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# A contribution of the University Forests to a lecture of HUSTEP (Hokkaido University Short-Term Exchange Program)

—Development of Eco-Campus through creating name plates of tree species—

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## Introduction

Hokkaido University has the largest experimental forest in the world belonging to one university with several advanced facilities and an ecologically well-managed campus. We have been developing lectures on field science as part of the Hokkaido University Short-Term Exchange Program (HUSTEP) through creating nameplates of trees (including their ecology, utilization and origin of their name, etc.).

The instigation for the creation of new lectures on field science (Environmental Science for Biological Resources) was serious environmental changes due to rapid economic development in Northeast Asia. Under these environmental changes, conservation of biodiversity in forests is a very important issue for future generations. We will be able to solve these environmental problems only when we forge international cooperation in environmental health services. Hokkaido University, located in Northeast Asia, should be engaged in environmental science education as well as forest technology.

Hokkaido University Forests have been developing a lecture on “Environmental Science for Biological Resources” as a contribution to the development of HUSTEP. The goal of the lecture is to encourage HUSTEP students to study in East Asia where we have the highest biodiversity. Students will be able to recognize species rich forests and campus in Far East. We also show the students that we have been using wood resources following the traditional methods of the Ainu, the indigenous people of northern Japan. However, we need a reasonable method for imparting the traditional methods of the Ainu as well as sustainable use of wood resources to the students.

For these reasons, we have established nameplates of representative tree species, which includes information about their ecology and utilization methods for HUSTEP education, with the ultimate aim of improving education at Hokkaido University. The objective of this document is to improve the HUSTEP lectures through the introduction of the contents and locations of the tree nameplates on the campus.

## Characteristics of Name Plates

Characteristics of the nameplates include the origin of the Japanese name, the Ainu name, ecological traits of trees and their utilization methods. When making the nameplates, we referred to the ordinary plates of plants (Ito 1972, Sato 1990) as well as books on Ainu culture and the utilization of wood by Ainu (Yamada 1994, Haginaka 1990).

## Structure and Setting Method of Name Plates

The nameplates are composed of the Japanese and English common names, the Latin name, the origin of the Japanese and Ainu names, ecology, utilization, and native region. The color of the

background of the plates is dark green and the text (both Japanese and English) is white in color (Fig.1).

The plates are the size of A4 piece of paper. They are attached to the tree trunks with a special coil, which has no negative effect on tree growth (Figure 2). We attached these nameplates, following the regulations of the “Campus Plan of Hokkaido University 2006”, to trees along the road between the International Student Center, the experimental nursery, and the dormitory for overseas students (Fig. 3).

### **Tree Species and Explanation**

Listed tree species (Table 1) and the explanation method are as follows: common Japanese name, Roman characters and English in parenthesis, Latin name, origin of common name in Japanese and Ainu, growth and reproductive characteristics, utilization, and native place. The order of the listed name of the trees followed the example of Engler (Ito 1972).

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## List of tree species

(In parenthesis means abbreviation of Latin name of trees as for Table 1)

1. イチョウ (Ichoh; Ginkgo) : *Ginkgo biloba* (Gb)

**Origin of Japanese name:** *Ichō* came from the Chinese word that means “duck foot” because the leaf resembles a webfoot.

**Ecology/Utilization:** Plant appeared in the Mesozoic period. Monotypic gymnosperm, Dioecism, light demanding species. Ginkgo nuts are edible. The tree is planted as firebreaks because of its thick bark. Its wood is used for cutting boards. The leaves are considered a medicinal herb.

2. イチイ (Ichii; Japanese yew) : *Taxus cuspidata* (Tc)

**Origin of Japanese name:** *Ichii* means “the first place.” A stick that conferred first class status in the 5~6<sup>th</sup> centuries was made from this tree. Also known as *Araragi*, *Shakunoki* or *Suo* and in Hokkaido as *Onko*.

**Ecology/Utilization:** Dioecism, evergreen conifer a shade tolerant species. Can live as long as a 1000 years. Its wood is used for decorative posts or wood carving.

