitat

When summarizing the main growing environments according to the categories of forest, forest edges, grasslands, farmland, wetlands/waterways, and coastlines (Fig.3), the most common were grasslands (36.9%), forests (33.8%), and forest edges (21.5%).

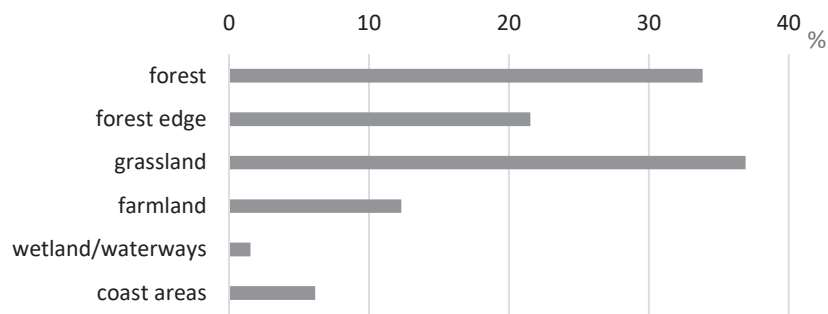


Fig. 2. Life form of wild edible plants (N=65)

3.3 Discussion

When plants are used as vegetables, it is often the leaves, particularly young shoots and other tender parts, that are utilized [2]. The fact that the majority of the wild plants utilized were herbaceous plants likely reflects the reality that small herbaceous plants are easier to harvest than woody plants. Furthermore, since most of the woody plants were shrubs or pioneer tree species, it is believed that those easily accessible to humans were prioritized for use.

The potential vegetation across nearly the entire territory of Japan consists of forests. While the results of this study confirm that forests do hold a certain degree of importance as habitats for edible wild plants, grasslands are recognized as being of greater significance. In Japan, grassland vegetation naturally occurs in alpine and wetland areas, but in most cases, it is established as a result of human disturbance. Therefore, these findings suggest that areas close to human settlements were more important as sites for food gathering. Furthermore, since many herbaceous plants, shrubs, and pioneer tree species prefer disturbed environments, disturbed vegetation environments tend to harbor many plants that are easily utilized by humans [8].

Most of the herbaceous plants used as vegetables were perennial herbs. In temperate regions such as Japan, perennial herbs die back above ground in winter, store nutrients underground, and enter dormancy. In spring, these perennials use the nutrients stored underground to grow rapidly. The aboveground parts are harvested as vegetables when they are still sufficiently tender. Similarly, woody plant species in Japan emerge from dormancy in spring and produce new shoots. These tender young leaves are then harvested as vegetables. As a result, the harvest season for wild plants is largely limited to spring.

According to Aoba (1981) [9], perennial herbs and woody plants have long growth periods before harvest and are less prone to variation, making them unsuitable as crops. Given these circumstances, it is believed that while the Japanese have consumed plants found in their immediate surroundings, they rarely cultivated them. Most of the “designated vegetables” mentioned at the beginning of this paper are annual herbs. Although some are perennials, their actual cultivation period is less than one year.

The Japanese have utilized a diverse range of plants as vegetables, focusing primarily on those growing in familiar environments close to human settlements. These edible plants consist mainly of young shoots from perennial herbs and woody plants, and their harvesting is limited to spring. In contrast, cultivated plants introduced from abroad are primarily annual herbs, and their harvest season generally begins in summer or later. Wild plants are valued as fresh vegetables during periods when cultivated crops are scarce, but they were never adopted as agricultural crops. Today, thanks to advances in agricultural technology, crops can be grown year-round. These crops are now distributed regardless of the season, and the

need to rely on wild plants in the spring has disappeared. Due to these circumstances, it is believed that Japanese plants have become a minor presence in everyday diets.

Final Remarks

Even if there is no practical necessity, traditional plant use is likely to continue if there is a sense of attachment or preference. Even today, there are still many people throughout Japan who enjoy eating wild plants. However, statistically, consumption has declined significantly [10]. In Japan, urban population concentration has progressed markedly since the 1960s. Furthermore, with the development of agricultural production and distribution, opportunities to encounter wild plants have diminished. Against this backdrop, as generations unfamiliar with the taste of wild plants have succeeded one another, the number of people who feel an attachment to or have a preference for edible wild plants is thought to have declined significantly.

Additionally, as pointed out in this paper, vegetation disturbance is important as a growing environment for wild plants that have been used as vegetables. In the past, vegetation disturbance near human settlements was primarily carried out to obtain fertilizer and fuel. Now that there is no longer a need for these gathering activities, there are not as many favorable environments for edible wild plants to grow as there once were. In particular, the area of grasslands has been declining significantly for over 100 years [12]. It is reasonable to assume that the productivity of edible wild plants in their natural state is currently low.

To realize a prosperous society while respecting biodiversity and conserving the natural environment, the existence of a culture that fosters familiarity with the local natural environment is essential. It is necessary to understand that such a culture has emerged as a result of the interaction between human activities and the natural environment. Against this backdrop, preserving or creating a culture that fosters familiarity with local plants has become a major challenge.

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