3. トドマツ (Todomatsu; Sakhalin fir) : *Abies sachalinensis* (As)

**Origin of Japanese name:** The Chinese character for *todo* expresses the stratum at each branch. *Matsu* means “pine tree.” The Ainu name at Shiraoi town is *Totoroppu*, which means trees forming a community.

**Ecology/Utilization:** Very shade tolerant species with lifespan of 150 years. Trees are characterized by wet hardwood. Representative afforestation species.

4. ヨーロッパトウヒ (Youroppa・touhi; Norway spruce) : *Picea abies* (Pa)

**Origin of Japanese name:** *Yoroppa* is the Japanese pronunciation of *Europe*. *Touhi* consists of *tou* (an old name of China), and *hi* (“*hinoki* cypress”).

**Ecology/Utilization:** This species grows well in very fertile conditions. The trees are planted as windbreaks to stop blowing snow. Its wood is used for piano making.

5. カラマツ (Karamatsu; Japanese larch) : *Larix kaempferi* (Lk)

**Origin of Japanese name:** *Kara* (an old name for a part of China) and *matsu* (“pine tree”).

**Ecology/Utilization:** Light demanding deciduous conifer native to Japan with a high growth rate. Transplanted from central Japan to Hokkaido in the early 1900s. Its wood is used mine support timbers and for furniture.

6. シラカンバ (Shirakanba; White birch) : *Betula platyphylla* var. *japonica* (Bp)

**Origin of Japanese name:** *Shira*- means “white.” *Kanba* originates from the Ainu word *Karimpa*.

**Ecology/Utilization:** Typical early successional species. Its bark is used as fire starter or for writing paper. Its wood is used for pulp or chopsticks. Its sap is drinkable.

7. ハシドイ (Hashidoi; Japanese lilac) : *Syringa reticulata* (Sr)

**Origin of Japanese name:** *Hishidoi* originates from the dialect of the Kiso region in Japan *Hashi-tsudoi*, which describes the blossoms attached to the top of the shoot. The Ainu name *pusuni* implies sound of popping wood in a fire.

**Ecology/Utilization:** Shade tolerant species grows at mesic sites. Used as shade trees, and its wood is used for handicrafts and for charcoal.

8. ミズナラ (Mizunara; Oak) : *Quercus mongolica* var. *crispula* (Qm)

**Origin of Japanese name:** *Mizunara* (“water oak”) is named because the xylem is extremely moist. *Nara* originates from a Korean word.

**Ecology/Utilization:** Mid to late successional species. Its wood is used for furniture making, floorboards and barrels.

9. ブナ (Buna; Siebold’s beech) : *Fagus crenata* (Fc)

**Origin of Japanese name:** Its old name *Sobaguri* (“buckwheat nut”) originated from the shape of its seed which resembles buckwheat. The origin of *buna* is unknown.

**Ecology/Utilization:** Typically shade tolerant species. The northern most beech forest is located at Kuromatsunai, Hokkaido. Its wood is used for handicrafts and for plywood.

10. ハルニレ (Harunire; Elm) : *Ulmus davidiana* var. *japonica* (Ud)

**Origin of Japanese name:** *Haru-* means “spring season.” *Nire* originates from *nure*, which describes the unctuous layer under the bark. ***Elm* originates from the Celtic word *Ulme*.** This tree is a traditional symbol of Hokkaido University.

**Ecology/Utilization:** Mid successional, light demanding species grown in mesic sites. Mainly used as a shade tree. Its wood is used for furniture or lumber.

11. カツラ (Katsura; Katsura tree) : *Cercidiphyllum japonicum* (Cj)

**Origin of Japanese name:** *Katsura* originated from *Katsu*, which means “producing scent.” In the autumn, when the leaves turn yellow, they have a pleasant fragrance.

**Ecology/Utilization:** Dioecism, it is a mid successional species and grows to be very large. It is a garden tree, its wood is used for veneer and for furniture. Ainu people used it for boat making.

12. キタコブシ (Kita-kobushi; Japanese magnolia) : *Magnolia kobus* var. *borealis* (Mk)

**Origin of Japanese name:** *Kita* means “north.” *Kobushi* means “fist.” Its bud and fruit resemble a fist. The local name, *Mansaku* means “to bloom first.” The Ainu name *Omaukunni* means “fragrant tree.”

**Ecology/Utilization:** A variety of *kobushi*. Early successional species. Its wood is used for toys and for lacquer ware. Its leaves are used for medicine.

13. ニワウルシ (Niwaurushi; Tree of heaven) : *Ailanthus altissima* (Aa)

**Origin of Japanese name:** Niwaurushi means the shape of leaves is pinnate compound resembling that of *Rhus* sp. but is not poisonous and can be planted in gardens. Shinjyu is named after the English name of “Tree of heaven”.

**Ecology/utilization:** Dioecious, deciduous broadleaved trees with early successional traits. Tolerant against pest. Planted as a shade tree along roads. An insecticide can be produced from its bark

14. スズカケノキ (Suzukakenoki; London plane) : *Platanus acerifolia* (Pa)

**Origin of Japanese name:** *Suzukakenoki* means “tree to hang a bell on.” The shape of its fruits is similar to a traditional Japanese bell. *Platan* means “wide leaf.”

**Ecology/Utilization:** Light demanding trees with high cold hardiness. Shade tree; highly resistant to pruning damage.

15. エゾヤマザクラ (Ezo-yamazakura; Sargent cherry) : *Prunus sargentii* (Psg)

**Origin of Japanese name:** *Ezo* is the former name of Hokkaido. *Yamazakura* means “mountain cherry (*yama-sakura*).” *Sakura* originates from the Japanese words that mean “glory” or “full bloom.”

**Ecology/Utilization:** Mid to late successional species. Its wood is used for housing materials and carving. Its bark is used for handicrafts. Its blossoms are edible.

16. ナナカマド (Nanakamado; Rowan) : *Sorbs commixta* (Sc)

**Origin of Japanese name:** *Nanakamado* means “seven ovens” because quality charcoal is made after seven days in an oven.

**Ecology/Utilization:** Typical gap species. Shade tree. Its wood is used for tool or weapon handles. Its seeds are edible but bitter.

17. ニセアカシア (Niseakasia; Black locust) : *Robinia pseudoacacia* (Rp)

**Origin of Japanese name:** *Niseakashia* means “fake acacia.” The shape of its leaf is similar to that of the acacia. It also known as *Harienjyu* in Japanese.

**Ecology/Utilization:** Light demanding species. Its wood is used for floor boards and for charcoal. Important for honey production.

18. シナノキ (Shinanoki; Basswood) : *Tilia japonica* (Tj)

**Origin of Japanese name:** *Shinanoki* means “white tree” or “tree with elastic bark” because its inner bark is very strong.

**Ecology/utilization:** Late successional species in mixed forests. Important in honey production. Its wood is used for wood carving.

19. オオバボダイジュ (Ooba-bodaijyu ; Linden) : *Tilia maximowicziana* (Tm)

**Origin of Japanese name:** *Bodaiju* originates from Chinese, which means “tree of Buddha.”

**Ecology/utilization:** Late successional species in mixed forests. Important in honey production. Its wood is suitable for wood carving but cracks occur more easily than in basswood.

20. カエデ (Kaede) : *Acer* sp. (A)

**Origin of Japanese name:** *Kaede* originates from *kaeru* (“frog”), and *te* (“hand”). The shape of its leaf resembles the hand of a frog.

**Ecology/Utilization:** Late successional species.

21. ハリギリ (Harigiri; Caster aralia) : *Kalopanax septemlobus* (Ks)

**Origin of Japanese name:** *Harigiri* means “paulownia with needles.”

**Ecology/Utilization:** It is a gap phase species and it is grown in infertile soil. Its wood is used for furniture making and for plywood. Its young leaves are edible.